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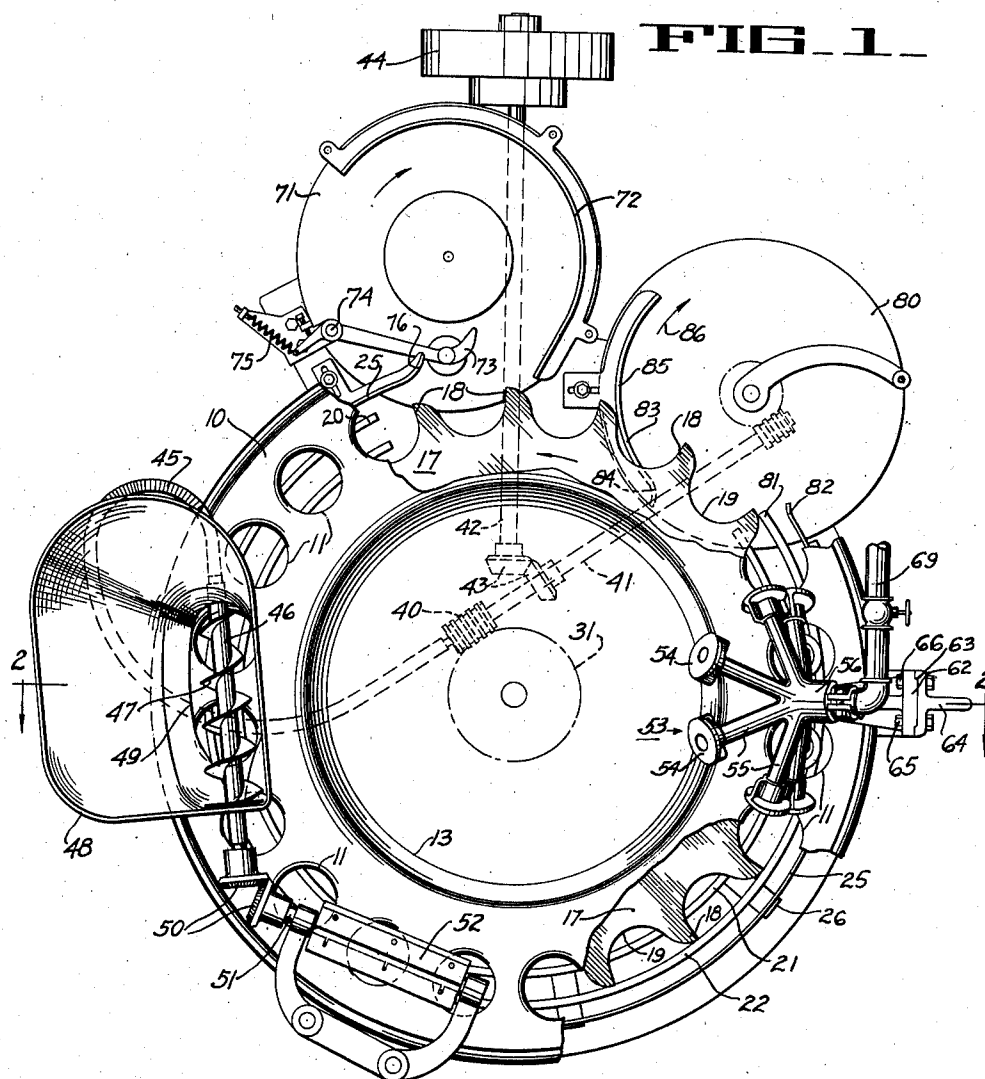
H. MONDLOCH

2,289,852

FILLING MACHINE

Filed July 26, 1940

2 Sheets-Sheet 1



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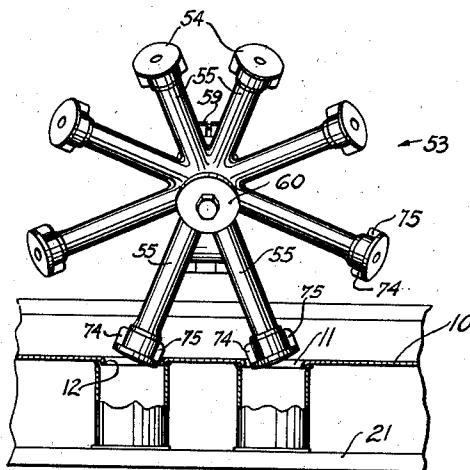
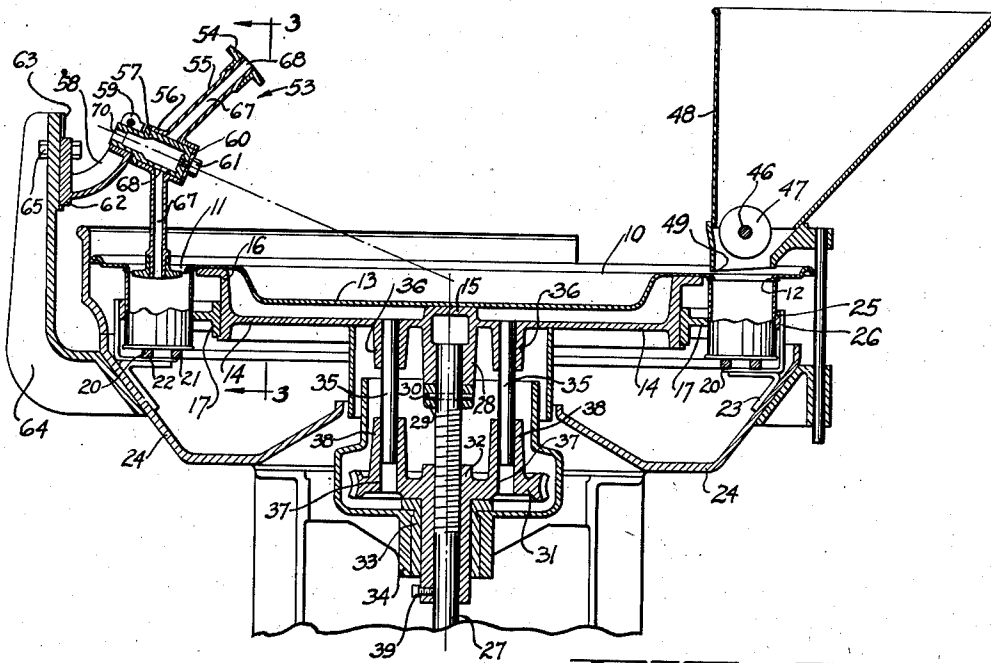
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UNITED STATES PATENT OFFICE

2,289,852

FILLING MACHINE

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Application July 26, 1940, Serial No. 347,714

7 Claims. (Cl. 226—71)

This invention relates to machine for packing commodities in receptacles such as cans or jars.

A machine of the type with which the invention is concerned is disclosed in the patent to W. F. Christel No. 2,150,490, issued March 14, 1939. In machines of this type the cans are carried around in a circle with their open ends in registry with filling openings in the periphery of a revolving table. The material is filled into the cans through a hopper positioned above the filling openings in the table and in the path of travel thereof.

One of the objects of this invention is to provide an improved means for packing the commodity down into the can after the can has been filled.

Another object of the invention is to provide a packer which is adapted to introduce juice or brine into the can as it is pressing the contents down into the can.

A further object of the invention is to provide an improved packer construction whereby the presser heads remain in the cans throughout a longer path of travel of the cans than was heretofore obtainable.

Another object of the invention is to provide a packer construction by which the diameter of the presser head and the depth of penetration thereof may be advantageously increased.

Other objects will become apparent after the disclosure of a machine in which the invention has been embodied.

In the drawings:

Fig. 1 is a plan view of the machine.

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

Fig. 3 is an elevation of the packer taken as indicated by the arrows 3—3 in Fig. 2 and showing the cooperation of the presser heads with the cans.

The machine comprises a revolving table 10 (Figs. 1 and 2) having a series of filling openings 11 arranged around its periphery. Each filling opening 11 has a downwardly projecting lip 12 for fitting into the open end of the can. The central portion 13 of the table 10 is depressed to form a bowl for the reception of excess material. The table 10 is supported upon and rigidly secured to the wheel 14 having a central protuberance 15 for supporting the center of the bowl portion 13 and having an upstanding peripheral flange 16 for supporting the peripheral portion of the table 10. A feed ring 17 is carried by the wheel 14 and is provided with feed fingers 18. Intermediate the fingers 18 are formed ar-

cuate openings or pockets 19 into which the can fits and which serve to center the can in registry with the filling openings 11.

A stationary track 20 comprising two spaced-apart concentric rails 21, 22 is provided for supporting the cans during their travel around with the table, the fingers 18 engaging the walls of the cans to advance the cans along the track 20. As shown in Fig. 2, the rails 21 and 22 are mounted in fixed position by means of brackets 23 attached to the frame 24 of the machine. A circular fixed guide rail 25 is supported on brackets 26 concentric with the table 10 to retain the cans in the arcuate openings 19 of the feed ring 17.

The wheel 14 is supported on a vertical shaft 27, the upper end of which is received in the bore of the hub 28 of the wheel 14. A collar 29 is secured to the shaft 27 by a pin 30. The shaft 27 is supported by a worm wheel 31, into the hub 32 of which the shaft 27 is threaded. The worm wheel 31 is supported in a bearing 33 mounted in the central portion 34 of the machine framework 24.

In order to transmit rotation from the worm wheel 31 to the wheel 14 the latter is provided with plunger rods 35 secured in bosses 36 formed integrally with the table 14. The rods 35 slidably engage bores 37 formed in upstanding bosses 38 on the worm wheel 31. A set screw 39 is threaded through the hub 32 of the worm wheel and bears against the shaft 27 to lock the worm wheel and shaft together in any adjusted position. The threaded shaft 27 is rotated to raise and lower the table 10 with respect to the track 20 in order to enable the machine to accommodate cans of different height. Rotation of the worm wheel 31 is transmitted through the rods 35 to the wheel 14 so that the table 10 rotates in unison with the worm wheel 31.

The means for driving the worm wheel 31 is shown in phantom in Fig. 1. The worm wheel 31 is driven by a worm 40 on a shaft 41 which is driven from a power shaft 42 by bevel gears 43. The outer end of the power shaft 42 has a pulley 44 adapted to be driven from a source of power not shown.

The shaft 41 is connected by means of a flexible drive 45 to a shaft 46 having a screw thread 47 thereon. The screw 47 is located in the bottom of a feed hopper 48 having a discharge outlet 49 disposed above the path of travel of the filling openings 11 of the table 10. The other end of the shaft 46 is connected by means of bevel gears 50 to the shaft 51 of a wiper 52.

The packer wheel indicated generally at 53

(Fig. 1) comprises a series of presser heads 54 each secured to the end of an arm 55. The arms 55 are formed integrally with a hub 56 from which they radiate in the manner of the spokes of a wheel except that each arm 55 is disposed at an angle to the axis of rotation of the hub 56. The hub 56 (Fig. 2) of the packer wheel is rotatably mounted on a hollow axle 57 which is securely held in an inclined position in a bracket 58 having a clamping head 59. The wheel is retained on the axle 57 by means of a disc 60 engaging the end of the hub 56 and secured to the axle 57 by means of the screw 61. The bracket 58 has a portion 62 formed to fit in a guide way 63. The guide way 63 is formed in a bracket 64 which is rigidly secured to the frame 24. The bracket 58 can be slid up and down in the guide way 63 and fastened in any vertically adjusted position by means of bolts 65 and 66.

It will be noted by reference to Fig. 2 that the angle formed at the intersection of the vertical axis of the table and the inclined axis of the axle is equal to the angle which each arm 55 makes with the axle so that in the bottom dead center position of the arm it depends vertically into the can and is disposed parallel to the vertical axis of rotation of the table.

In order to introduce liquids such as juice or brine into the can the arms or spokes 55 of the packer wheel 53 have passages 67 formed therein which communicate with a port 68 in the fixed hollow axle 57 when the arm 55 is in the vertical depending position with the presser head 54 disposed within the can. The liquid to be introduced into the can is supplied to the interior of the hollow axle 57 by means of a pipe 69 (Fig. 1) which is attached to an opening 70 (Fig. 2) provided in the axle 57. The pipe 69 is omitted in Fig. 2 to simplify and clarify the view.

The operation of the machine will now be described. The table 10 is vertically adjusted by means of the screw shaft 27 to accommodate the height of can to be filled. The shaft 27 is then locked by means of the set screw 39. The bracket 58 is vertically adjusted on its guide way 63 in order to obtain the desired penetration of the presser heads 54 into the cans. When this adjustment has been made the bracket is locked by means of the bolts 65 and 66. Power is then applied to the pulley 44 and the table 10 is rotated.

The cans are deposited on a rotary feed disc 71 (Fig. 1) which carries them around in a clockwise direction. A fixed guide rail 72 directs the cans toward the feed wheel 17 and a member 73 pivoted at 74 and urged by a spring 75 aids in positioning the cans one by one in the pockets 19 of the feed wheel. Each can after being engaged by the fingers 18 is transferred from the disc 71 to the track 20 which begins adjacent the periphery of the feed disc 71. The cans are guided into the pockets 19 and retained therein by the guide rail 25 which has a curved end 76 overlying the feed disc 71. In this manner the cans are positioned with their open ends in registry with the filling openings 11 and are carried around on the track 20 in their filling position by rotation of the feed ring 17.

The commodity to be filled in the cans is placed in the hopper 48. As the filling openings 11 pass under the discharge outlet 49 of the hopper the material is deposited in the cans. The screw 47 rotates in a direction to move the material in the opposite direction to the direction of movement of the cans and serves to facilitate

transfer of the commodity from the hopper to the can. When the filling opening 11 passes out of registry with the discharge outlet 49 of the hopper 48 the can is filled to the brim with material and some excess material is disposed within the depending lip 12 of the filling opening 11. The excess material is removed by means of the rotating wiper 52 which is driven from the screw shaft 45 by the bevel gears 50. The material is wiped toward the center of the table 10 where it collects in the bowl 13.

As the table 10 rotates, the presser heads 54 of the packer wheel 53 engage in the filling openings 11 and rotation of the table thus causes rotation of the wheel. As best shown in Fig. 3 each presser head is provided with two fins 74 and 75. These fins are disposed in diametrically opposite positions on the presser head and the presser head is secured to the arm 55 in a predetermined position, so that when the arm 55 is in the vertically depending position the fins lie in a plane substantially tangent to the circular path of the cans, or, in other words, perpendicular to the section line 2—2 in Fig. 1. The actual engagement between the presser head and the table 10 takes place, as shown in Fig. 3, between the lip 12 of the opening 11 and the fin 75 on the presser head 54.

By reason of the fact that the arms 55 are disposed at an angle to the axle 57 and the axle 57 is disposed with its axis inclined to the axis of rotation of the table, the presser heads are enabled to engage in the filling openings 11 in advance of the dead center or vertically depending position of the arm 55. Likewise, the presser head remains in the filling opening for an equal distance beyond the dead center position. By this construction the presser head is enabled to follow the path of movement of the filling opening through a portion of its path of travel. The presser head and the filling opening have approximately the same arc of travel during the time the presser head is disposed in the filling opening. If the packer wheel 53 with its angularly disposed spokes and inclined axis is considered as a cone of revolution, the intersection of this cone with the disc of the table would be an arc.

The presser heads 54 enter the can and pack the commodity down into the can to a predetermined level below the brim, depending upon the height of adjustment of the bracket 58 (Fig. 2). While the presser head is disposed in the can the port 68 is uncovered and the juice or brine is discharged through the passage 67 in the arm 55 and added to the contents of the can.

After leaving the packer wheel the cans are deposited on a rotary discharge disc 80 (Fig. 1). The track 20 ends at 81 above the disc 80 and likewise the guide rail 25 ends at 82. The feed wheel 17 moves the cans off the end of the track onto the disc 80. The cans are disengaged from the pockets 19 in the feed wheel 17 by a stationary rake 83 having an end 84 which projects under the feed wheel into the path of the cans, and having an arcuate portion 85 which guides the cans around in the direction of rotation of the discharge disc indicated by the arrow 86.

By employing the packer wheel construction of my invention the presser head is able to follow the path of the can and remain therein for a longer period so that the packer has a better opportunity to perform its functions. At the same time, the presser head can be caused to penetrate deeper into the can than was previously

possible. In addition, this coincident-path construction permits the use of larger diameter presser heads.

While I have described a particular embodiment of the present invention, it will be obvious that various changes and modifications may be made in the details without departing from the spirit of the present invention and the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by U. S. Letters Patent is:

1. In a machine for filling material into containers such as cans and the like, having means for conveying the containers around in a circle about a vertical axis, means for pressing the material into the container, comprising an arm having a presser head thereon, said arm being journaled on an axis inclined to said vertical axis, said arm being arranged at an angle to said inclined axis so that in the vertically depending position of said arm it is parallel to said vertical axis, and means to rotate said arm in timed relation with the movement of the container.

2. In a machine for filling material into containers, such as cans and the like, having means for conveying the containers around in a circle about a vertical axis, means for pressing the material into the container, comprising an axle, an arm journaled on said axle, a presser head on said arm, a vertically-adjustable mounting for said axle to support said axle in an inclined position with respect to said vertical axis, and means to rotate said arm on said axle in timed relation with the movement of the container, said arm being disposed at an angle to said axle so that in the bottom dead center position thereof said arm is parallel to said vertical axis, whereby said mounting may be vertically adjusted to determine the depth of penetration of said presser head into the container in the bottom dead center position of said arm.

3. In a machine for filling material into containers, such as cans and the like, having a rotary table provided with filling openings around its periphery, and means to convey the cans around in registry with said filling openings, a packer wheel disposed above said table, said wheel being journaled on an axle inclined to the axis of rotation of said table, the spokes of said wheel being inclined with respect to said axle, presser heads on said spokes adapted to enter said filling openings, said heads and said openings having a common path of travel during the time said heads are disposed in said openings, and fins on said presser heads to engage the lips of said openings whereby said packer wheel is actuated by said table.

4. In a machine for filling material into containers, such as cans and the like, having a rotary table provided with filling openings around its periphery, and means to convey the cans around in registry with said filling openings, a packer wheel disposed above a portion of said table, an axle to support said wheel for rotation, a vertically-adjustable mounting for said axle adapted to support said axle with its axis intersecting the vertical axis of rotation of said table

at an angle, said mounting being disposed outside the periphery of said table, said wheel having a plurality of spokes each disposed at an angle to said axle, the angle of said spokes being the same as the angle between said axes, a presser head on each spoke, and means on said heads to engage the lips of said filling openings to transmit rotation to said wheel from said table.

5. In a machine for filling material into containers such as cans and the like having a rotary table provided with filling openings around its periphery, and means to convey the cans around in registry with said filling openings, a packer wheel disposed above said table, said wheel being journaled on an axle inclined to the axis of said table, the spokes of said wheel being inclined to said axle, presser heads on said spokes each comprising a hub portion attached to the spoke and a relatively thin annular flange extending outwardly therefrom, the external diameter of said flange being substantially equal to the diameter of said filling opening, said heads and said openings having a common path of travel during the time said heads are disposed in said openings, and a fin on said presser head to engage the lip of said opening whereby said packer wheel is actuated by said table, said fin being disposed on said presser head in a position where said fin lies substantially tangent to said path of travel when said presser head is disposed within said opening.

6. In a machine for filling material into containers such as cans and the like, having means for conveying the containers around in a circle about a vertical axis, means for supplying liquid and pressing the material into the container, comprising an arm having a liquid conducting passage therethrough and a presser head thereon, said arm being journaled on an axis inclined to said vertical axis, said arm being arranged at an angle to said inclined axis so that in the vertically depending position of said arm it is parallel to said vertical axis, means for supplying liquid to the passage in said arm, and means to rotate said arm in timed relation with the movement of the container.

7. In a machine for filling material into containers, such as cans and the like, having means for conveying the containers around in a circle about a vertical axis, means for supplying liquid and pressing the material into the container, comprising an axle, an arm journaled on said axle, a presser head on said arm, said arm and presser head having a liquid conducting passage therethrough, a vertically-adjustable mounting for said axle to support said axle in an inclined position with respect to said vertical axis, means for intermittently supplying liquid to said passage, and means to rotate said arm on said axle in timed relation with the movement of the container, said arm being disposed at an angle to said axle so that in the bottom dead center position thereof said arm is parallel to said vertical axis, whereby said mounting may be vertically adjusted to determine the depth of penetration of said presser head into the container in the bottom dead center position of said arm.

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