

Sept. 27, 1932.

J. HAUKE

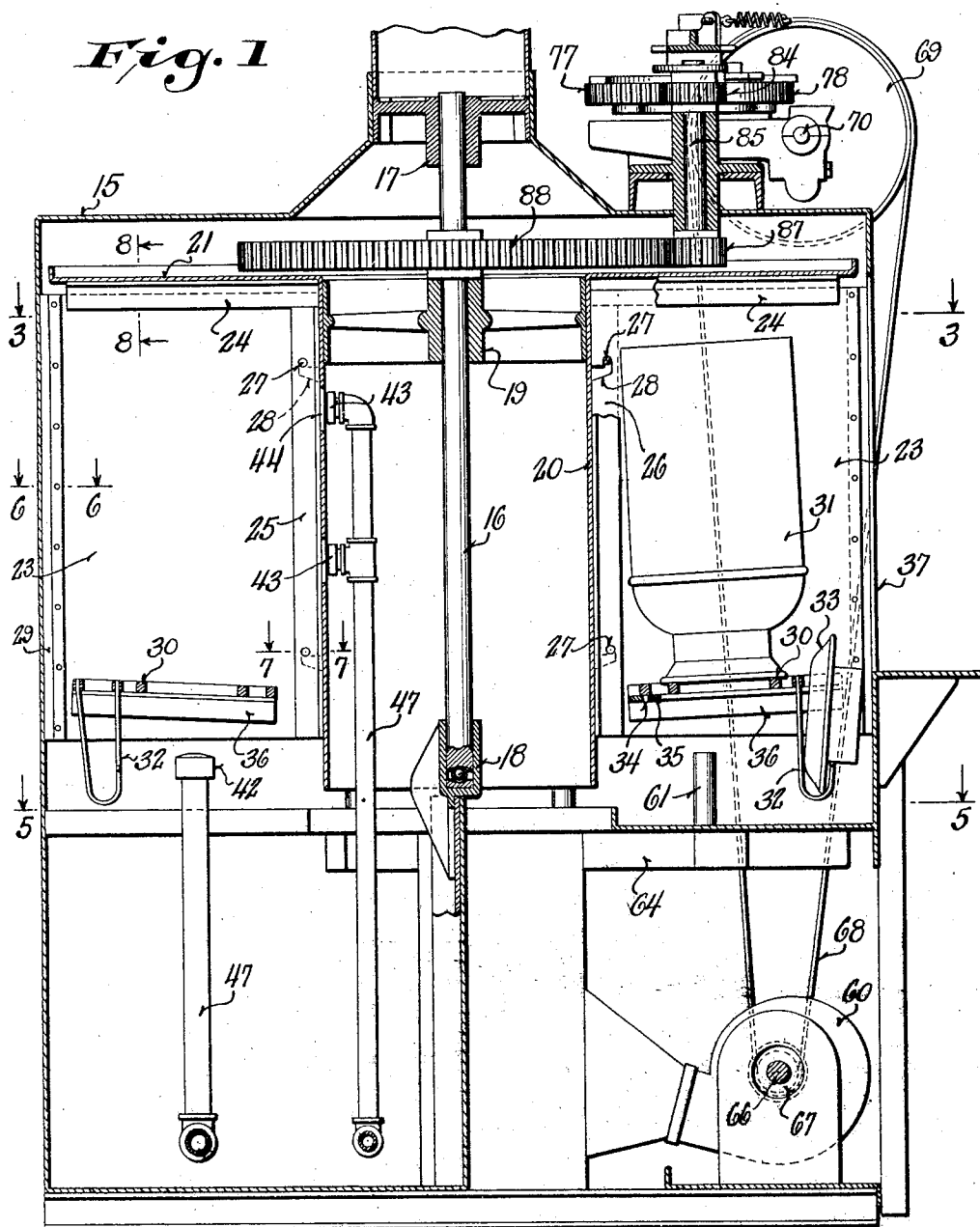
1,879,224

CONTAINER WASHING MACHINE

Filed Sept. 26, 1929

5 Sheets-Sheet 1

Fig. 1



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Fig. 2

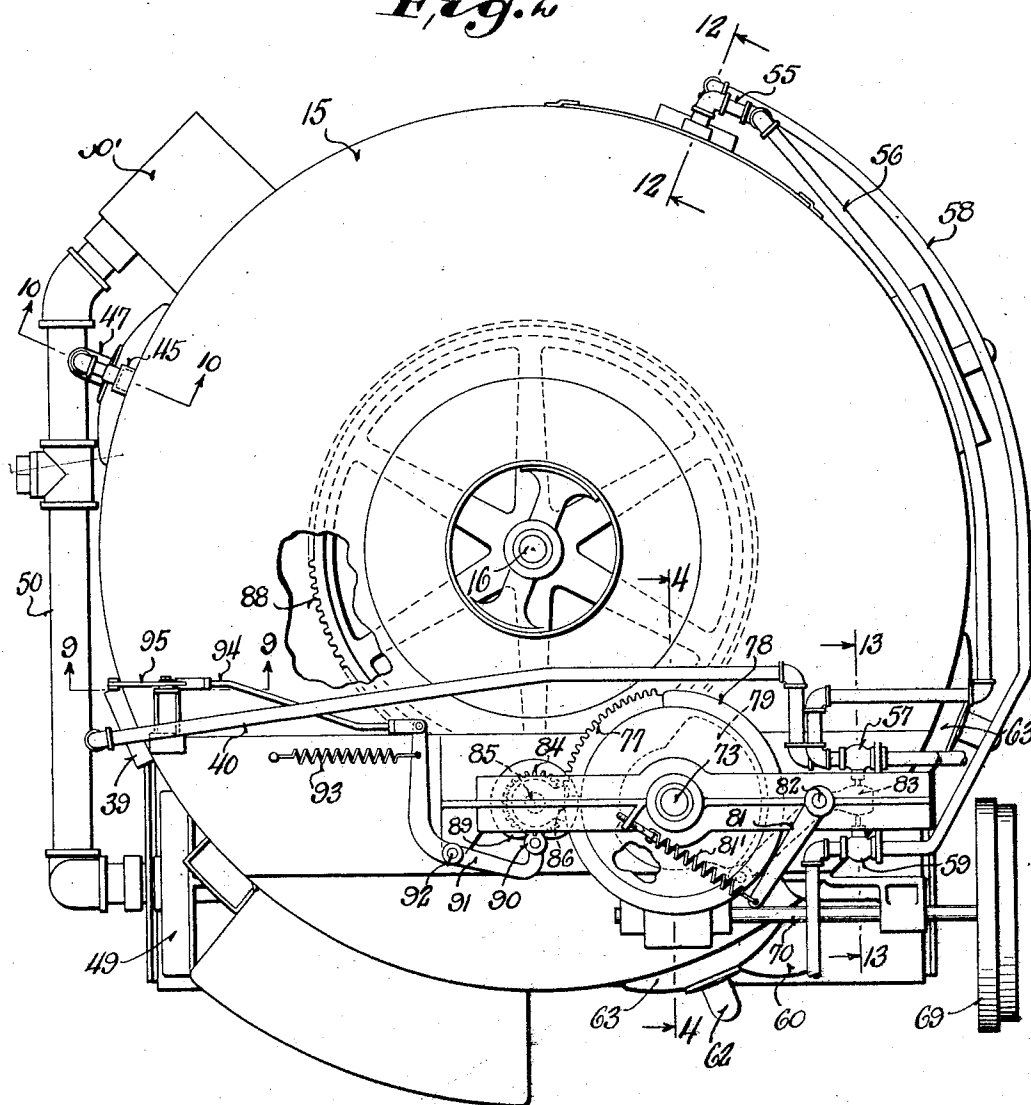
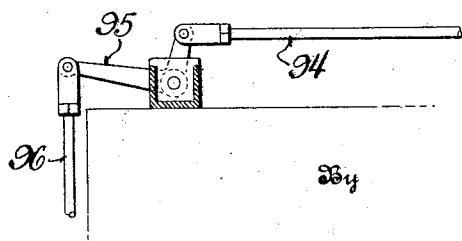


Fig. 9



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Fig. 3

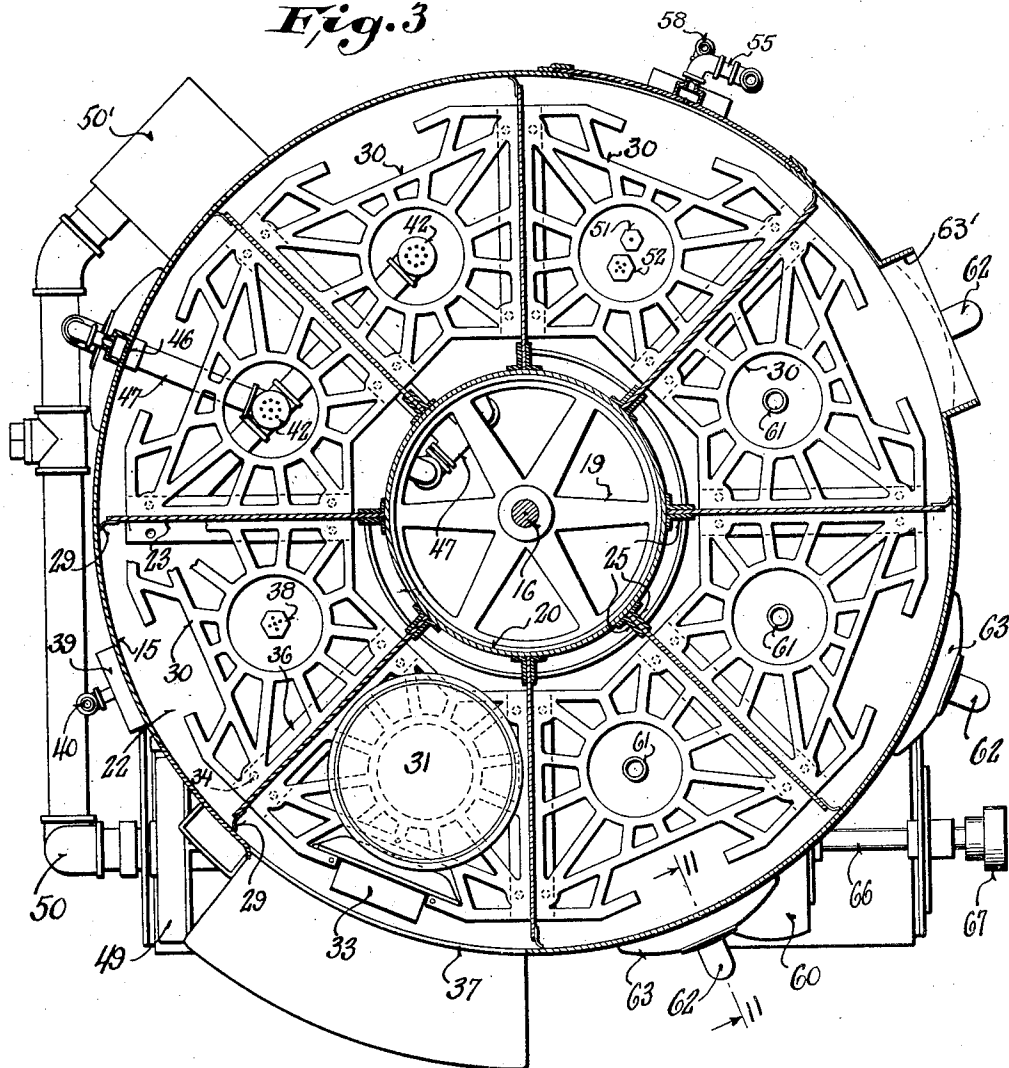
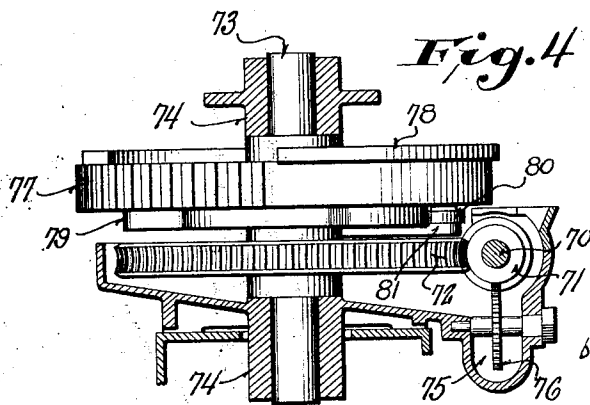


Fig. 4



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Fig. 5

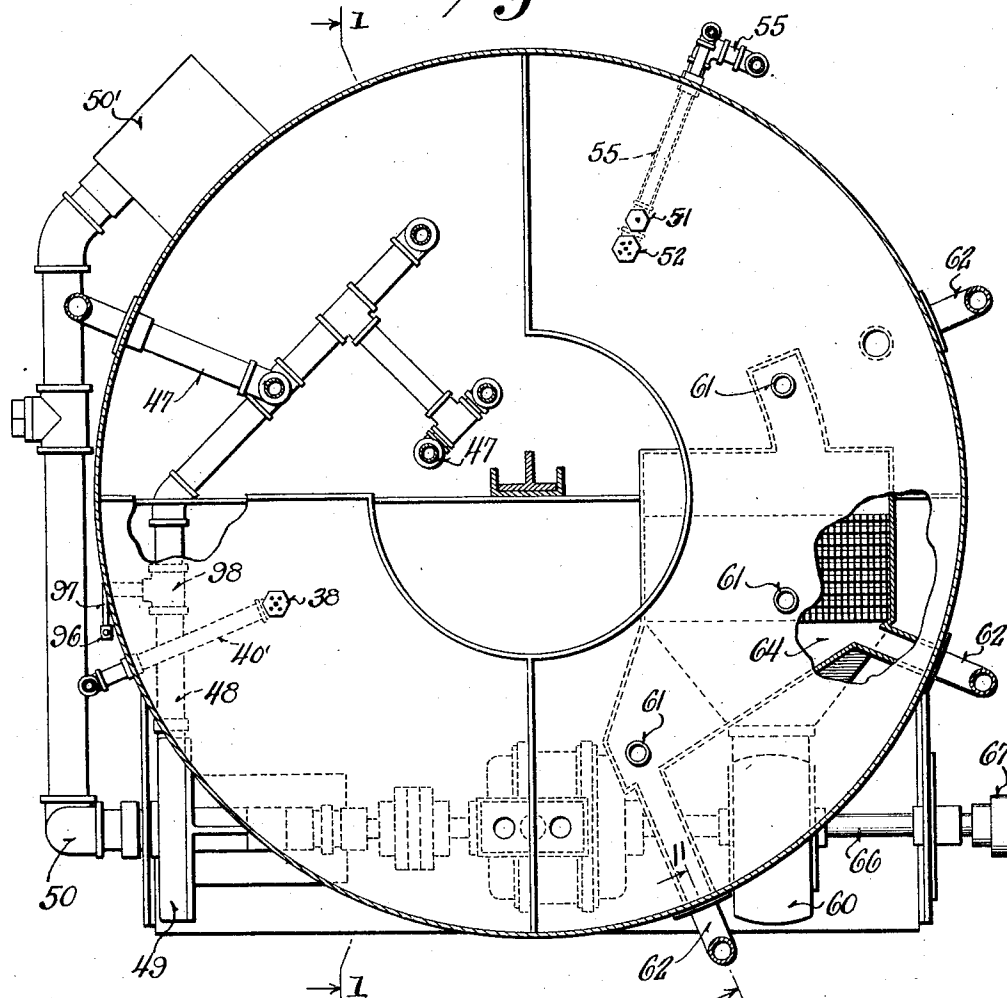


Fig. 6

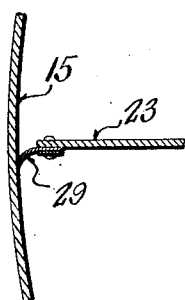


Fig. 7

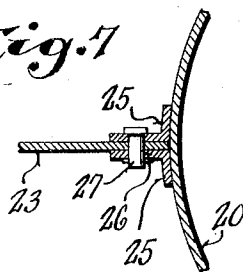
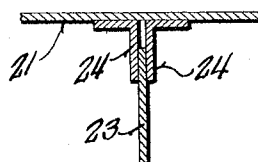


Fig. 8



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Fig. 10

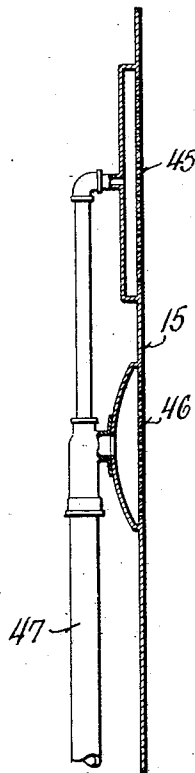


Fig. 11

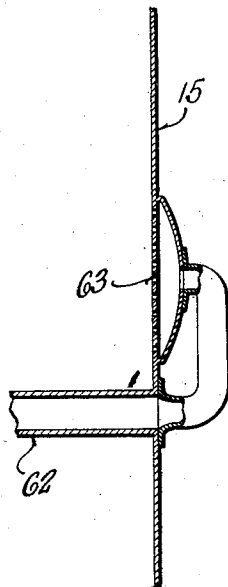


Fig. 12

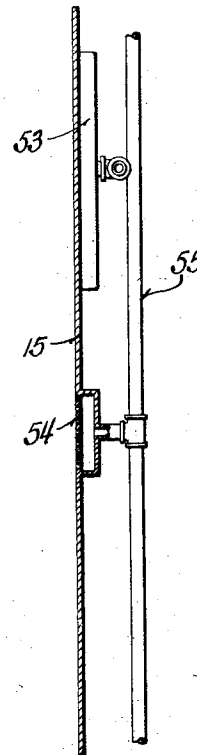
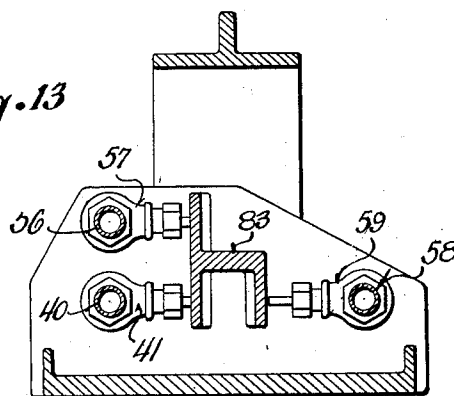


Fig. 13



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UNITED STATES PATENT OFFICE

JOSEPH HAUKE, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO HAUKE MANUFACTURING COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN

CONTAINER WASHING MACHINE

Application filed September 26, 1929. Serial No. 395,360.

The invention relates to container washing machines and more particularly to a machine for washing milk cans and similar containers.

5 The invention relates to that type of washing machine in which the containers are cleaned as they are carried within a housing and rotated from one position to another. One disadvantage of prior devices of this type is that the spray of washing liquid from one compartment enters adjacent compartments and this cuts down the efficiency of the machine as the washing liquids are thus diluted and lose their full effectiveness. One of the objects of this invention is to overcome this disadvantage and improve the efficiency of the machine by providing means which effectively seal one compartment from the other and confines the spray within the compartment intended.

20 A further object of the invention is to provide means for automatically shutting off the pump while the containers are being turned from one position to another to conserve the washing liquid.

25 A further object of the invention is to provide an improved drive for the rotary container carrier.

30 A further object of the invention is to provide readily removable partitions on the carrier to form the compartments and permit ready inspection and repair of the spray nozzles.

35 The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

40 In the drawings Fig. 1 is a vertical sectional view through a washing machine embodying the invention, taken on the line 1—1 of Fig. 5;

Fig. 2 is a plan view of the machine, parts being broken away;

45 Fig. 3 is a horizontal, sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a detail sectional view taken on the line 4—4 of Fig. 2;

50 Fig. 5 is a horizontal, sectional view taken on the line 5—5 of Fig. 1;

Fig. 6 is a detail sectional view taken on the line 6—6 of Fig. 1;

Fig. 7 is a detail sectional view taken on the line 7—7 of Fig. 1;

Fig. 8 is a detail sectional view taken on the line 8—8 of Fig. 1;

Fig. 9 is a detail sectional view taken on the line 9—9 of Fig. 2;

Fig. 10 is a detail, vertical, sectional view taken on the line 10—10 of Fig. 2;

Fig. 11 is a detail, vertical, sectional view taken on the line 11—11 of Fig. 5;

Fig. 12 is a detail, vertical, sectional view taken on the line 12—12 of Fig. 2;

Fig. 13 is a detail sectional view taken on the line 13—13 of Fig. 2.

Referring to the drawings the numeral 15 designates the main housing or casing and 16 a centrally disposed, rotary shaft journaled in an upper bearing 17 and on a thrust bearing 18 disposed at some distance from the base of the machine.

A spider 19 is mounted on the shaft 16 and carries a cylindrical shell 20 having an annular top 21 secured thereto and forming a carrier which is divided into a plurality of compartments 22 by a series of removable partitions 23.

For mounting these partitions on the carrier the top 21 is provided with radially disposed sets of spaced angle irons 24 forming a horizontal guide channel, see Figs. 1 and 8, and the shell 20 is provided with aligned sets of spaced angle irons 25 forming a vertical guide channel 26 and carrying spaced pins 27 engaging the rear edges of the partitions and removably connected thereto by hooked slots 28 in each partition, as shown in Fig. 1, whereby the partitions are slid into place along the guides and lifted slightly as they enter the slots 28 and then dropped down when the pins 27 register with the inner hooked ends of the slots.

The partitions 23 extend from the top of the compartments to within a short distance from the washing nozzles which spray the interior of the can and in order to effectively seal the compartments from each other each of the partitions has a flexible strip 29, preferably of rubber or suitable rubber compo-

sition, secured along its outer edge and of a width to flex over and rub against the side walls of the housing 15 as the carrier revolves.

The partitions have racks or supports 30 secured thereto for the cans 31 and racks 32 for the can covers 33 associated with the racks 30, which are preferably inclined inwardly so as to cant the cans slightly toward the center of the machine so that in case the top edge of the can is dented and uneven the can will not have a tendency to tip outwardly against the outer casing.

As shown in Figs. 1 and 3, it will be noted that each of the racks 30 is a gridlike structure and at its sides has depending pins 34 which enter holes 35 in ledges formed by the angle irons 36 on adjacent partitions and thus the racks are removably mounted on the partitions and tie them together.

One side of the casing has a feeding and delivery opening 37 through which the partitions 23 and racks 30 are assembled on the carrier and through which the dirty cans and covers are introduced into the machine and the washed cans and covers removed therefrom, the carrier being rotated intermittently in a clockwise direction, as viewed in Fig. 3.

At the first station the inside of the can is given a pre-rinse with cold water introduced through a spray nozzle 38 and the inside of the cover is similarly rinsed with cold water delivered through a horizontally disposed spray nozzle 39, not shown in detail but similar to the nozzle hereinafter described in connection with Fig. 12. Each of these spray nozzles is connected by piping 40' with a supply pipe 40, shown in Figs. 2 and 13, provided with a control valve 41 which is intermittently operated as hereinafter described.

At the two following stations both the inside and outside of the can and cover are subjected to the action of sprays of a suitable washing fluid. In each of these stations the spray nozzle 42 sends its cleansing jets into the interior of the can and against the cover and spray nozzles 43 direct their sprays through openings 44 in the shell 20 against the side of the can, see Fig. 1, while a spray nozzle 45 directs its spray against the opposite side of the can and a spray nozzle 46 directs its spray against the interior of the cover, these last-mentioned nozzles being shown more particularly in Fig. 10. All of these nozzles are connected by piping 47 with a supply pipe 48 connected with the discharge side of a pressure pump 49, whose supply side is connected by a pipe 50 with a supply tank 50' for the washing fluid.

At the next station the can and cover are given a sterilizing rinsing by the introduction of steam through a nozzle 51 and water through nozzles 52, 53 and 54, see Figs. 2, 3 and 12, it being noted that the nozzle 54 directs water against the cover. The nozzles

52, 53 and 54 are connected by piping 55 with a supply pipe 56, shown in Figs. 2 and 13, provided with an intermittently-operated valve 57, while the steam nozzle 51 is connected to the steam supply pipe 58 provided with an intermittently-operated valve 59.

At the next three stations or positions of the carrier the can and cover are dried by hot air introduced from a blower 60 connected with each of the compartments by vertically disposed ducts 61 and laterally disposed ducts 62 connected with hot air nozzles 63, see Figs. 3, 5 and 11, the blower delivering the air into a chamber 64 communicating with these ducts, the first drying station having a vent opening 63' for the escape of steam.

For operating the machine, a prime mover, such as an electric motor 65, is shown in Figs. 1 and 5, whose drive shaft 66 is connected to drive the pump 49 and blower 60 direct and carries a pulley 67 connected by a belt 68 with a pulley 69 on a shaft 70 associated with the carrier drive and nozzle controls.

The shaft 70 has a worm 71 mounted thereon meshing with a wormwheel 72 on continuously rotating upright shaft 73 journaled in bearings 74, this gearing being continuously oiled by oil fed from a sump 75 by a small gear 76 meshing with the worm 71, see Figs. 2 and 4.

A segmental gear 77, Geneva stop quadrant 78 and a cam 79 are mounted on the shaft 73.

The cam 79 engages a roller 80 on a valve control lever 81 held against the cam by a spring 81' and pivoted intermediate its ends on a shaft 82 and whose other end 83 engages the stems of the valves 41, 57 and 59, whereby the water valves 41 and 57 are opened during about one-half of the revolution of the shaft 73 and the steam valve 59 is opened during the other half of the revolution of said shaft.

The segmental gear 77 meshes intermittently with a gear 84 on a vertically disposed shaft 85 which carries a locking segment 86 adapted to cooperate with the stop quadrant 78 to prevent the shaft 85 from rotating except when the gears 77 and 84 are in mesh. Thus the shaft 85 is intermittently driven by the shaft 73 and carries a gear 87 meshing with a gear 88 on the carrier shaft, whereby the carrier is given an intermittent step-by-step rotation and advanced each time through a distance equal to a compartment space.

In order to prevent the pump from furnishing washing liquid to the nozzles 42, 43, 45 and 46 except when the carrier is stationary and in washing position, a cam 89 is mounted on the shaft 85 and is engaged by a roller 90 on a lever 91 pivoted at 92 and urged toward the cam by a spring 93. This lever is connected by a link 94 with a bellcrank lever 95 which is connected by a link 96 with the operating arm 97 of a control valve 98 in the pipe 48 supplying washing liquid. Thus the use of washing fluid is conserved.

From the foregoing it will be noted that I have provided a container washing machine in which the containers are carried on an intermittently operated, rotary carrier from one position to another and subjected to various washing operations; that the carrier includes a series of removable partitions and can supports; that the compartments provided in the carrier are effectively sealed from each other; and that the washing liquid is automatically turned off while the carrier is rotating from one position to another and turned on when the carrier is in washing position.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except insofar as such limitations are included in the claims.

What I claim as my invention is:

1. In a washing machine of the character described, the combination of a housing, a carrier rotatably mounted in said housing and provided with a plurality of sets of radially extending, horizontally and vertically disposed guideways, partitions slidably mounted in said guideways and having detachable, hooked connections with the carrier to form therewith a series of compartments, container supports removably connected to adjacent partitions, means for imparting a rotary movement to the carrier, and means for directing washing fluid into and against the containers on said carrier.

2. In a washing machine of the character described, the combination of a housing, a carrier rotatably mounted in said housing having an inner wall and a top, a plurality of sets of radially disposed guideways on said top, a plurality of sets of radially disposed guideways on said inner wall alined with said first-named guideways, partitions slidably mounted in said guideways and having detachable connection with the carrier to form therewith a series of compartments, container supports removably connected to adjacent partitions, means for imparting rotary movement to the carrier, and means for directing washing fluid into and against the containers on said carrier.

In testimony whereof I affix my signature.

JOSEPH HAUKE.