June 28, 1938. F. F. WOLF 2,122,018

CAN WASHING MACHINE

Filed Nov. 22, 1934 4 Sheets-Sheet 1

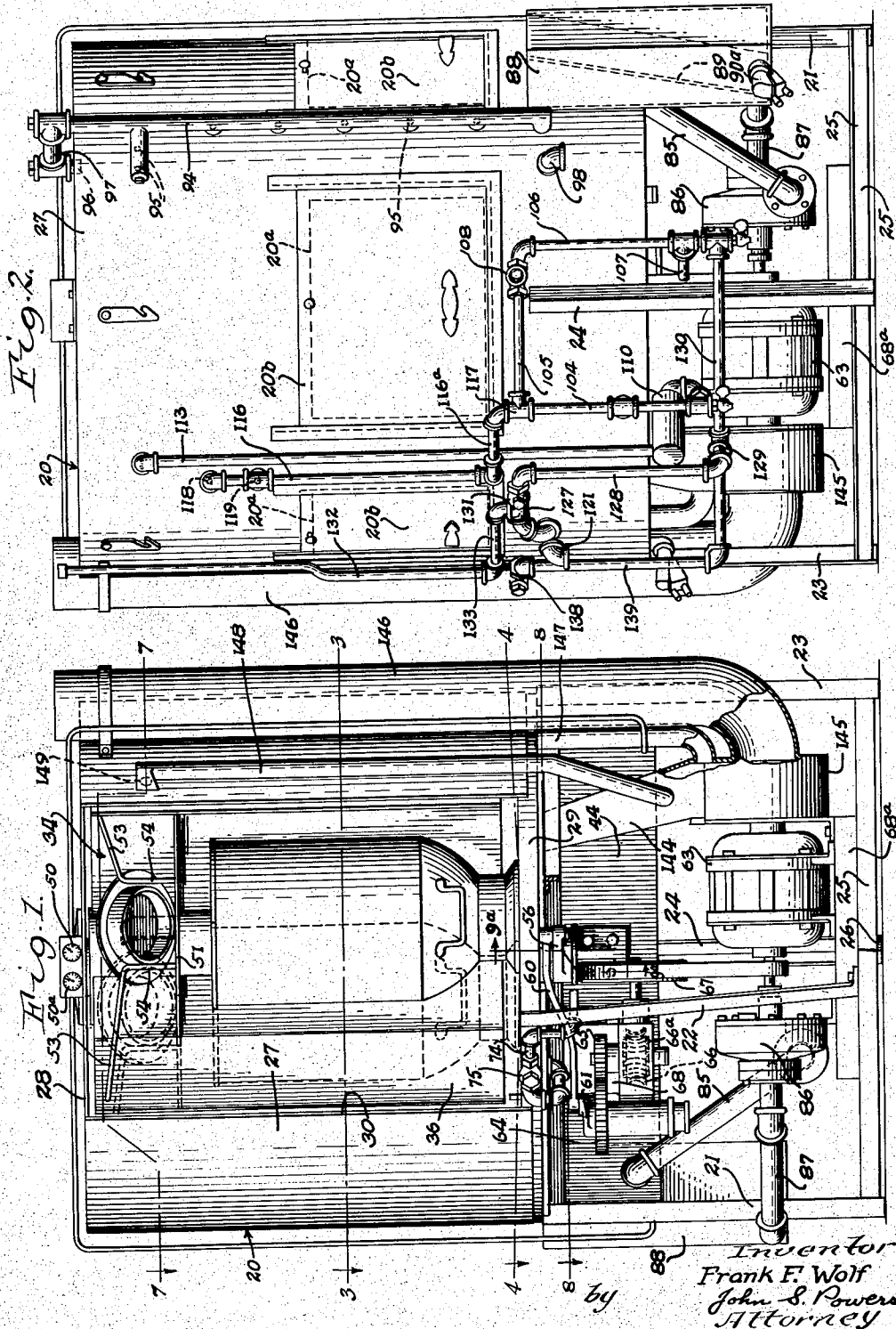

Fig. 2.

Fig. 1.

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CAN WASHING MACHINE

Filed Nov. 22, 1934 4 Sheets-Sheet 2

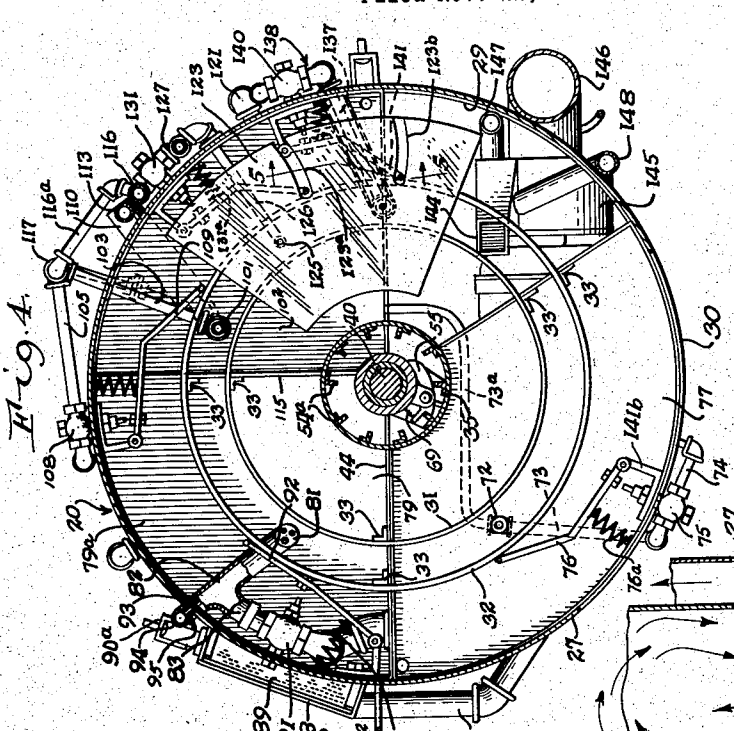

Fig. 4.

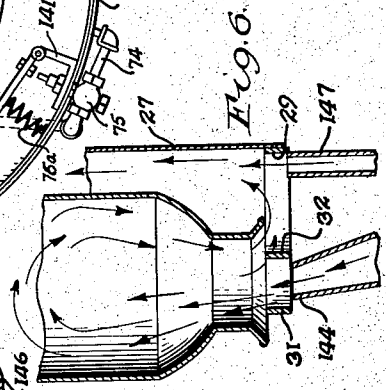

Fig. 6.

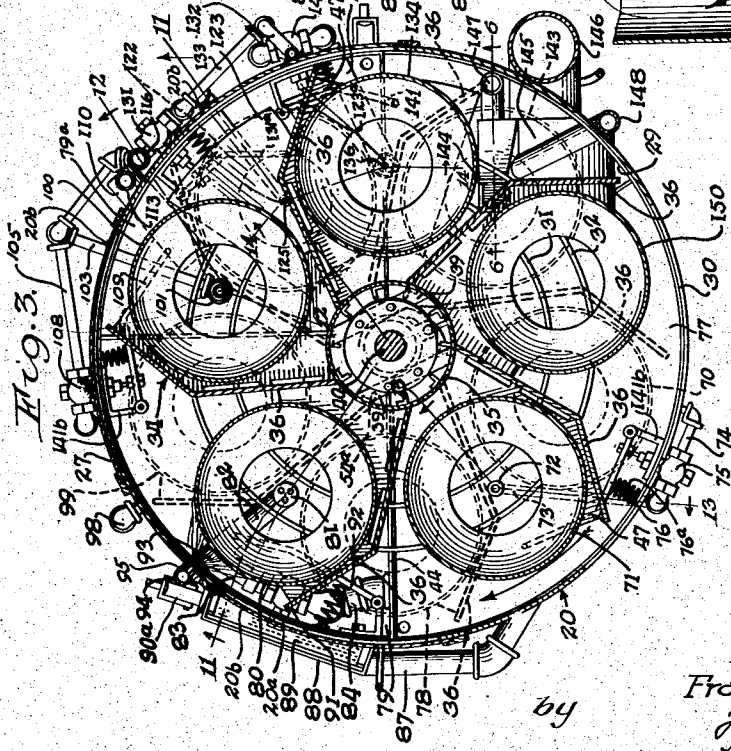

Fig. 3.

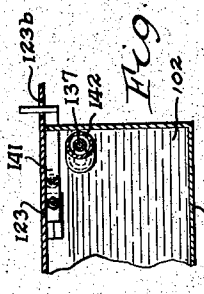

Fig. 5.

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CAN WASHING MACHINE

Filed Nov. 22, 1934 4 Sheets-Sheet 3

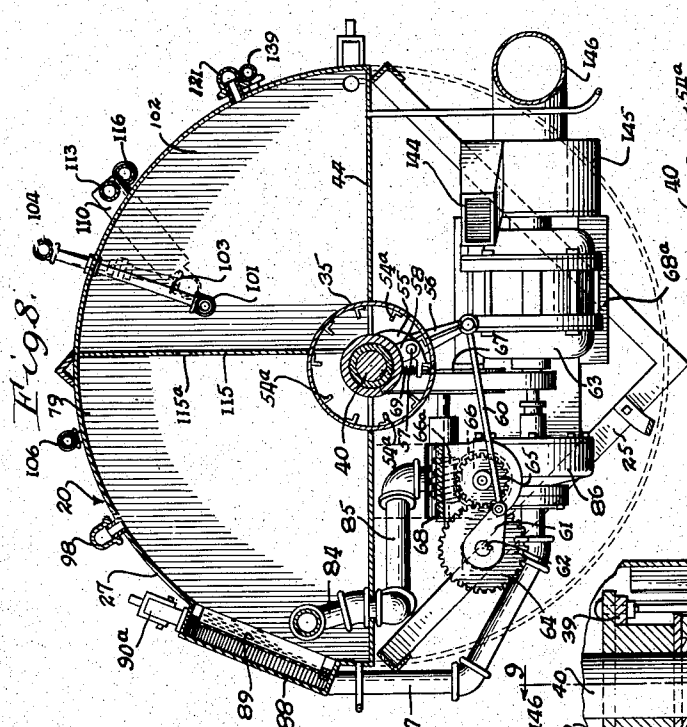

Fig. 8.

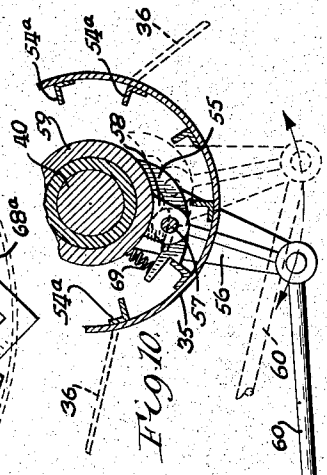

Fig. 10.

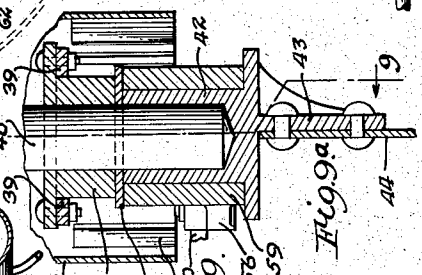

Fig. 9a.

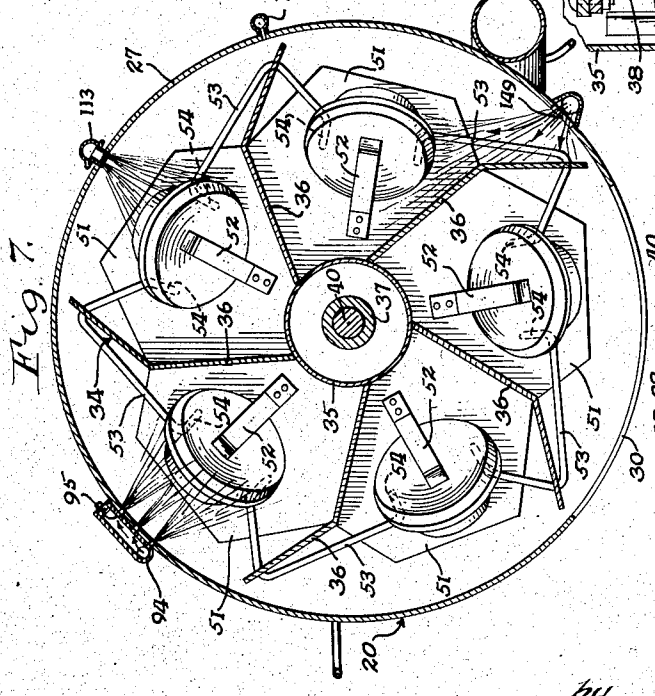

Fig. 7.

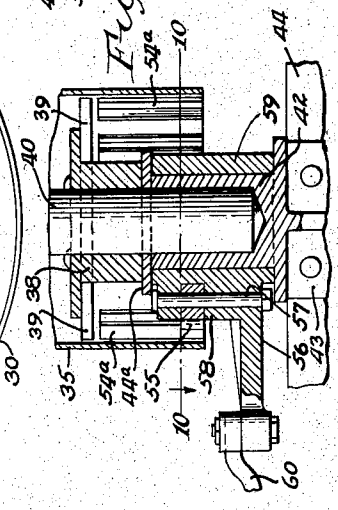

Fig. 9.

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June 28, 1938. F. F. WOLF 2,122,018

CAN WASHING MACHINE

Filed Nov. 22, 1934 4 Sheets-Sheet 4

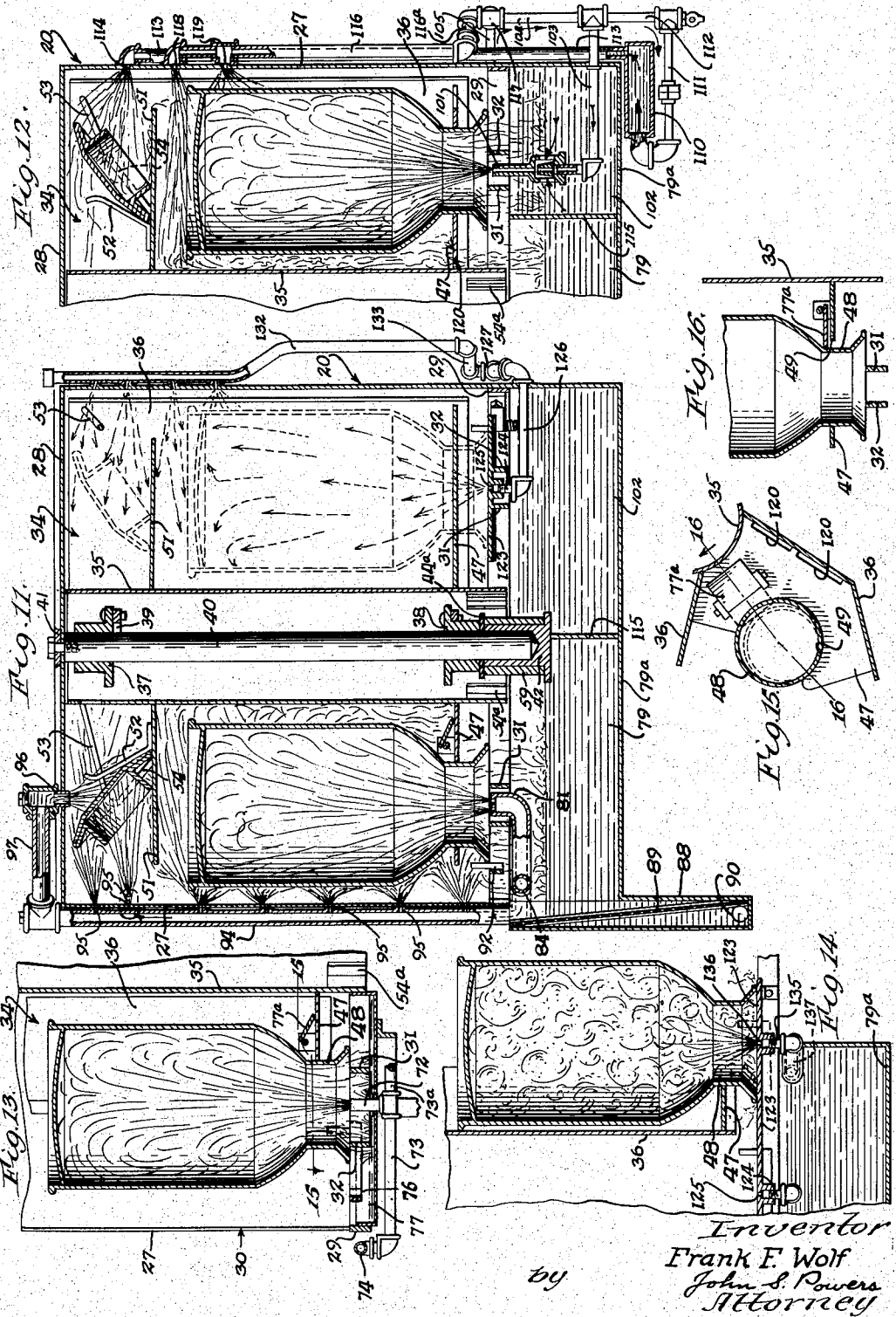

Fig. 12.

Fig. 16.

Fig. 11.

Fig. 15.

Fig. 13.

Fig. 14.

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Patented June 28, 1938 2,122,018

UNITED STATES PATENT OFFICE

2,122,018

CAN WASHING MACHINE

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Application November 22, 1934, Serial No. 754,287

11 Claims. (Cl. 141—7)

This invention relates to machines for washing and sterilizing milk cans and similar containers and more particularly the invention is concerned with improvements in machines of the type having a series of stations to which the containers are moved and subjected to the action of the various treating fluids which are to condition them for use.

One object of the invention is a machine having a novel arrangement and design of parts, whereby compactness and economy in construction are obtained.

A further object is to provide a machine which is economical to operate and which is highly effective in washing and sterilizing the containers.

A still further object is a machine in which provision is made for accommodating containers of different sizes.

A still further object is to provide a machine in which the moist air which fills the containers after the sterilizing operations is withdrawn and removed from their vicinity.

A still further object is to provide a machine having separate loading and unloading stations.

A still further object is a machine in which provision is made for preventing contamination of the water which is employed to rinse the washing solution from the containers.

A still further object is to provide a novel means for subjecting the covers of the containers to the action of the washing solution, this object contemplating the use of steam as a motive fluid for spraying the covers with the said solution.

The invention is illustrated in the accompanying drawings in which:

Figure 1 is a front elevation of a machine in which features of the invention are incorporated.

Figure 2 is a rear view of the machine also in elevation.

Figure 3 is a horizontal section taken along line 3—3 of Figure 1.

Figure 4 is a similar section taken along line 4—4 of Figure 1.

Figure 5 is a fragmentary section taken along line 5—5 of Figure 4.

Figure 6 is a fragmentary vertical section taken along line 6—6 of Figure 3.

Figure 7 is a horizontal section taken along line 7—7 of Figure 1.

Figure 8 is a similar section taken along line 8—8 of Figure 1.

Figure 9 is an enlarged fragmentary section taken along line 9—9 of Figure 9*a*.

Figure 9*a* is a vertical section taken along line 9*a*—9*a* of Figure 1.

Figure 10 is a fragmentary section taken along line 10—10 of Figure 9.

Figure 11 is a vertical section taken along line 11—11 of Figure 3.

Figure 12 is a fragmentary vertical section taken along line 12—12 of Figure 3.

Figure 13 is a fragmentary vertical section taken along line 13—13 of Figure 3.

Figure 14 is a similar section taken along line 14—14 of Figure 3.

Figure 15 is a fragmentary horizontal section taken along line 15—15 of Figure 13.

Figure 16 is a fragmentary section taken along line 16—16 of Figure 15.

Various of the features of the invention are applicable to machines of both the rotary and straightaway types. The machine illustrated, however, is of the rotary type and it includes a cylindrical housing 20 (Figure 1) which is supported upon legs 21, 22, 23 and 24, the legs 21, 23 and 24 being adapted to rest directly upon the floor while the leg 22 is connected at its lower end to an angle member 25. One arm of the member 25 is connected to the leg 21 and the other arm is connected to the leg 23, the said member carrying at the juncture of its two arms a block 26 which is adapted to rest upon the floor. The housing 20 includes a side wall 27, a top wall 28 and a reinforcing band 29, it being noted that that part of the side wall which is at the front of the machine overlaps the band 29 and terminates at this point while that part of the side wall which is at the rear of the machine extends well below the said band as best shown in Figure 2. The side wall 27 is formed at the front with an opening 30 through which the containers to be treated are introduced into the machine and through which they are removed from the machine upon completion of the treating operations, the said opening extending from the top wall 28 of the housing to the reinforcing band 29. The housing 20 is also formed with a plurality of circumferentially spaced openings 20*a* through which the various parts of the machine are accessible, the said openings being normally closed by suitable sliding doors 20*b*.

When introduced into the machine the containers are inverted and rested upon a pair of circular concentric bars 31 and 32 (Figure 4), the said bars providing a circular trackway and being suitably secured in the machine by angle members 33. The containers are moved around the said trackway by a carrier member 34. The member 34 is formed or provided with an elongated tubular body 35 (Figure 3) which carries five sub-

stantially radially extending arms 36, the outer ends of the said arms extending angularly forward with respect to their inner ends. Hubs 37 and 38 (Figure 11) are secured in the upper and lower ends respectively of the tubular body 35 by cross bars 39 and they fit around a stationary shaft 40 which is secured at its upper end to a cross member 41 which is carried by the top wall 28 of the housing. At its lower end the shaft 40 fits in a socket which is formed in a member 42 (Figure 9a). The said member includes a bracket extension 43 by which it is suitably supported from a wall 44, a thrust plate 44a preferably being arranged between the hub 38 and the co-operating face of the member 42.

The arms 36 of the member 34 extend from the top wall 28 of the housing to within a short distance of the track bars 31 and 32 and their outer ends terminate in the vicinity of the circular side wall of the housing, whereby to divide the interior of the housing into independent compartments. The arms 36 carry plates 47 (Figure 15) which are adapted to engage the necks 48 of the containers and move them around the track bars 31 and 32 as the member 34 rotates, the said plates being cut away as at 49 to provide recesses in which the necks fit.

The arms 36 of the member 34 also carry plates 51 (Figures 7 and 12) which are located a short distance from the tops of the arms and which are adapted to provide shelves upon which the container covers may be arranged for treatment, it being understood, of course, that each cover is arranged upon the shelf above its respective container in order that the proper covers will be applied to the containers upon completion of the washing and sterilizing operations. In order to support the covers in such a position upon the plates 51 that their interiors will be exposed to the treating fluids which are employed, a stop 52 is secured to each plate 51. The said stop limits movement of the covers toward the tubular body 35 of the member 34, the covers being held in an inclined position with their tops resting against the stops 52 by rods 53 which are formed with parallel end portions 54 that engage the under sides of the cover flanges.

Means is provided for effecting step-by-step rotary movements of the carrier member 34, whereby to cause the containers to move step-by-step around the trackway provided by the bars 31 and 32. For this purpose a series of angle members 54a (Figures 9 and 10) are secured to the inside of the tubular body 35 at its lower end, the said members providing teeth which co-operate with a ratchet 55. The said ratchet is carried by a lever 56 which is pivotally mounted upon the member 42, the ratchet being supported for pivotal movement upon a pin 57 which is carried by a lateral enlargement 58 of the hub 59 of the lever. The end of the lever 56 is connected by a link 60 (Figure 8) to a crank 61 which is carried by a shaft 62. The said shaft is connected to the drive pulley of an electric motor 63 by reducing gears 64, 65, 66 and 66a and a pulley 67, the various parts of the said gear reducing mechanism being supported beneath the trackway for the containers by a hanger 68 which is suitably secured to the wall 44 while the motor 63 is mounted upon a base 68a which is supported upon the arms of the member 25.

The ratchet 55 is normally held in engagement with the angle members 54a by a spring 69. When the motor 63, therefore, is connected to power the crank 61 rotates and the lever 56 and ratchet 55 are oscillated. As the lever 56 moves forward (clockwise) the ratchet 55 engages the adjacent angle member 54a and the carrier member 34 is rotated through a predetermined angle. During the return movement of the lever 56 the carrier member 34 remains stationary, the ratchet 55 being depressed against the action of the spring 69 as the ratchet passes over the succeeding angle member 54a so that as the lever 56 again moves forward the carrier member 34 will again be rotated through a predetermined angular distance.

It will be apparent that as the actuating mechanism rotates the carrier member 34 in the manner described the containers are moved step-by-step around the trackway, the containers and their covers remaining stationary during the return movements of the lever 56. In the machine illustrated the actuating mechanism is so designed that the carrier member 34 makes a complete revolution in ten movements, there being a period of rest after each such movement. For each position of rest of the carrier member 34 there is, of course, a corresponding rest position for the containers.

In the use of the machine, assuming the carrier member 34 to be at rest in the dotted-line position shown in Figure 3, an inverted container is inserted through the left side of the opening 30 and is rested upon the track bars 31 and 32 in the position indicated in dotted lines at 70 (Figure 3). At the same time the container cover is arranged in the manner described upon the shelf 51 directly over the container. Upon operation of the actuating mechanism to rotate the carrier member a step forward (clockwise) the container is moved to the full-line position indicated at 71. In this position the mouth of the container is located directly over a nozzle 72 which is connected by a pipe 73 to a water supply pipe 74. The discharge of water from the nozzle 72 is controlled by a valve 75 which is included in the pipe 74 and which is normally closed. The said valve includes an actuating lever 76 which is normally held out of contact with the stem of the valve by a spring 76a. The free end of the lever extends into the path of the lip of the container, whereby the container itself moves the actuating lever 76 to open the valve 75 and hold it open so long as the container remains in the position shown. The water which enters the pipe 73 is discharged from the nozzle 72 into the container to thoroughly rinse it. The water which drains from the container enters a shallow receptacle 77 which may be connected to a suitable waste pipe.

In order to condition the machine to accommodate containers of various sizes, each plate 47 preferably carries an adapter element 77a. The latter is pivotally mounted upon the plate and is movable to one position (see dotted line position in Figure 15 and full-line position in Figure 16), in which its free end extends into the recess 49. When the adapter 77a is moved to such a position its free end co-operates with the neck of a relatively small container to hold the container against the opposite wall of the recess 49. When a large size container is to be washed and sterilized the adapter is moved to the full-line position shown in Figure 15, the neck of the container in this case substantially filling the recess 49. It will be apparent, therefore, that both large and small containers are held against that portion of the recess 49 which lies opposite the adapter 77a. Hence that por-

tion of the container which engages the actuating lever 76 co-operates with the said lever in substantially the same manner whether the container be of a large or a small size.

During the next angular movement of the carrier member 34 the container is moved to the position indicated in dotted lines at 78, the actuating lever 76 being released during the initial part of this movement to permit the valve 75 to cut off the supply of water to the nozzle 72. During the time that the container rests at the position indicated at 78 the rinse water is permitted to drain from it. It will be noted that the container projects beyond the receptacle 77 and overlies a tank 79 which will be described more fully hereinafter.

The next movement of the carrier member 34 moves the container to the position indicated in full lines at 80. In this position the container is located over a nozzle 81 (Figure 4) which is formed or provided upon a pipe section 82 and which includes a lateral branch 83, the said branch being connected by a pipe 84 and a pipe 85 (Figures 2 and 8) to the exhaust side of a pump 86. The pump 86, as illustrated, is connected to the armature shaft of the motor 63 (Figure 1) and is mounted upon an extension of the motor base 68a. The intake side of the pump is connected by a conduit 87 to a tank 88. The latter is formed upon the housing 20 (Figure 11) and communicates with the tank 79, it being noted that the tank 88 while relatively narrow in width extends well below the bottom wall of the tank 79. A screen 89 is arranged in the tank 88 and is adapted to prevent solid materials from passing to the pump 86. An opening 90 which is formed in the bottom of the tank 88 provides a drainage outlet and is normally closed by a valve 90a (Figures 3 and 4).

The tank 79 provides a reservoir for the soda solution which is employed in washing the containers and their covers. Preferably a valve 91 (Figure 4) is included in the pipe 84. The said valve is normally closed. It includes an actuating lever 92 which is similar to and which functions in substantially the same manner as the actuating lever 76 of the valve 75, that is to say it extends into the path of the containers so that as a container moves over the nozzle 81 it engages the lever 92 and moves it to open the valve, whereby to permit soda solution to be discharged from the said nozzle into the container. The pipe section 82 includes a second branch 93 which is connected to a pipe 94 (Figure 11). The pipe 94 extends vertically along the side wall 27 of the housing opposite the point at which a container comes to rest over the nozzle 81. A series of aligned openings 95 are formed in the pipe 94 and wall 27. The soda solution which enters the pipe 94 emerges from the openings 95 in the form of sprays, whereby to subject the exterior of the container to the action of the soda solution. It will be noted that several of the openings 95 are located above the shelf 51 upon which the cover of the container is arranged. The soda solution which emerges from these openings is sprayed upon the underside of the cover while a nozzle 96 which extends through the top wall 28 of the housing is adapted to spray soda solution upon the top of the cover, the nozzle 96 being connected to the pipe 94 by a branch pipe 97.

The soda solution which drains from the container and cover while they are located over the nozzle 81 returns to the tank 79. As this liquid flows from the tank 79 into the tank 88 it passes through, and is filtered by, the screen 89, the particles of foreign matter suspended in the liquid settling upon the said screen. The soda solution, therefore, which enters the tank 88 is filtered prior to its withdrawal by the pump 86. Preferably the screen 89 is mounted in suitable guideways formed at opposite sides of the tank, whereby to enable removal of the screen for cleaning. A fitting 98 (Figure 2) is carried by the side wall of the housing 20, the said fitting communicating with the tank 79 at the overflow level and being adapted to be connected to a suitable waste pipe.

After being subjected to the action of the soda solution as described the container is moved to the position indicated in dotted lines at 99 (Figure 3), the lever 92 of the valve 91 being released as the container moves away from the nozzle 81 to cut off the supply of soda solution to the said nozzle. In the position indicated at 99 the container and its cover are permitted to drain. The container is still located over the tank 79. Any soda solution draining from it or its cover, therefore, returns to the said tank.

From the drain position the container is moved to the position indicated in full lines at 100. In this position the container is located over an ejector 101 (Figure 12). The said ejector is located in a tank 102 which adjoins the tank 79 and which provides a reservoir for the rinse water which is to be used in removing the washing solution from the containers and their covers. The ejector is partially immersed in the rinse water as shown and is connected by a branch pipe 103 and pipes 104, 105 and 106 (Figure 2) to a steam supply pipe 107. The pipe 105 includes a normally closed valve 108. The said valve is provided with an actuating lever 109 (Figures 3 and 4) which normally extends into the path traversed by the containers. Hence as the container moves to a position over the ejector 101 as described the lever 109 is actuated to open the valve 108 and admit steam to the ejector. As the steam is discharged from the ejector it carries rinse water into the can with it. The rinse water is preferably maintained at a temperature of the order of 180° F. by the steam which is supplied to the ejector, the temperature of the water being shown upon a suitable indicator 50. Hence as the valve 108 is opened hot water is directed into the container in the form of a spray, thereby removing the washing solution and at the same time heating the container.

Means is provided for rinsing the washing solution from the cover of the container. The said means includes a cylinder 110 (Figure 12) one end of which is connected by pipes 111 and 112 with the pipes 103 and 104. A vertical pipe 113 which is connected to the opposite end of the cylinder extends along the side wall 27 of the housing and terminates at a point above and opposite the shelf 51 upon which the cover is arranged. The pipe 113 communicates with the interior of the housing through one or more openings 114. It will be apparent that while the carrier member 34 is moving the container from the position indicated at 99 to the position indicated at 100 the valve 108 will be closed. Hence rinse water will flow by gravity through the ejector 101, pipes 103, 112 and 111 into the cylinder 110. When the valve 108, therefore, is operated steam is not only admitted to the ejector 101 as described but steam is also ad-

mitted to the cylinder 110 through pipes 112 and 111. The rinse water in the cylinder is forced by the steam up through the pipe 113 to the opening 114 through which it emerges in the form of a spray, thereby rinsing the washing solution from the cover.

As the rinse water drains from the container and cover a part of it returns to the tank 102. In accordance with the invention a substantial part of it, however, is caused to enter the tank 79 which contains the washing solution, it being noted that in the rinse position the container extends over the partition 115 which separates the washing solution tank from the rinse tank. A vertical pipe 116 (Figure 12) therefore, is arranged against the housing and adjacent the pipe 113. The pipe 116 is connected to the steam pipes 104 and 105 by a pipe 116a and a fitting 117. At its upper end it communicates with the interior of the housing through upper and lower openings 118 and 119 respectively. It will be apparent that upon operation of the valve 108 steam will be admitted to the pipe 116 and will be discharged through the openings 118 and 119 in the form of sprays.

The upper opening 118 is located at such a height that the steam which passes through it is directed against the top of the container. The steam spray removes the liquids and suspended materials which have accumulated upon the bottom of the container and forces them over that portion of the bottom edge of the container which lies adjacent the tubular body 35 of the carrier member. The said liquids and suspended materials flow down alongside the body 35, pass through openings 120 which are formed in the neck engaging plate 47 and enter the soda solution tank 79. The construction described has the advantage that contamination of the rinse water is prevented as the washing solution and solid materials which are removed from the bottoms of the container drain into the soda solution tank and are directed through the tank 88 to remove the solid materials in the manner described. In the event that small size containers are being washed and sterilized, the steam jet from the opening 119 is available to remove the liquids and solid particles from the bottoms of the containers.

The rinse water which drains into the tank 79 heats the washing solution. The washing solution is preferably further heated by permitting heated rinse water to flow from the tank 102 through an opening 115a (Figure 8) which is formed in the partition 115 and into the tank 79 at a rate which will maintain the washing solution at the desired temperature. The temperature of the washing solution is shown upon an indicator 50a (Figure 1).

The tanks 79 and 102 are parts of a larger tank which includes a bottom wall 79a (Figure 4), the depending portion of the side wall 27 of the housing and the wall 44, the two tanks being separated by the partition 115 which provides a common division wall. The tank 102 is provided with an outlet fitting 121 through which the excess rinse water passes when the water rises above the desired level, the said fitting being adapted to be connected to a suitable waste pipe. Preferably fresh rinse water is introduced into the tank 102 at predetermined intervals. To this end a by-pass pipe 73a (Figures 4 and 13) is connected to the pipe 73 which supplies rinse water to the nozzle 72. The pipe 73 communicates with the tank 102. Hence each time the valve 75 is opened during the preliminary rinsing operations a predetermined quantity of fresh water is admitted to the tank 102.

From the rinse position the container is moved to the position indicated in dotted lines at 122 (Figure 3). In this position it is located upon a plate 123 and over a nozzle 124 (Figure 11). The plate 123 is carried by the track bars 31 and 32. It completely closes the mouth of the container except for a small opening 125 which is formed in the plate over the nozzle 124. The said nozzle is connected by pipes 126, 127, 128, 129 and 130 (Figure 2) to the pipe 106. The pipe 127 includes a normally closed valve 131 (Figure 4). The actuating lever 131a of the valve is engaged and operated by the container as it moves over the nozzle 124 to open the valve 131 and admit steam to the pipe 126, (Figure 11), the plate 123 being formed with an arcuate slot 123a (Figure 4) to accommodate the end of the said lever. The pipe 126 is arranged in the tank 102 so that it is immersed in the rinse water. A substantial part of the steam, therefore, which enters the pipe 126 is condensed and the condensate is forced through the nozzle 124 into the container to sterilize and heat it. At the same time steam is directed against the top of the container and the cover by a pipe 132 (Figure 11) which is connected to the pipe 127 by a pipe 133, the supply of steam to the pipe 132 also being controlled by the valve 131.

The next movement of the carrier member 34 moves the container to the full-line position indicated at 134 (Figure 3), the lever 131a of the valve 131 being released during the initial part of such movement to cut off the supply of steam to the pipes 126 and 132. In the position indicated at 134 the container, which still rests upon the plate 123, is located over a nozzle 135 (Figure 14), the plate 123 closing the mouth of the container except for an opening 136 which is formed in it directly over the nozzle 135. The said nozzle is connected by a pipe 137, a fitting 138 (Figure 2) and a pipe 139 to the steam pipe 130. The fitting 138 (Figure 4) includes a normally closed valve 140. The actuating lever 141 of the valve is operated by the container as it moves to a position over the nozzle 135, an arcuate slot 123b being formed in the plate 123 to accommodate the end of the said lever, and steam is admitted to the pipe 137. The steam discharges through the nozzle 135 into the container and builds up to a substantial pressure, whereby the steam is caused to enter all corners, crevices and seams. The container is thus further sterilized and heated. The pipe 137 is located in the tank 102 below the surface of the rinse water. In order to prevent condensation of the steam as it passes through the said pipe it is preferably encased in a jacket 142 (Figure 5).

Preferably the actuating lever 141 of the valve 140 and the actuating levers of the valves 91, 108 and 131 are of a similar construction and function in substantially the same manner as the actuating lever 76 of the valve 75.

Upon completion of the sterilizing treatment described the container is moved to the position indicated in dotted lines at 143, (Figure 3), the lever 141 of the valve 140 being released during the initial part of such movement to cut off the supply of steam to the nozzle 135. In the position indicated at 143 the container is located over a nozzle 144 upon the track bars 31 and 32, the con-

tainer having been moved off the plate 123 during its movement to this position. The nozzle 144 is connected to the exhaust side of a fan 145, the said fan being connected to the armature shaft of the motor 63 and having an intake pipe 146 which extends vertically alongside the housing of the machine. The fan 145 operates continuously. Hence as the container comes to rest over the nozzle 144 a current of air is directed into it, thereby driving from the container the hot moist air with which it is filled. In order to effect the removal of the moist air from the vicinity of the container a second nozzle 147 (Figures 1 and 6), which is also connected to the exhaust side of the fan, is located at one side of the mouth of the container. As the hot moist air is forced out of the container in the manner described it is entrained and carried upwardly toward the top of the housing 20 by the current of air from the nozzle 147, a suitable opening being formed in the top wall 28 of the housing to permit the escape of such air. The removal of the moist air from the container completes the drying operation while the container is still hot from the sterilizing treatments.

The invention also contemplates the drying of the cover of the container with the aid of air. To this end a branch pipe 148 (Figure 1) which communicates with the nozzle 144 extends vertically alongside the housing. The said pipe is formed with an outlet opening 149 (Figure 1) which is located opposite the position at which the cover pauses as the container comes to rest over the nozzle 144. A part of the air from the fan 145, therefore, passes through the pipe 148 and is directed against the cover to facilitate its drying and complete the treating operations.

The next movement of the carrier member 34 moves the container to the full-line, or unloading, position indicated at 150 (Figure 3). When the container reaches this position it is lifted from the track bars 31 and 32 and withdrawn from the housing 20 through the right side of the opening 30. As the container is removed from the machine it is inverted. The cover is then removed from the shelf 51 and replaced upon the container.

The following movement of the carrier member 34 carries the two arms from between which the container referred to above has just been removed to a loading position, another container being inverted and inserted through the left side of the opening 30 as described. The carrier member, therefore, has made a complete revolution and occupies the dotted line position indicated in Figure 3.

From the foregoing it will be apparent that although the machine illustrated will accommodate five containers at one time each container has ten rest positions and is subjected to the same treatments that are provided by larger machines. Thus each container is subjected to the action of a preliminary rinsing medium, a washing solution, a second rinsing medium, sterilizing treatments of scalding water and steam and is then dried with the aid of air. In addition there are two positions in which the container remains at rest while the treating mediums are permitted to drain from it. The machine, therefore, has the advantage that it is small in size and hence requires a minimum of floor space. It has the further advantage that it represents a relatively small investment as compared to machines of the larger type.

It will be noted that the loading position of the machine is one step removed from the unloading position. Hence a container and its cover are removed from the machine during one rest period of the carrier member and a second container and cover and placed in the machine in the compartment of the carrier member occupied by the first container and cover during the next rest period of the carrier member. In other words after the machine is fully loaded, a container to be washed and sterilized will be placed upon the track bars and one which has been washed and sterilized will be removed therefrom during each rest period of the carriage member, the containers to be washed and sterilized being inserted through one side of the opening 30 and those which have been washed and sterilized being withdrawn through the opposite side of the said opening. The construction described has the advantage that the operating mechanism may be adjusted to effect a step-by-step rotary movement of the carrier member at the desired speed while insuring adequate time for loading and unloading the containers and their covers.

I claim as my invention:

1. In a machine for washing and sterilizing milk cans, the combination of a trackway upon which said cans are arranged in single file in an inverted position, said trackway accommodating a predetermined number of said cans, means for providing stations along said trackway which in number are greater than the number of said cans which said trackway will accommodate, certain of said stations having means for subjecting said cans one at a time to the action of various fluid mediums which are employed to wash and sterilize them and means for moving said cans individually along said trackway step-by-step while permitting each of them to pause a predetermined interval at each of said stations.

2. In a machine of the character described, the combination of a housing, a member in said housing which divides it into a plurality of compartments, each of which is adapted to accommodate a container, means for providing a series of stations which in number are greater than the number of containers which said member will accommodate, said stations having means for subjecting the containers to the action of various fluid mediums which are employed in conditioning them for use and means for rotating said member intermittently to move said containers through said housing while permitting them to pause a predetermined interval at each of said stations.

3. In a machine of the character described, the combination of a housing, a circular trackway in said housing upon which the containers are arranged, a member in said housing which is located above said trackway and which divides said housing into a plurality of compartments, each of said compartments being adapted to accommodate a container, means for providing a series of stations around said trackway which in number are greater than the number of containers which said member will accommodate, said stations having means for subjecting the containers to the action of various fluid mediums which are employed in conditioning them for use and means for rotating said member intermittently to move said containers around said trackway while permitting them to pause a predetermined interval at each of said stations.

4. In a machine of the character described, the combination of a housing, a circular trackway in said housing upon which the containers are arranged, a member above said trackway,

said member having a series of substantially radially extending arms which divide said housing into a plurality of compartments, each of which is adapted to accommodate a container, a series of stations around said trackway which in number are greater than the number of containers which said member will accommodate, said stations having means for subjecting the containers to the action of various fluid mediums which are employed in conditioning them for use and means for rotating said member intermittently to move said containers around said trackway while permitting them to pause a predetermined interval at each of said stations.

5. In a machine of the character described, the combination of a housing, a circular trackway in said housing upon which the containers are arranged, a member above said trackway, said member having a series of substantially radially extending arms which divide said housing into a plurality of compartments, each of which is adapted to accommodate a container, the outer ends of said arms extending angularly forward in the direction that the said member rotates, a series of stations around said trackway which in number are greater than the number of containers which said member will accommodate, said stations having means for subjecting the containers to the action of various fluid mediums which are employed in conditioning them for use and means for rotating said member intermittently to move said containers around said trackway while permitting them to pause a predetermined interval at each of said stations.

6. In a machine of the character described, the combination of a housing having an opening, a circular trackway in said housing upon which the containers are arranged, a member in said housing which is located above said trackway and which divides said housing into a plurality of compartments, each of said compartments being adapted to accommodate a container, means for providing a series of stations around said trackway which in number are greater than the number of containers which said member will accommodate, said stations having means for subjecting the containers to the action of various fluid mediums which are employed in washing and sterilizing them and means for rotating said member intermittently to move said containers around said trackway while permitting them to pause a predetermined interval at each station, said last named means being operative to permit each compartment to pause at one side of said opening to enable the removal of a container which has been washed and sterilized and then to pause a second time at the opposite side of said opening to permit a container which is to be washed and sterilized to be arranged in said compartment.

7. In a machine for washing and sterilizing containers and their covers, the combination of a trackway upon which the containers are arranged, means for providing a series of treating stations along said trackway, means for moving said containers and covers past said stations while permitting them to pause a predetermined interval at each of said stations, one of said stations having means for subjecting the containers and covers to the action of a liquid medium, said last named means including a tank which contains said liquid medium, an ejector which is located in said tank, means for supplying steam to said ejector to spray liquid from said tank into said containers as they are positioned over said ejector, said means being operative to cut off the supply of steam to said ejector as said containers move away from said station, a receptacle, a conduit through which said receptacle communicates with said ejector, said receptacle being so located relative to said tank that when the supply of steam to said ejector is cut off liquid flows from said tank by gravity and enters said receptacle and a second conduit which communicates at one end with said receptacle and which leads to a point opposite the position at which the covers pause, whereby when steam is supplied to said ejector to spray liquid from said tank into a container steam is also supplied to said receptacle and the liquid therein is sprayed upon a cover.

8. In a machine of the character described, the combination of a housing, a carrier member in said housing which divides it into a plurality of compartments, each of which is adapted to accommodate a container, said carrier member having means for supporting the container covers above their respective containers, means for providing a series of treating stations, means for rotating said carrier member intermittently to move said containers and covers through said machine while permitting them to pause a predetermined interval at each of said stations, one of said stations having means for subjecting the containers and covers to the action of a liquid medium, said last named means including a tank which contains said liquid medium, an ejector which is located in said tank, means for supplying steam to said ejector to spray liquid from said tank into said containers as they are positioned over said ejector, said means being operative to cut off the supply of steam to said ejector as said containers move away from it, a receptacle, a conduit through which said receptacle communicates with said ejector, said receptacle being so located relative to said tank that when the supply of steam to said ejector is cut off liquid flows from said tank by gravity and enters said receptacle and a second conduit which communicates at one end with said receptacle and which communicates at its opposite end with the interior of said housing at a point opposite the position at which the covers pause, whereby when steam is supplied to said ejector to spray liquid from said tank into a container steam is also supplied to said receptacle and the liquid therein is discharged against a cover.

9. In a machine of the character described, the combination of a trackway upon which the containers are arranged in an inverted position, means for providing treating stations along said trackway, means for moving said containers along said trackway while permitting them to pause a predetermined interval at each of said stations, means at one of said stations for subjecting the containers to the action of a washing solution, said means including a tank which contains said washing solution and a nozzle for receiving washing solution from said tank, means at another station for rinsing the washing solution from said containers, said last named means including a second tank which contains the rinsing liquid and a second nozzle for receiving rinsing liquid from said tank, said container overlying said first mentioned tank when positioned above said second nozzle and steam jets for blowing the liquids and suspended foreign matter off the bottoms of the containers, said liquids and

foreign matter draining into said first mentioned tank.

10. In a machine of the character described, the combination of a housing having a cylindrical shell, a circular trackway upon which the containers are arranged in an inverted position, means for providing treating stations around said trackway, means for moving said containers around said trackway while permitting them to pause a predetermined interval at each of said stations, means at one of said stations for subjecting the containers to the action of a washing solution, said means including a tank which contains said washing solution and a nozzle for receiving washing solution from said tank, means at another station for rinsing the washing solution from said containers, said last named means including a second tank which contains the rinsing liquid and a second nozzle for receiving rinsing liquid from said tank, said tanks having a common division wall, said shell extending downwardly for a portion of its circumference to provide outer side walls for said tanks, said containers overlying said division wall when positioned over said second nozzle and steam jets for blowing the liquid and suspended foreign matter off the bottoms of the containers, said liquid and foreign matter draining into the tank containing said washing solution.

11. In a machine of the character described, the combination of a housing, a rotatable member in said housing which divides it into a plurality of compartments, each of which is adapted to accommodate a container, means for providing a series of stations which in number are greater than the number of containers which said member will accommodate, said stations having means for subjecting the containers to the action of various fluid mediums which are employed in conditioning them for use and means for rotating said member intermittently to move said containers through said housing while permitting them to pause a predetermined interval at each of said stations, one of said stations being an unloading station and a second of said stations being a loading station, said housing being cut away to provide access to said last two stations.

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