

Oct. 28, 1924.

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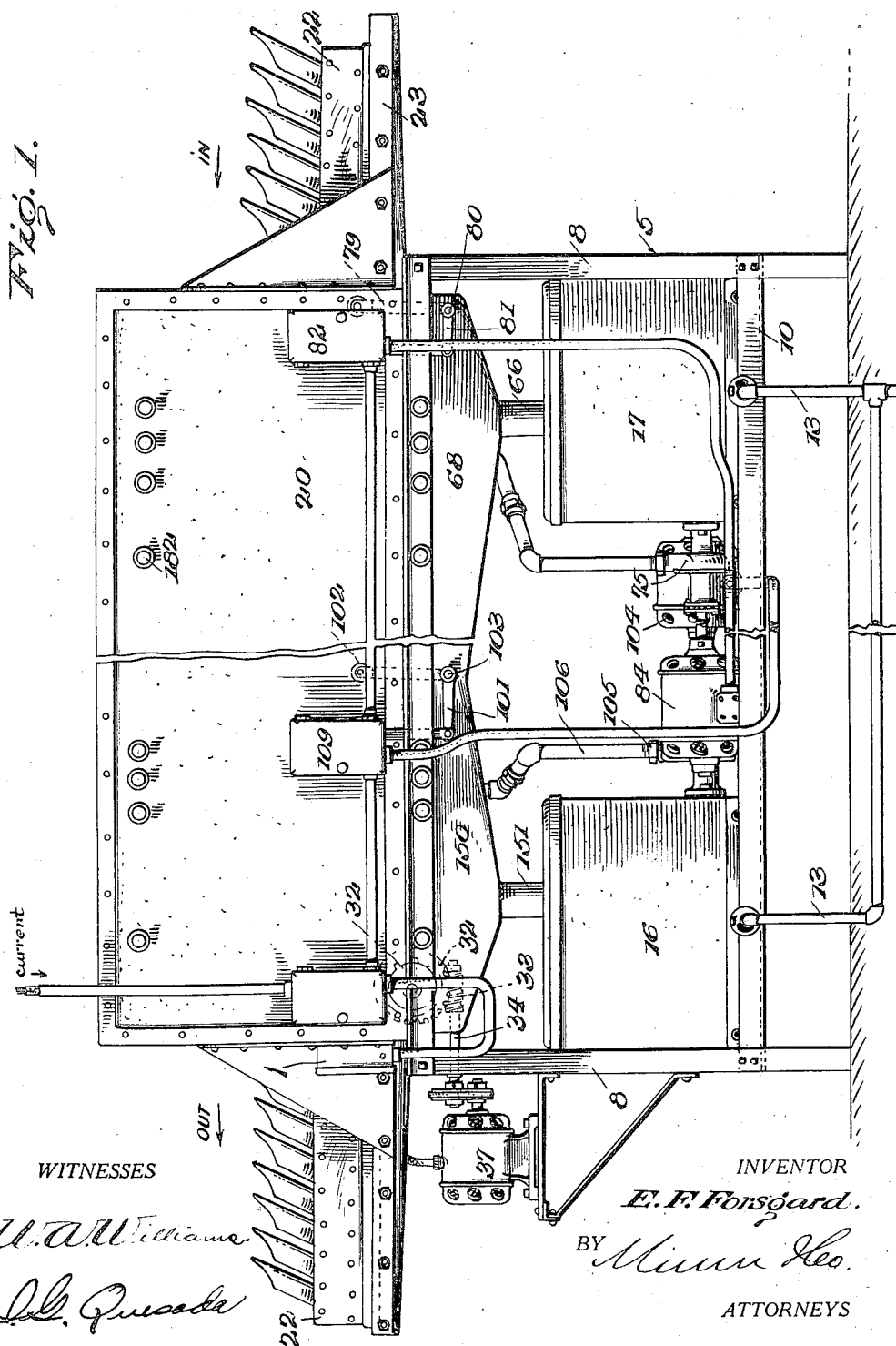
E. F. FORSGARD

WASHING MACHINE

Filed Aug. 22, 1923

4 Sheets-Sheet 1

Fig. 1.



Oct. 28, 1924.

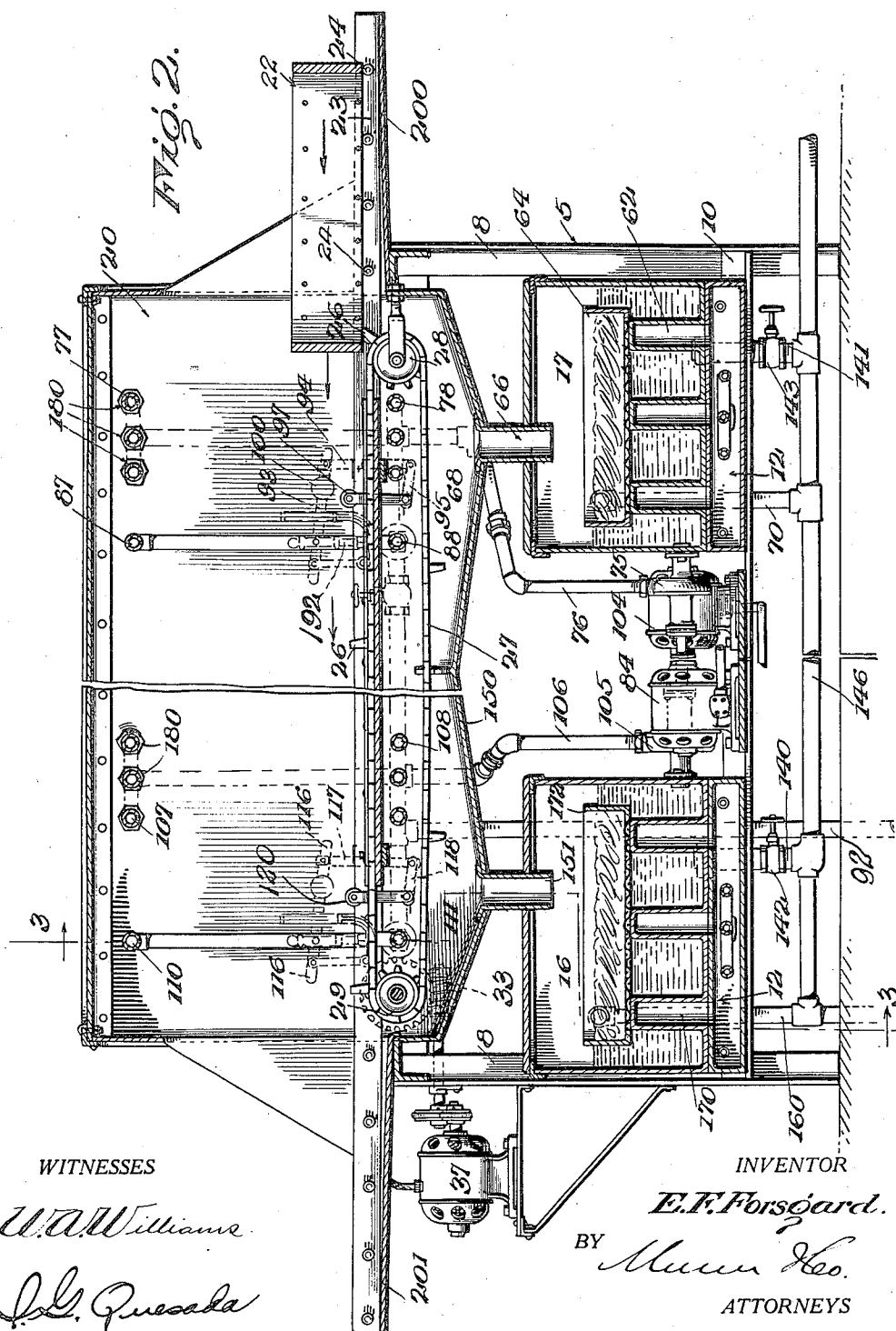
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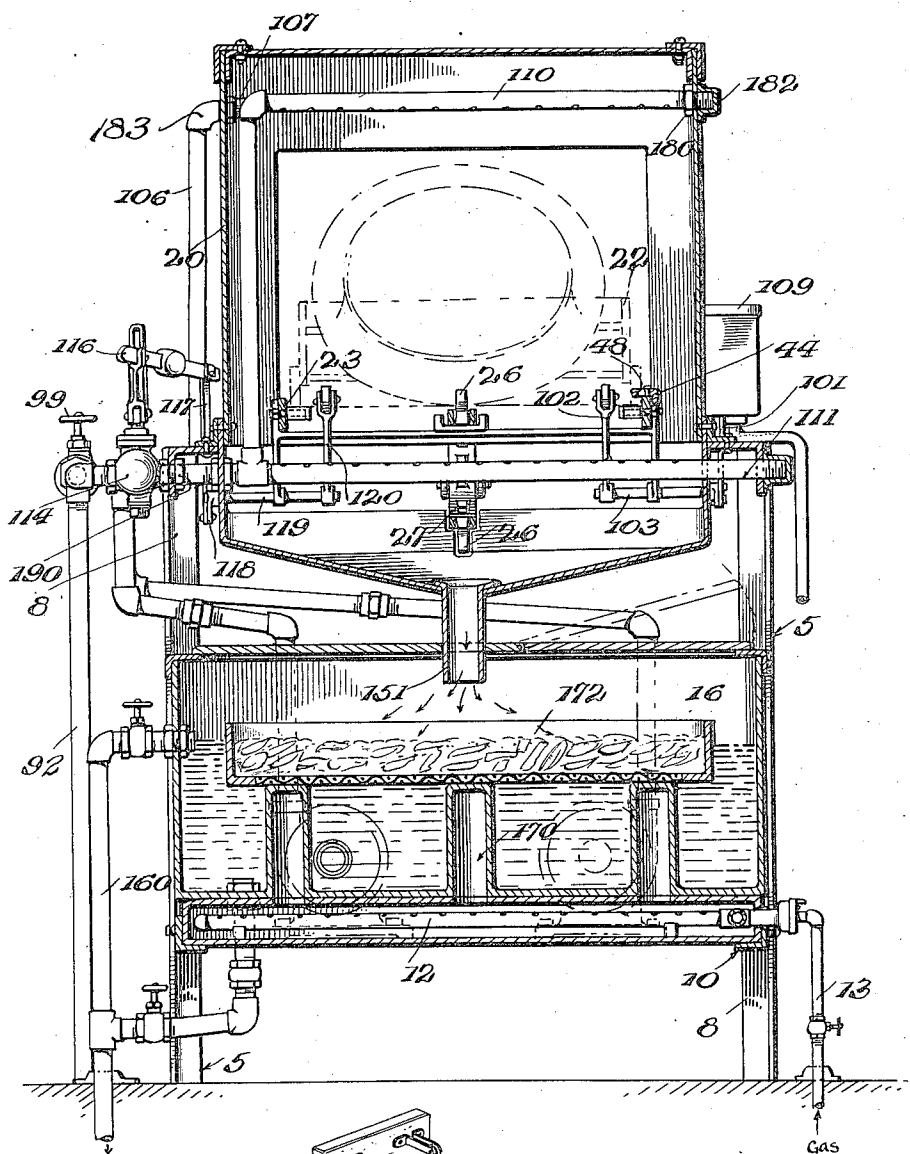
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Fig. 3.



OVER FLOW
WITNESSES

W.A. Williams.

L. Quesada

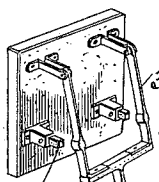


Fig. 6.

INVENTOR

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UNITED STATES PATENT OFFICE.

EDWARD FERDINAND FORSGARD, OF WACO, TEXAS.

WASHING MACHINE.

Application filed August 22, 1923. Serial No. 658,811.

To all whom it may concern:

Be it known that I, EDWARD F. FORSGARD, a citizen of the United States, and a resident of Waco, in the county of McLennan and State of Texas, have invented certain new and useful Improvements in Washing Machines, of which the following is a specification.

This invention relates to washing machines, and is especially adapted for use in washing dishes in large quantities.

This invention is a continuation, in part, of my application filed October 14th, 1921, and serially numbered 507,627.

Briefly stated, an important object of this invention is to provide a washing machine wherein the feeding of one or more dish containing tray sets a dish conveyor in operation, and wherein the dish containing trays successively and separately actuate the liquid controlling members so that the various sprays are present only when the dishes are actually within the range of the same, all of which results in low consumption of electric power for operating the liquid pumps, and in the economical use of the highly heated cleaning and scalding waters.

Further, the invention aims to provide a dish washing machine wherein the movement of the last dish containing tray beyond the range of the final spray, results in automatically cutting off the power unit for the tray conveyor.

Also an important object is to provide a machine of the character described in which the sole duty of the operator is to introduce the dish containing trays into the machine, while all starting and stopping of the conveyor and the liquid pumps is accomplished automatically, whereby the operation of the machine may be safely entrusted to attendants of limited intelligence such as are found in the kitchens of large restaurants.

Also, in setting forth the objects of the invention, it might be stated that novel means are provided for constantly replenishing the cleaning and scalding waters, and consequently the water containing tanks cannot be damaged by the heaters therefor.

Also the invention aims to provide means whereby the cleaning solution or liquid, may

be maintained at the proper strength at all times.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawing forming a part of this application, and in which like parts are employed to designate like parts throughout the same,

Figure 1 is a fragmentary side elevation of the improved dish washing machine,

Figure 2 is a longitudinal section thru the machine,

Figure 3 is a vertical transverse section thru the machine, the view being taken on the line 3—3 of Figure 2,

Figure 4 is a horizontal sectional view thru the machine,

Figure 5 is a perspective illustrating a switch operating member embodied in the invention,

Figure 6 is a perspective illustrating a switch embodied in the invention and the actuating means for the switch.

In the drawing wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 5 generally designates a frame provided with legs 8. Figure 2 illustrates that the lower portions of the legs are joined by combined bracing and supporting bars 10 upon which gas burners, 12 rest. A gas pipe 13 is connected to each gas burner 12 and may have connection with a suitable source of supply. If desired, any other heating means such as electric heating elements, may be employed without departing from the spirit of the invention. Furthermore, a thermostat may be employed to automatically regulate the supply of heat.

The burners 12 act as heating members for the contents of tanks 16 and 17, the tank 17 being adapted to receive a cleaning liquid, while the tank 16 receives a scalding liquid.

Figure 2 illustrates that a casing 20 is mounted upon the frame 5 and has its ends open for the reception and discharge of one or more dish containing trays 22.

In carrying out the invention, a pair of parallel tracks 23 are mounted upon the

frame within the casing 20, and have their ends extended a suitable distance beyond the ends of the frame, to support the trays prior to being introduced into the casing and subsequent to their discharge from the casing. The tracks 23 carry inwardly extending rollers 24 upon which the trays 22 slide, and when a tray is manually introduced into the casing, the forward end of the tray will be engaged by a lug 26 on an endless chain conveyor 27.

Figure 2 illustrates that the chain 27 is mounted upon sprocket wheels 28 and 29, the sprocket wheel 29 having connection with a driven shaft 30.

Attention is invited to Figure 4, which illustrates that the shaft 30 has connection with a worm wheel 32, which meshes with worm 33 on one end of the shaft 34. The shaft 34 is connected by a belt 36 or other suitable means, with an electric motor 37 arranged at one end of the machine, and it will be seen that when electric current is supplied to the motor 37 the conveyor will be operated for carrying a dish containing tray or trays thru the machine.

One of the features of the invention reside in the means whereby the motor 37 is automatically energized when the tray or trays 22 are introduced into the casing, and whereby the motor is stopped when the trays pass beyond the range of the final spray.

The controlling means for the motor is in the nature of a switch 1 having stationary and movable contacts 38 and 39 respectively, connected in the usual and well known manner with an electric circuit so that when the contacts are engaged, the circuit will be closed, and the motor 37 energized.

The movable contact 39 has pivotal connection with a link 40 which in turn is pivotally connected as shown at 42 to the adjacent end of an actuating bar 44 preferably of angle iron construction. The horizontal flange of the angle bar 44 is slidable upon and overhangs one of the tracks 23, and is in the path of travel of the trays, so that when the trays are introduced into the machine, they necessarily engage the bar and remain engaged with the bar until the tray leaves the machine.

When the trays are introduced into the machine, they ride on the rollers 24 and engage the beveled end 46 of the actuating bar 44 and thereby impart a longitudinal movement to the bar. It is of course, necessary to move the bar 44 laterally a limited extent, and this is accomplished by the engagement of the tray with the inner edge of the bar. More specifically, the horizontal flange of the bar 44 is formed with diagonal slots 48 which slidably receive pins 49 carried by the track 23 and when the tray moves the bar 44 laterally, it will also move the bar forwardly so as to operate the switch.

When the switch is thus operated, the circuit is closed, and the electric motor 37 for starting the conveyor is energized. This results in the engagement of one of the lugs 26 with the forward end of the tray just introduced, and the tray is thus conveyed through the machine.

When the last tray is discharged from the machine, it will of course, move out of engagement with the inner edge of the actuating bar 44 to permit a spring 50, or other suitable means, to return the bar to its original position, and thereby cut off the supply of current to the electric motor. It is important to note that as long as a tray is within the machine, the conveyor will be operated, and in case a train of trays passes through the machine, the conveyor operating motor will be stopped only when the last tray leaves the casing 20.

Attention is now directed to Figure 2 which illustrates the means for pumping the cleaning solution over the dishes, and by reference to this figure, it will be observed that the tank 17 receives a quantity of water, and is mounted directly over one of the burners 12 so that the water therein is maintained in a highly heated condition. Also, a plurality of flues 62 are secured in the bottom of the tank 60, and are open at their lower ends to allow the heat to enter, and thereby efficiently heat the water. A soap supporting member 64 is loosely arranged in the tank 17 and is directly beneath the discharge pipe 66 of a drain pan 68, so that the cleaning water, after passing over the dishes, will be collected by the pan 68, and returned to the tank 17. It will be seen that the water in returning by way of the pipe 66, will pass over and dissolve a portion of the soap in the tray 64, so that a strong cleaning solution is maintained at all times, notwithstanding the fact that water is constantly being added to the cleaning solution by a means to be later described.

Figure 2 illustrates that an overflow pipe 70 has communication with the upper portion of the tank 17 and receives the scum which forms on the top of the water. It will be noted, however, that the overflow pipe 70 is located beneath the plane of the top of the tray, or soap container 64, so that the soap will not be allowed to escape by way of the overflow pipe. Also the overflow pipe 70 is located considerably above the plane of the upper ends of the flues 62 so that the water is maintained well above the tops of the flues. The flues 62 constitute the sole means of supporting the soap container 64, which as illustrated in Figure 3, has a reticulated bottom wall. This permits the water, upon being discharged from the pipe 66, to pass thru the soap laden container and then about the flues to be reheated.

Figure 2 illustrates that a centrifugal

pump 75 has communication with the lower portion of the tank 17, and has a discharge pipe 76 which communicates with and supplies cleaning liquid to upper and lower spray pipes 77 and 78 respectively. The spray pipes 77 and 78 are formed with perforations by means of which the water is supplied in strong sprays to the upper and lower sides of the dishes when introduced into the machine.

When a tray is introduced into the machine, it will, as previously stated, start the conveyor and the tray will then engage a motor control arm 79 (Figure 4), mounted on a shaft 80 extended through one of the sides of the frame. The outer end of the shaft 80 is provided with a crank 81 having connection in any desired manner with the movable contact of an electric switch 82, so that when the arm 79 is operated by the tray, the crank 81 will close the switch, and thereby close the circuit through an electric motor 84 employed for operating the centrifugal pump 75.

As the tray laden with dishes passes between the spray pipes 77 and 78, the dishes are subjected to a strong spray of cleaning water from the same, and the refuse on the dishes is removed. However, as soon as the dishes pass beyond the range of the spray pipes 77 and 78 the arm 79 will be immediately released, and the circuit through the motor 84 will be broken. It is thus seen that the highly heated cleaning water is flowing only while the dishes are actually within the range of the same, and when the dishes pass beyond the range of the cleaning liquid, the flow of water is immediately stopped, all of which results in the economical use of water and in the low consumption of electric current.

As the dishes pass on, they are next subjected to a strong spray of hot rinsing water from spray pipes 87 and 88, which, as illustrated in Figure 2, are located above and below the dishes. The transversely extending spray pipes 87 and 88 receive the initial rinsing water by way of a valve 90 (Figure 4) having connection with a manifold 91. The manifold 91 is connected with a main supply pipe 92 extending from a hot water boiler, or the like, and by obtaining water which was previously unused, the dishes are rinsed in a highly sanitary manner.

The valve 90 is provided with a control stem 192 having connection with a lever 93, which in turn is connected to a link 94. Figure 2 illustrates that the link 94 is in turn connected to the crank 95 of a shaft 96, the said shaft being provided with a contact member 97 in the path of travel of the tray or trays. Thus, when the tray engages the contact member 97 the valve 90 is opened to supply the hot rinsing water to the pipes 87 and 88. A suitable valve 99 is interposed in

the manifold 91 between the valve 90 and the main pipe 92 so that the quantity of initial rinsing water supplied may be regulated as the occasion requires.

At this point, it is desired to point out that the water supplied by the spray pipes 87 and 88 is collected by the pan 68 and is supplied to the tank 17. By this means, the supply of water to the cleaning tank 17 is constantly replenished, and thus the burner 12 cannot in any way damage the flues 62 or other parts of the tank. Figure 2 illustrates that the collector pan 68 extends beyond the vertical plane of the rinsing pipes 87 and 88, so as to collect all of the water discharged by them.

When the conveyor moves the tray beyond the range of pipes 87 and 88, it will also move the tray out of engagement with the arm 97 so that the weight 100 on the lever 93 will immediately close the valve 90 and thereby cut off the initial supply of rinsing water. It might be stated that the initial rinsing water is heated previous to its use, and consequently it is desirable to conserve the supply of the same.

The tray next encounters and operates a second switch operating crank 102 (Figure 3) having connection with a short shaft 103 which rotatably extends thru one of the sides of the frame, and the outer portion of the shaft 103 is connected to a crank 101, which is connected to one of the contacts of a switch 109. Therefore, when the tray operates the crank 102 the crank 101 is operated for closing the circuit through the switch 109. When this occurs, an electric circuit is completed through an electric motor 104 employed for operating a second centrifugal pump 105.

The centrifugal pump 105 has communication with the tank 16 which contains water for sterilizing purposes. When the pump 105 is in operation, it pumps the water through a pipe 106 which supplies spray pipes 107 and 108 arranged within the casing and extending transversely thereof. The water supplied by way of the spray pipes 107 and 108 is intended to thoroughly scald and sterilize the dishes, and when the dish containing tray passes beyond or out of engagement with the arm 102 the arm returns to its original position, consequently breaking the circuit for stopping the motor 104. Thus consumption of electric power and the use of the highly heated scalding water is reduced to a minimum.

As the dish containing tray passes on, it is received between final upper and lower rinsing pipes 110 and 111, respectively. The final upper and lower rinsing pipes 110 and 111 are supplied by the manifold 91 and a valve 114 is interposed in the manifold between the main supply pipe 92 and the final rinsing pipes. The valve 114 is similar in

construction to the valve 90 and is provided with a lever 116 having connection with a link 117. The link 117 in turn is connected to an arm 118 on a shaft 119. The shaft 119 carries a crank 120 arranged in the path of travel of the dish tray, so that when the dish tray engages the arm, it will be operated for automatically opening the valve 114.

Therefore, as the tray enters the space between the upper and lower final spray pipes 110 and 111, a strong spray of hot water will be supplied to the dishes for finally rinsing the same. The continued movement of the conveyor chain will cause the lug 26 to ride about the gear 29 and move out of engagement with the forward end of the tray, and thus the tray will stop between the spray pipes 110 and 111 where they are subjected to a thorough spraying of hot water. However, when the dish containing tray passes beyond the range of the spray pipes, 110 and 111, the arm 120 will be released for allowing the weight operated lever 116 to again close the valve 114.

In case there is only one tray passing thru the machine, another lug 26 immediately behind the tray will engage the same after a short interval, and will move the tray out of the casing 20. Or, if there is another tray passing through the machine, it will engage the tray immediately in advance of it, and move it out through the discharge opening of the machine. It will be seen that by allowing the dishes to stop for a short period between the final rinsing pipes 110 and 111, the same are thoroughly scalded and made ready for use.

When the last dish containing tray moves out of the machine, it will move out of engagement with the actuating bar 44 so that the current supplied to the motor 37 will be cut off and the conveyor will stop.

Before proceeding with the description of the operation, it is desired to point out that the tanks 16 and 17 are provided with drain pipes 140 and 141 having valves 142 and 143 respectively, by means of which the discharge of the liquid may be regulated. Of course, the valves 142 and 143 are opened only when it is desired to entirely or partly drain the tanks. The pipes 140 and 141 are connected to a final discharge pipe 146 which may extend to a suitable point of disposal.

Figure 2 illustrates that the water from the scalding pipes 107 and 108 is collected by a pan 150, having a discharge pipe 151 which returns the scalding water to the tank 16. Also the final rinsing pipes 110 are arranged above the pan 150, so that the final rinsing water, after passing over the dishes, will be collected in the pan, and supplied to the tank 16 so as to maintain the liquid level at a predetermined point. By constantly

supplying fresh heated water to the tank 16, the level of the water is maintained up to the overflow pipe 160 so that if any scum collects on the water, it will pass out through the pipe 160.

The tank 16 may be provided with flues 170 which allow the heat from the burner 12 to thoroughly heat the water contained in the tank 16. Also the flues 170 support a collector 172 designed to collect any refuse which may pass through the pipe 151.

One of the important structural advantages is illustrated in Figures 2, 3 and 4, wherein the pipes which extend across the upper portion of the casing 20, extend through the side walls of the casing, and are provided with nuts 180 which engage the inner sides of the casing, and with fittings 182 and 183, which engage the outer side of the casing. The fittings 182 are in the nature of caps, while the fitting 183 may be an elbow or the like. The pipes therefore serve as a means for effectively bracing the upper portion of the machine and for strengthening and reinforcing the same. The same applies to the pipes which extend across the lower portion of the machine, and it will be seen that these are provided with fastening devices, or fittings 190 which engage the opposite sides of the side bars of the frame, and therefore effectively reinforce the frame.

It will be observed that all of the caps 182 may be quickly removed, as the same are located exteriorly of the machine, and this permits a suitable cleaning element to be introduced into the pipes for removing any matter which may collect on the interior of the same.

In operation, a tray filled with dishes is introduced into the machine, and it will first engage the actuating bar 44 for setting the motor 37 in operation. When the chain starts, it will advance the tray to a point between the initial cleaning pipes 77 and 78, and when the tray passes beyond these pipes, the supply of cleaning water is immediately cut off. The tray now engages the arm 97 and the initial rinsing water is applied through the valve 90. As the tray passes beyond the range of the initial rinsing water, it will engage the contact arm 102 and operate the same so as to set the pump 105 in operation whereby the sterilizing water is pumped from the tank 16 over the dishes for thoroughly sterilizing the same. This water is maintained more or less fresh at all times, because it collects the final rinsing water supplied by the pipes 110 and 111. When the water passes beyond the range of the pipes 107 and 108, the pump 105 is immediately stopped, and the spray from the final rinsing pipes is started. In this case, also when the tray passes beyond the range of the pipes 110 and 111, the spray from same is stopped,

and as previously stated, as the tray leaves the machine, the conveyor chain is stopped.

It will be observed that inclined drain boards 200 and 201 are located at the inlet and outlet ends respectively of the machine, and collect any water which may accidentally be discharged through the openings at the ends of the casing. The side edges of the drain boards 200 and 201 are extended upwardly, and are secured to the tracks 23 by the same bolts which secure the rollers 24 in place.

A thorough inspection of the machine, and the observation of the same in operation, reveals that each spray operates only while the dishes are actually within the range of the same, with the result that only a small amount of electric power is consumed. This also provides for the economical consumption of water. A machine constructed in accordance with this invention is capable of washing in the neighborhood of 8,000 dishes per hour, and is especially adapted for use in large restaurants where the attendants are of limited intelligence.

The machine is entirely automatic in operation in so far as starting and stopping the various motors is concerned, and the sole duty of the attendant is to introduce the trays into the machine and to remove the trays as they are discharged.

The dishes, upon being discharged from the machine, are absolutely free of grease, and are ready for use again, and it is desired to point out that the machine is capable of washing glasses equally as well as china.

The pressure of the pumps causes the spray to pass over the dishes with considerable force, so that all matter is removed from same.

The cleaning solution is maintained at the proper strength by adding soap in any desired form from time to time to the collector and soap receiver 64.

The tops of the tanks or reservoirs are provided with hinged covers, by means of which ready access to the tanks may be had.

This provides a convenient means for removing refuse which collects in the baskets 64 and 172, the bottoms of which are reticulated. It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that such minor changes in arrangement and construction of parts may be made as will remain within the spirit of the invention and scope of what is claimed.

Having thus described the invention, what is claimed is:—

1. A dish washing machine comprising a casing having inlet and outlet openings for the passage of dish containing trays, tray supporting guides extending through the casing, a conveyor for moving the trays through the casing, a motor for operating

the conveyor, and a tray actuated motor control member extended through the casing and terminating adjacent the outlet end of the same whereby the discharge of the dish trays from the casing releases said tray actuated motor operating member.

2. A dish washing machine comprising a casing having inlet and outlet openings for the passage of dish containing trays, tray supporting guides extending through the casing, a conveyor for moving the trays through the casing, a motor for operating the conveyor, a tray engaged and actuated motor operating bar mounted on one of said guides and terminating adjacent the outlet end of the casing whereby the discharge of the last tray from the casing releases said tray actuated operating bar.

3. A dish washing machine comprising a casing having inlet and outlet openings for the passage of dish containing trays, tray supporting guides extending through the casing, a conveyor for moving the trays through the casing, a motor for operating the conveyor, a tray actuated motor operating bar mounted on one of said guides and terminating adjacent the outlet end of the casing whereby the discharge of the last tray from the casing releases said tray actuated operating bar, said actuating bar having a pin and slot connection with the associated guide.

4. A dish washing machine comprising a casing having inlet and outlet openings for the passage of dish containing trays, tray supporting guides extending through the casing, a conveyor for moving the trays through the casing, a motor for operating the conveyor, a tray actuated motor operating bar mounted on one of said guides and terminating adjacent the outlet end of the casing whereby the discharge of the last tray from the casing releases the tray actuated operating bar, said actuating bar having a pin and slot connection with the associated guide, and the slots being extended diagonally whereby the bar is moved longitudinally when forced laterally by the trays.

5. A dish washing machine comprising a casing having inlet and outlet openings for the passage of dish containing trays, tray supporting guides extending through said casing, a plurality of trays movable through the casing on said guides, a conveyor for moving the trays through the casing, a motor for operating the conveyor, and a tray actuated bar arranged within said casing in the path of travel of the trays and moved laterally and longitudinally thereby, a control member associated with the motor, and means connecting said actuating bar to said control member whereby the engagement of one or more trays with said actuating bar results in the operation of said motor.

6. A dish washing machine comprising a casing having inlet and outlet openings for the passage of dish containing trays, tray supporting guides extending through said casing, a plurality of trays movable through the casing on said guides, a conveyor for moving the trays through the casing, a motor for operating this conveyor, a tray actuated bar arranged within said casing in the path of travel of the trays and moved laterally and longitudinally thereby, a control member associated with the motor, means connecting said actuating bar to said control member whereby the engagement of one or more trays with said actuating bar results in the operation of said motor, and means whereby to return said bar to its original position and consequently shut off said motor upon the discharge of the last tray from the casing.

7. A dish washing machine comprising a casing having inlet and outlet openings, guides extending through said casing, a conveyor for moving the trays through said casing, a motor operating said conveyor, a control member connected to said motor, an actuating bar having a pin and slot connection with one of said guides and having means connected to said control member whereby the engagement of one or more trays with said bar actuates said control member, and means associated with said actuating bar for returning the same to its original position upon being released by the last trays whereby the motor is shut off immediately upon passage of the last tray through the machine.

8. A dish washing machine comprising a casing having inlet and outlet openings for dish-containing trays, the bottom wall of said casing being provided with separate collector trays having depending discharge pipes, tanks receiving said pipes and having vertical flues terminating between the upper and lower sides of the tank, and reticulated containers resting on said flues, spray pipes within said casing, said spray pipe being adapted to direct a spray of water over the tanks in the trays, the separate collector trays being adapted to receive the water from the spray pipes and direct the same through the discharge pipes and the reticulated containers.

9. A dish washing machine comprising a casing having a bottom wall provided with a pair of water collecting pans having discharge pipes, tanks arranged beneath the discharge pipes to receive the water from the same, and containing scalding and cleaning water, spray pipes having communication with said tanks and adapted for spraying cleaning and scalding water over the dishes, rinsing water supply pipes arranged adjacent said spray pipes and directly above said pans whereby the water from the last

named pipes is collected by said pans and supplied to said tanks for replenishing the cleaning and scalding tanks, and tray operated means for controlling the supply of water through said last named pipes.

10. A dish washing machine comprising a casing having a bottom wall provided with a pair of water collecting pans having discharge pipes, tanks arranged beneath the discharge pipes to receive the water from the same, and containing scalding and cleaning water, spray pipes having communication with said tanks and adapted for spraying cleaning and scalding water over the dishes, rinsing water supply pipes arranged adjacent said spray pipes and directly above said pans whereby the water from the last named pipes is collected by said pans and supplied to said tanks for replenishing the cleaning and scalding tanks, tray operated means for controlling the supply of water through said last named pipes, and separate pumps for pumping the waters from said tanks through said first named pipes.

11. A dish washing machine comprising a casing having a bottom wall provided with a pair of water collecting pans having discharge pipes, tanks arranged beneath the discharge pipes to receive the water from the same, and containing scalding and cleaning water, spray pipes having communication with said tanks and adapted for spraying cleaning and scalding water over the dishes, rinsing water supply pipes arranged adjacent said spray pipes and directly above said pans whereby the water from the last named pipes is collected by said pans and supplied to said tanks for replenishing the cleaning and scalding tanks, tray operated means for controlling the supply of water through said last named pipes, separate pumps for pumping the waters from said tanks through said first named pipes, motors connected to said pumps, and control members arranged at spaced points within the casing and in the path of travel of the trays for operating said motors.

12. A dish washing machine comprising a casing having a bottom wall provided with a pair of water collecting pans having discharge pipes, tanks arranged beneath the discharge pipes to receive the water from the same, and containing scalding and cleaning water, spray pipes having communication with said tanks and adapted for spraying cleaning and scalding water over the dishes, rinsing water supply pipes arranged adjacent said spray pipes and directly above said pans whereby the water from the last named pipes is collected by said pans and supplied to said tanks for replenishing the cleaning and scalding tanks, and a soap container arranged in the tank containing the cleaning water and being directly beneath one of the water dis-

charge pipes whereby the water is passed over the soap upon returning to the tank.

13. A dish washing machine comprising a casing having inlet and outlet openings, a track extending through the casing and terminating beyond the ends of the same, inclined drain pans connected to said track exteriorly of the casing, spray pipes for cleaning water arranged within the casing and adapted to spray the dishes upon entering the casing, scalding water supply pipes arranged within the casing for supplying scalding water to the dishes, rinsing water supply pipes arranged between the supply pipes for the cleaning and scalding water supply pipes, and means controlled by the movement of objects through the casing for turning on the supply of water in the rinsing water supply pipes when the objects are within the range of the same.

14. A dish washing machine comprising a casing having inlet and outlet openings, a track extending through the casing and terminating beyond the ends of the same, inclined drain pans connected to said track exteriorly of the casing, spray pipes for cleaning water arranged within the casing and adapted to spray the dishes upon entering the casing, scalding water supply pipes arranged within the casing, for supplying scalding water to the dishes, rins-

ing water supply pipes arranged between the supply pipes for the cleaning and scalding water supply pipes at the outlet end of the casing, means controlled by the movement of objects through the casing for turning on the supply of water in the rinsing water supply pipes when the objects are within the range of the same, and object operated means for controlling the supply of water through the supply pipes for the cleaning and scalding waters.

15. A dish washing machine comprising a plurality of trays, means slidably supporting said trays, spraying pipes for supplying cleaning and scalding liquid to the dishes, tanks having communication with said pipes, pumps for pumping the liquids from said tanks through said spray pipes, separate motors operating said pumps, motor control members having cranks arranged in the path of travel of the trays and operated thereby whereby each of the motors and the pump associated therewith are operated while the dishes are within the range of the spray pipes, a conveyor for moving the trays, a motor for operating the conveyor, a control member for the motor, and means arranged in the path of travel of the trays and engaged thereby, whereby to operate said control members.

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