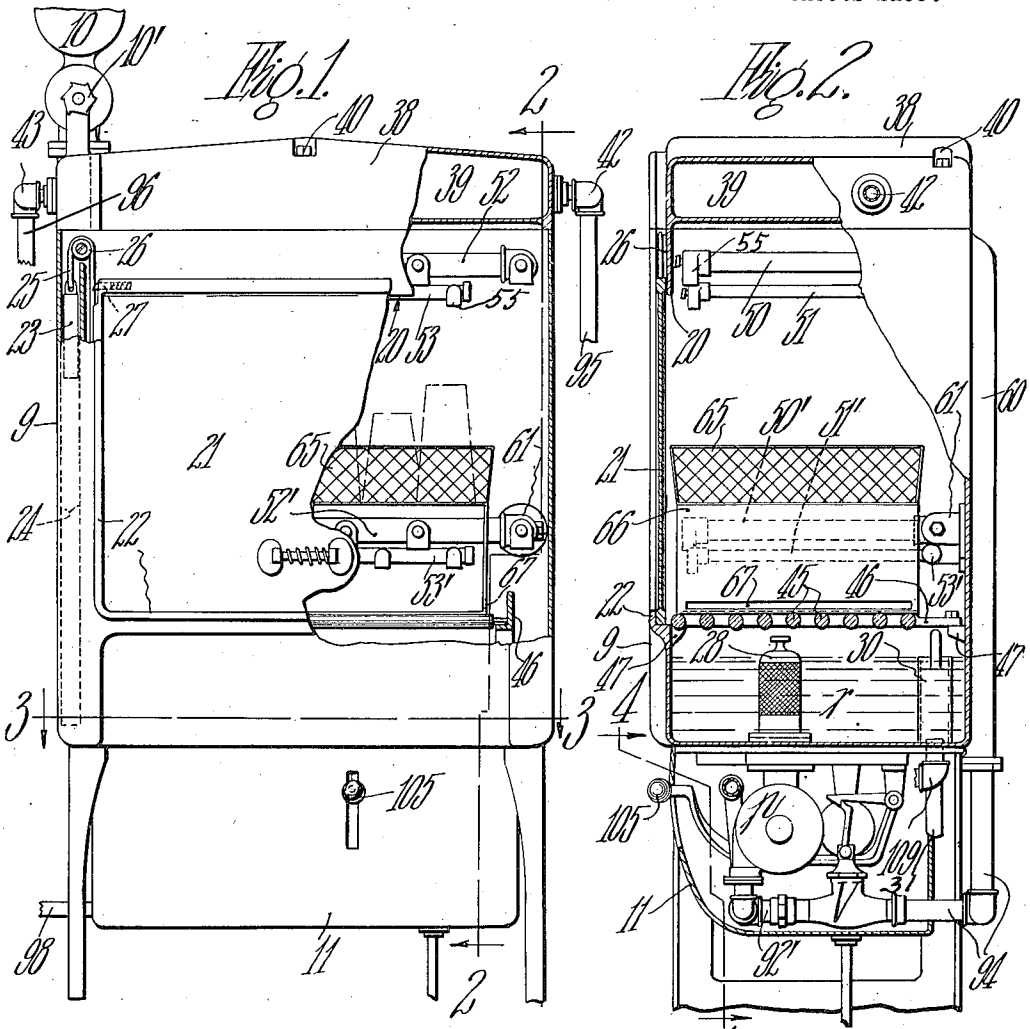
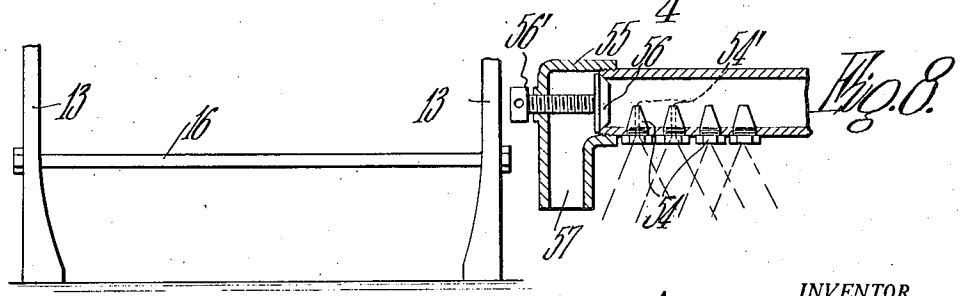
Aug. 28, 1923. 1,466,192

A. C. SCHMELZER

WASHING MACHINE

Filed Jan. 20, 1919 4 Sheets-Sheet 1





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Aug. 28, 1923. 1,466,192

A. C. SCHMELZER

WASHING MACHINE

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Fig. 3.

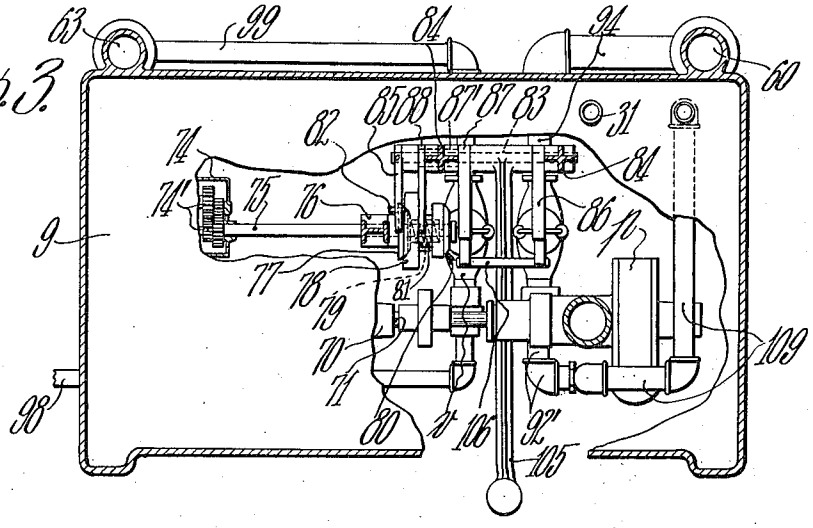


Fig. 4.

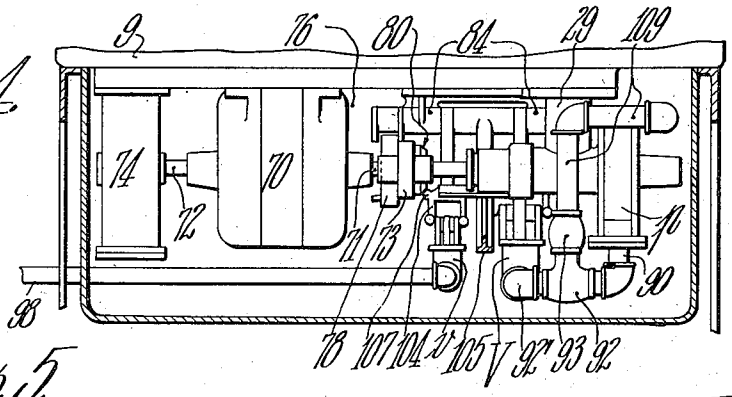


Fig. 5.

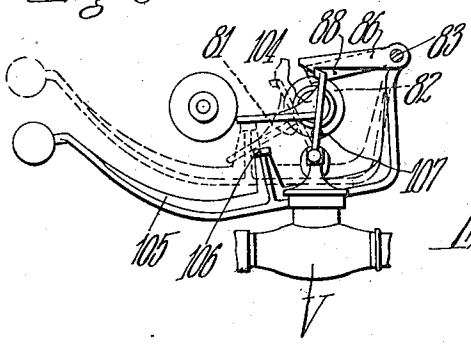
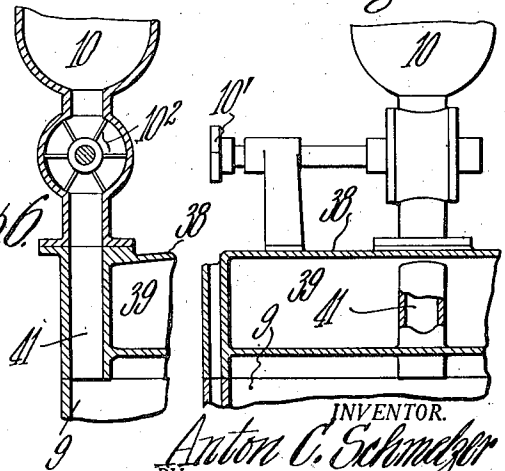


Fig. 7.

Fig. 6.



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Fig. 11.

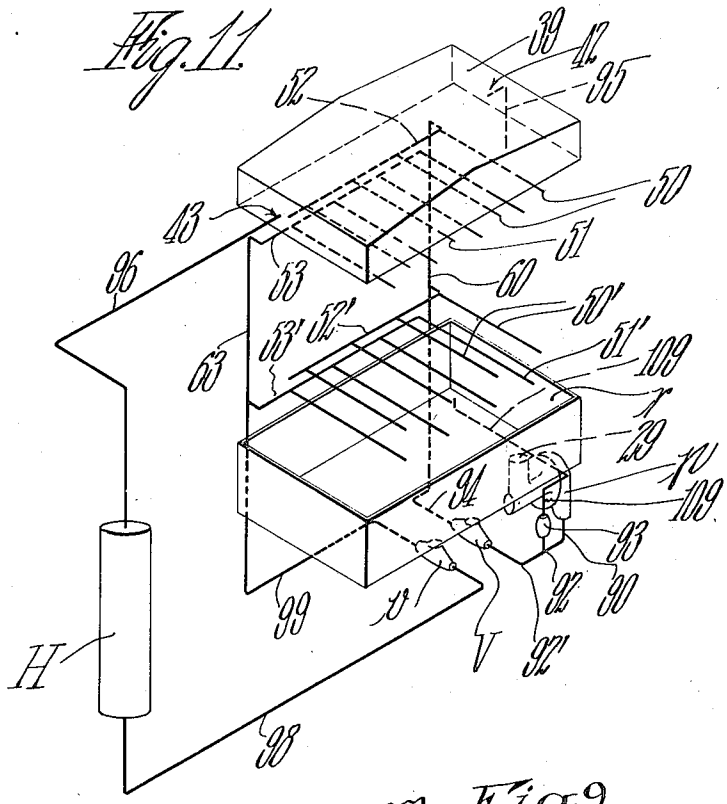
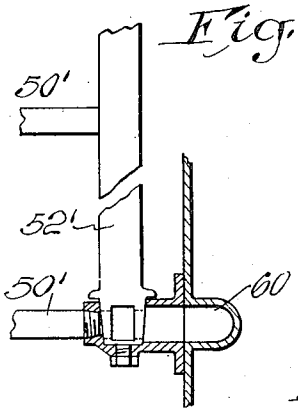


Fig. 9.



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Aug. 28, 1923. 1,466,192

A. C. SCHMELZER

WASHING MACHINE

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Fig. 10.

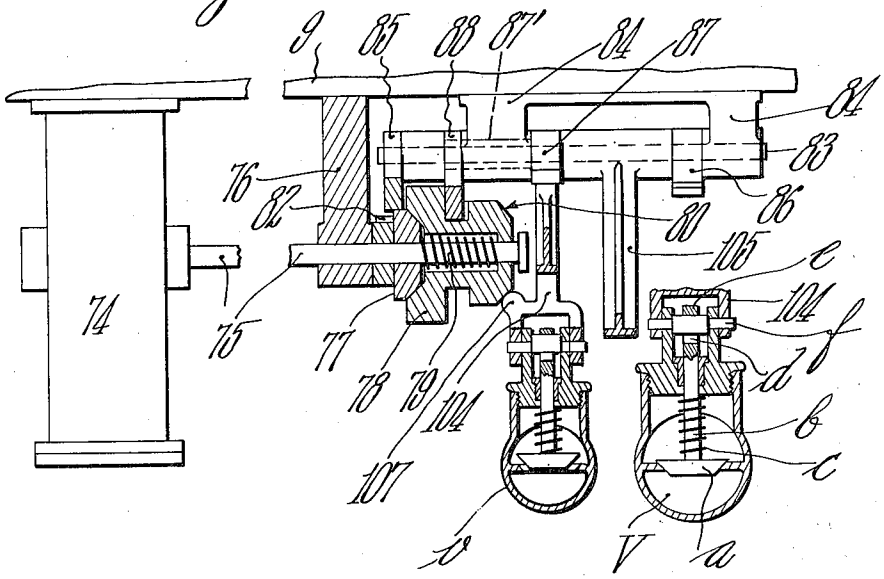


Fig. 13.

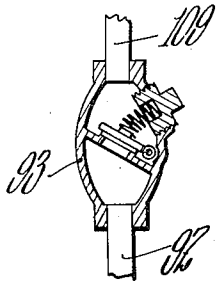
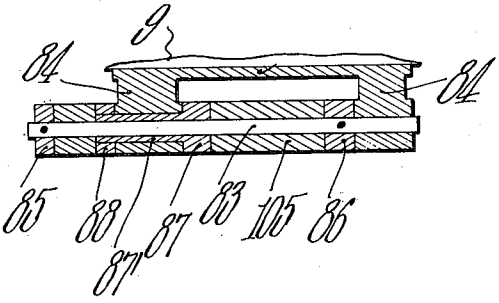


Fig. 12.



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UNITED STATES PATENT OFFICE.

ANTON C. SCHMELZER, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CENTURY MACHINERY CORPORATION, OF HOLYOKE, MASSACHUSETTS, A CORPORATION OF DELAWARE.

WASHING MACHINE.

Application filed January 20, 1919. Serial No. 272,156.

To all whom it may concern:

Be it known that I, ANTON C. SCHMELZER, born in Hungary, of Hungarian parents, now believing myself to be a citizen of that country, and having formally declared my intentions of becoming a citizen of the United States of America in conformance with the United States Immigration Laws, and now residing at Springfield, in the county of Hampden, and State of Massachusetts, have invented certain new and useful Improvements in Washing Machines, of which the following is the specification.

This invention relates to improvements in washing machines and more particularly to machines for washing and sterilizing drinking glasses, dishes, or other receptacles of a similar nature.

According to one feature of my invention, I provide a machine with mechanical means to circulate or deliver washing and rinsing water during predetermined periods in the cycle of operation of the machine and a mechanical means to automatically stop the flow of washing and rinsing water at predetermined times.

According to a further feature of the invention a dispenser for soap or the like is provided and such dispenser is arranged for actuation from the door of the washing compartment, to the end that a measured charge of soap or the like is automatically delivered into said compartment each time the door is opened and closed.

According to another feature of the invention, an improved sprinkler pipe construction is provided for use in a machine of the type described.

Other features and advantages will appear in the following description and in the illustrative embodiment of the invention in the accompanying drawings, in which:

Fig. 1 is an exterior elevation of my machine with parts broken away to show its interior;

Fig. 2 is an elevational section taken on the line 2—2 of Fig. 1;

Fig. 3 is a sectional plan view taken on the line 3—3 of Fig. 1, with parts broken away to show the valve operating mechanism;

Fig. 4 is a transverse sectional elevation taken on the line 4—4 of Fig. 2;

Fig. 5 is a fragmentary view of the valve operating mechanism;

Fig. 6 is a section taken through the soap dispenser;

Fig. 7 is a section taken on the line 7—7 of Fig. 6;

Fig. 8 is a sectional elevation through one of the delivery pipes of the machine; and

Fig. 9 is a fragmentary sectional plan view illustrative of the swivel mounting of the lower sprinkler pipes.

Fig. 10 is a vertical sectional view taken along the axis of shaft 75;

Fig. 11 is a diagrammatical view showing the arrangement of pipes in the machine;

Fig. 12 is a vertical sectional view taken along the shaft 83; and

Fig. 13 is a sectional elevational view of a check valve used in the machine.

Referring to these drawings with particular reference to Figs. 1 and 2; it will be seen that my machine consists, in general, of a casing 9, in which are located the washing and rinsing sprinklers and in which the articles to be washed are adapted to be placed. A soap dispenser 10 is associated with the upper portion of the casing 9 and the control and circulating mechanism for both the washing and rinsing water systems are located beneath the casing and enclosed by a cover 11. The casing 9 is supported by spaced apart supports 13 secured to the lower side of the casing by suitable bolts and are maintained in a spaced relation at their lower ends by a tie rod 16.

The casing 9 of the machine is best shown in Figs. 1 and 2 and has on its front side a rectangular opening 20. A sliding door 21 is constructed and arranged to slightly overlap the opening on its four sides and caused to lie snugly against the face of the casing by the lip portion 22 thereon. This door, which is arranged to slide upwardly from a closed to an open position is counterweighed to allow it to remain in either an open, closed or intermediate position. Thus, counterweights 23, which slide freely in channels 24 of the casing 9, are connected to the door by flexible cords or cables 25 and the cords are run over suitable grooved guide sheaves 26. The door is further provided with a spring pressed pawl 27 in its

upper corner, as shown in Fig. 1, which pawl is adapted to engage with the soap dispenser as will later be described. The lower portion of the casing 9 is designed to serve as a water reservoir, as at *r*. In this reservoir *r* is located a removable filter 28, which is placed directly over the pump inlet 29 (see Fig. 3) and a removable overflow nozzle 30, which is located directly over an overflow pipe 31 (see Figs. 2 and 3).

A hollow cover 38 surmounts the open top of the casing and provides a tank 39 which forms a jacketed upper wall for the casing 9 for purposes to be hereinafter described. This cover is suitably secured to the casing as by bolts 40. The cover 38 supports the soap dispenser 10 and has an enclosed channel 41 located directly under the outlet of the soap dispenser (see Figs. 6 and 7) to convey soap or the like to the interior of the casing 9. A water inlet 42 and a water outlet 43 are located at opposite ends of the cover 38 for purposes to be later described.

A plurality of idler rolls 45 are rotatably mounted in the side rails 46 which are supported by projections 47 on the interior of casing 9 and, as will be seen by reference to Figs. 1 and 2, are so arranged that the rolls are held approximately in line with the bottom edge of the door opening. These rolls are provided for the purpose of receiving and supporting trays containing the articles to be washed.

The washing sprinklers 50 and 50′ and the rinsing sprinklers 51 and 51′ are tubular in cross section and are suitably connected as by a pipe thread or the like to the headers 52, 52′ and 53 and 53′ respectively.

The means for delivering washing and rinsing water into the washing compartment of the casing 9 will now be described. Both the washing and rinsing means are provided in upper and lower sets, with a plurality of sprinkler pipes to each set. Thus, adjacent the upper wall of the washing compartment, and along the rear side thereof, is a suitably supported header member 52, from which a plurality of sprinkler pipes 50 extend forwardly in spaced parallel relation toward the cover 21. The pipes 50 constitute the upper set of washing sprinklers. Adjacent header 52 is a similar header 53 from which a plurality of pipes 51 radiate similarly to the pipes 50 described. Pipes 51 constitute the upper set of rinsing sprinklers. The lower sets of washing and rinsing sprinklers are designated 50′ and 51′ respectively and are mounted on headers 52′ and 53′ respectively in a similar manner to that already described. The lower sets of sprinklers are arranged above the series of rolls 45 described.

Each of the sprinkler pipes 50, 50′, 51 and 51′ is provided with a plurality of nozzles 54 arranged in longitudinally spaced relation. Each nozzle, as shown in Fig. 8, is provided with a threaded portion whereby it may be removably secured to its sprinkler pipe. The openings 54′ through the nozzles are enlarged at their outer ends to facilitate the spreading action of the water, as shown by the dotted lines. As will be seen the nozzles extend to a considerable distance into the sprinklers and are purposely so extended to prevent foreign matter contained in the water from being forced through the openings 54′. An elbow 55, in threaded engagement with the outer end of each sprinkler pipe, is provided with a valve 56, as shown. The valve 56 normally seats against a suitable seat on the end of its sprinkler pipe and thus closes such end. This valve normally is in closed position as shown and may be opened by turning the shank portion 56′ at such times as it is necessary to clear the sprinklers of foreign matter or the like.

The washing sprinkler headers 52 and 52′ are suitably connected to a vertical riser 60 formed on the rear right hand corner of the casing 9 as shown in Fig. 3. The rinsing sprinkler headers 53 and 53′ are suitably connected to a riser 63 formed on the rear left corner of casing 9, as shown in Fig. 3. The lower header 52′ is suitably swivelled in a support 61 whereby it may be swung upwardly from the illustrated position in an obvious manner thus raising the intermediate spray pipes 50 out of the way when cleaning the tank *r*, the end spray pipe being preferably mounted directly in support 61. The lower header 53′ is similarly mounted for swinging movement but is pivoted to the opposite side of casing 9.

For the purpose of positioning the articles to be washed in a location between the top and bottom sprinklers a tray 65 of wire mesh is provided. Such tray is supported along two edges by a U-shaped support 66, as best shown in Figs. 1 and 2. The support 66 is adapted to be slid into the washing compartment with the flat bottom part of the support riding upon rollers 45. In the upstanding parts of the support 66 and closely adjacent the bottom part thereof are longitudinal openings 67 for the purpose of allowing water and foreign matter to quickly escape from the bottom of the support along both ends as well as along the open sides thereof. The open sides of the support permit the support with attached tray to be slid into place in the washing compartment without moving the lower sets of sprinklers and yet support the articles to be washed above such lower sets.

The water distributing and circulating apparatus will now be described; with particular reference to Figs. 3, 4, and 5. An electric motor 70 is suitably attached to the under side of the casing 9 and has extending therefrom in opposite directions two shafts

71 and 72. In axial alignment with the motor is a suitable pump p, preferably of the centrifugal type, and the driving shaft of the pump is connected by a rigid coupling 73 to the shaft 71 of the motor 70. A gear box 74 is also attached to the casing 9 housing a suitable speed gear reduction mechanism, exemplified in part by the gears 74′ in Fig. 3. The driven end of such mechanism is in alignment with the motor 70 and connected to the shaft 72 of the motor 70. This mechanism may be of any suitable type which is capable of effecting a considerable speed reduction and it has been thought unnecessary to illustrate the mechanism in detail. In this instance, for example, it is proposed to use a mechanism capable of reducing from a motor speed of approximately 1700 revolutions per minute to a speed of one or less revolutions per minute.

A shaft 75 extends from the driving end of the gear box 74 and is arranged to lie in the same plane with and parallel to the axis of the motor 70. This shaft 75 is rotatably supported in a bearing 76, which is secured to the under side of the casing 9, and fixed on shaft 75 and adjacent the bearing 76 is a clutch cone 77. A clutch disc 78 is loosely mounted on the shaft 75 and is adapted to engage, and be driven from, the clutch cone 77. This disc is also provided with a spiral spring 79 contained within an axial recess provided therefor, and this spring acts to normally hold the disc 78 and cone 77 from frictional engagement. The disc 78 is further provided with a bevel face 80 with which a valve lever may engage, as will later appear, to slide the disc longitudinally along the shaft 75 and thus bring the clutching faces into frictional engagement. Projecting pins 81 and 82 extend from the opposite faces of the clutch disc 78 (see Fig. 3) and are arranged to operate valve levers, as will later be described. A rocker shaft 83 is rotatably mounted in bearings 84 and has secured to one end a lever 85, which lies adjacent one face of the clutch disc 78 and in such a position as to be raised at predetermined times by the pin 82 of the disc 78. A pawl 86, best shown in Fig. 5, is also fixed to the shaft 83 (Fig. 12) near its other end, and, of course, swings uniformly with the lever 85. A pawl 87, similar to the pawl 86, has a sleeve 87′ fixed thereto which extends through the left hand bearing 84 and is loosely mounted on shaft 83. To the left of the sleeve 87′ is secured a lever 88. The lever 88 lies adjacent the other face of the clutch disc 78 and is arranged to be raised by engagement with the pin 81 of the disc. Thus it will be seen that as the clutch disc rotates the pins 81 and 82 thereon are arranged to raise the levers 85 and 88 respectively which will raise simultaneously the pawls 86 and 87 for a purpose to be hereinafter described.

The water system may be divided into two groups namely, a washing and a rinsing system. The washing system will first be described. The pump p previously referred to, is secured to the bottom of the casing and has its inlet 29 arranged directly under the filter 28 already described. Its outlet 90 extends from the bottom and is connected by suitable connections to the T 92. Directly over the T 92 a check valve 93 is placed for a purpose to be hereinafter described.

Suitable connections 92′ connect the T 92 with a valve V. The latter is clearly shown in Fig. 10 and includes a valve element a and attached stem b, which element is normally held to its seat by a spring c. The stem b has an opening d therein to receive an eccentric e which is fixed to a shaft f rotatably supported on the valve casing. This valve V at its discharge end is connected by suitable pipe connections 94 (Figs. 2 and 3) to the washing riser 60, already described. Thus, washing water may be taken in by the pump from reservoir r and conducted and distributed therefrom as follows, viz., through T 92 to valve V, through connnections 94 to riser 60 and into sprinklers 50 and 50′ from whence it is forced through the nozzles 54 at suitable pressure dependent only upon speed of pump p.

The rinsing system designed to furnish clean and unused water will now be described. A pipe 95, connected with any suitable water supply (not shown) is connected to the water inlet 42 of the described tank 39, (Figs. 1 and 11) and a pipe 96 is adapted to connect the outlet of the tank with a water heater H which may be of any well known type. A pipe 98, (see Figs. 3, 4 and 11) is adapted to connect the heater to the machine and leads to a valve v. This valve v is identical in construction with the valve V and is closed by similar means. A pipe 99 and suitable connections join the valve v to the rinsing riser 63 and delivers the water to the sprinklers 51 and 51′. Thus it will be seen that the rinsing water is conducted in the following manner, viz, from its source through pipe 95 into tank 39, from tank 39 to heater H from the heater through pipe 98 to valve v, thence to riser 63 and headers 53 and 53′ then into sprinklers 51 and 51′.

The valve V of the washing system and the valve v of the rinsing system which are normally closed are arranged to be opened in the following manner. As will be seen by reference to Fig. 5, each valve is provided with a lever 104, arranged to be engaged by the pawls 86 and 87 to hold the valves in an open position. As heretofore described these valves V and v are closed by a spring (such as b) within the valve and, when so closed, the levers 104 assume positions such as

shown in dotted lines in Fig. 5. A lever 105 pivotally mounted on the shaft 83 is provided with an upstanding portion 106 which extends transversely to lie beneath and engage with both valve levers 104 when such levers are in the described dotted line position. On lifting the lever 105, both levers 104 are raised and are caught and retained in an open position by the pawls 86 and 87. The valve lever 104 of valve *v* is provided with a projection 107 (see Figs. 4, 5, and 10) which when the valve is opened engages the bevel 80 of the clutch disc 78 and causes this disc to slide along the shaft 75 and engage the cone 77.

The foregoing description discloses the apparatus for the circulation and control of the washing and rinsing during a washing or rinsing operation, but at such times as the machine is being supplied with articles to be washed it is desired that no water be allowed to flow through the sprinklers. The valves V and *v*, of course, are closed during this period and as the pump *p* is running at all times the discharge therefrom is desirably conducted to the tank *r*. To accomplish this purpose, I provide directly over the T 92 a check valve 93 (see Figs. 3 and 4) which is of a well known type such as will remain closed under a head but will open with pressure applied to its inlet, when said pressure is in excess of the head on its discharge end. An illustrative example of one suitable type of check valve is shown in Fig. 13. Suitable pipe connections 109 connect the valve 93 with the reservoir *r* and allows of a free circulation of water from reservoir *r* through pump *p* and back to reservoir *r*, for the purpose as hereinbefore described.

In operation, the reservoir *r* of the casing 9 is supplied with water of any desired temperature and water from a suitable source of supply is admitted to the tank 39 through the pipe 95. Water in the tank 39 flows through the discharge pipe 43 to a heater or the like and is returned to the machine by the pipe 98. The water thus returned to the machine is raised to any required temperature by the heater and delivered in a volume under suitable pressure. There being suitable water in the reservoir *r* the door 21 is raised to an open position and in so raising the spring pressed pawl 27 of the door is carried to a location above the ratchet wheel 10′ of the dispenser. The door, when in an open position, allows the tray 65 with its attached support 66 to be passed through the opening 20 of the casing 9 and placed upon the rollers 54. The door 21 is now closed and, in lowering the door to a closed position, the pawl 27 thereon engages the ratchet wheel 10′ of the soap dispenser 10. This engagement will turn the ratchet and also the pocketed wheel 10^2 within the dispenser and deliver through the channel 41, (see Fig. 6,) whatever soap powder, or the like, is contained within a compartment of the pocketed wheel. This soap will fall to the water in the reservoir *r* of the casing 9 when it will be taken up and dissolved by the water. At this point the motor 70 is set in operation and drives the pump *p* and shaft 75 continuously, and until the current thereto has been disconnected.

It is now desired to commence the washing and rinsing operations and the valve V of the washing systems and the valve *v* of the rinsing systems are simultaneously opened.

It will here be noted that the opening of the valve *v* of the rinsing system causes the clutch cone 77 and disc 78 to be moved into clutching engagement and the disc 78 will now rotate with the shaft 75. The clutch will thus remain in clutching engagement until the valve *v* is closed, at which time the spring 79 will disengage the clutch members.

The valves, having thus been opened and sufficient washing water having been applied to the articles being washed, it is required to close the washing valve V. This is accomplished by the pin 82 of the rotating disc 78 abutting and raising the lever 85, which oscillates said shaft 83 and raises the lever 86. This action disengages the valve lever 104 of valve V and the spring therein returns the lever to the dotted line position. The valve thus being closed, no further water will be pumped to the washing sprinklers 50 and 50′ and, since the pump is in continuous operation, the water is now pumped up through the check valve 93 and pipe 109 to the reservoir *r*. The rinsing water, now being forced through the sprinklers, removes soap and other substances left on the articles and continues rinsing them until the valve *v* is closed. This valve is closed in a manner similar to the closing of valve V, and is accomplished by the pin 81 of the rotating disc 78 engaging and raising the lever 88.

Thus I have provided improvements in washing machines which are particularly designed for the washing of numerous and divers articles such as glasses, receptacles or the like. It is obvious that modifications may be made in the device as herein described for illustrative purposes and I therefore prefer to have the scope of my invention defined by the appended claims rather than by the foregoing description.

What I claim is—

1. A washing machine, comprising in combination, a washing compartment having spray pipes located therein, means to deliver fluids to the spray pipes, valves to

control the delivering means, means manually operable to open said valves and automatic means to successively close said valves when predetermined intervals have elapsed.

2. A washing machine, comprising in combination, a casing having a compartment with an opening therein through which the articles to be washed are passed, a dispenser to deliver soap or the like to the washing compartment, a cover arranged to open and close the opening of the casing, and means on the cover to operate the dispenser to deliver to the washing compartment a measured quantity of soap or the like.

3. In a washing machine, the combination with a basket of wire mesh for holding articles to be washed, of a U-shaped member having spaced upstanding side walls for supporting said basket and a flat base portion, said side walls being provided with openings located slightly above said base portion, and a plurality of idler rolls arranged in a horizontal plane for engaging said base portion to support said member and tray.

4. A washing machine comprising in combination, separate fluid delivery means, self closing valves to control the delivery means, manually operable means to open said control valves, means to releasably hold said valves in open position, and automatic means to successively release the last-named means and permit the valves to close after intervals of time have elapsed.

5. A washing machine, comprising in combination, a casing having a washing compartment, sprinklers located in said compartment, means to deliver washing fluid to said sprinkler, means to deliver rinsing fluid to said compartment, a separate valve to control each of said means, manually operable means to simultaneously open both said valves, means automatically operable at a predetermined time after the opening of said valves to close the washing fluid valve and later at a predetermined time after the closing of the last named valve to close the other valve.

6. In a washing machine, a washing compartment, means to deliver fluid therein, a self closing valve associated with said means, manually operable means to open said valve, a latch to hold said valve in open position, a pump to supply said means, a motor to drive said pump at relatively high speed, a rotatable element driven from the motor at comparatively slow speed, and a device on said element to automatically trip said latch and permit the valve to close at a predetermined time after its opening.

7. In a washing machine, a washing compartment, means to deliver fluid therein, a self closing valve associated with said means, manually operable means to open said valve, a latch to hold said valve in open position, a pump to supply said means, a motor to drive said pump at relatively high speed, a rotatable element driven from the motor at comparatively slow speed, and a device on said element to automatically trip said latch, a self opening clutch through which said element is driven from the motor, and means operable by the opening of said valve to close the clutch, said means being releasable simultaneously with the tripping of said latch.

8. A washing machine comprising in combination, a washing compartment, separate means for delivering fluids to said compartment, valves for controlling the flow of the fluids, means for simultaneously opening said valves, and motor operated means for closing said valves successively.

9. In a washing machine provided with a washing compartment and separate fluid delivery means extending within said compartment, control valves for controlling the flow of fluid to said compartment through said fluid delivery means, means for simultaneously opening said valves to permit the flow of fluid through said fluid delivery means, and means for automatically operating said valves in sequence to close the same.

10. In a washing machine provided with a washing compartment and separate fluid delivery means extending within said compartment, control valves for controlling the flow of fluid to said compartment through said fluid delivery means, means for simultaneously opening said valves, and means comprising a motor for forcing fluid through said fluid delivery means and actuating said valves to close the same.

11. A washing machine, comprising in combination, a casing having a compartment with an opening therein through which the articles to be washed are passed, a dispenser to deliver soap or the like to the washing compartment, a cover arranged to open and close the opening of the casing, and means operable upon the closing movement of said cover to actuate said dispenser to deliver to the washing compartment a measured quantity of soap or the like.

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