Feb. 19, 1952 E. W. VARS 2,586,398

SPRAY-TYPE DISH-WASHING MACHINE HAVING A CIRCULATING PUMP AND PLURAL ROTATABLE STRAINER MEANS SELECTIVELY COOPERABLE THEREWITH

Filed May 2, 1944

6 Sheets-Sheet 1

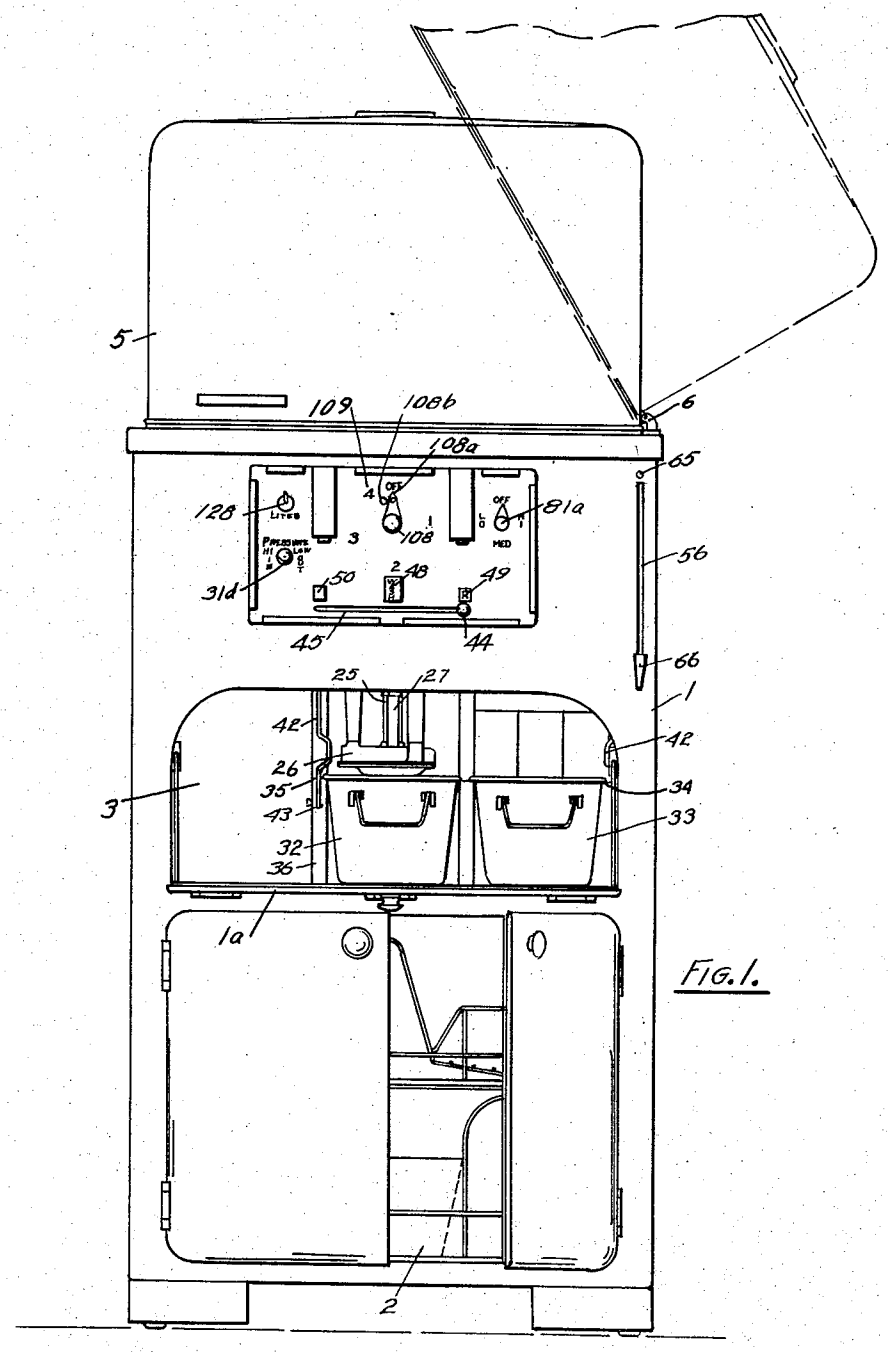


FIG. 1.

INVENTOR

Ethan W. Vars

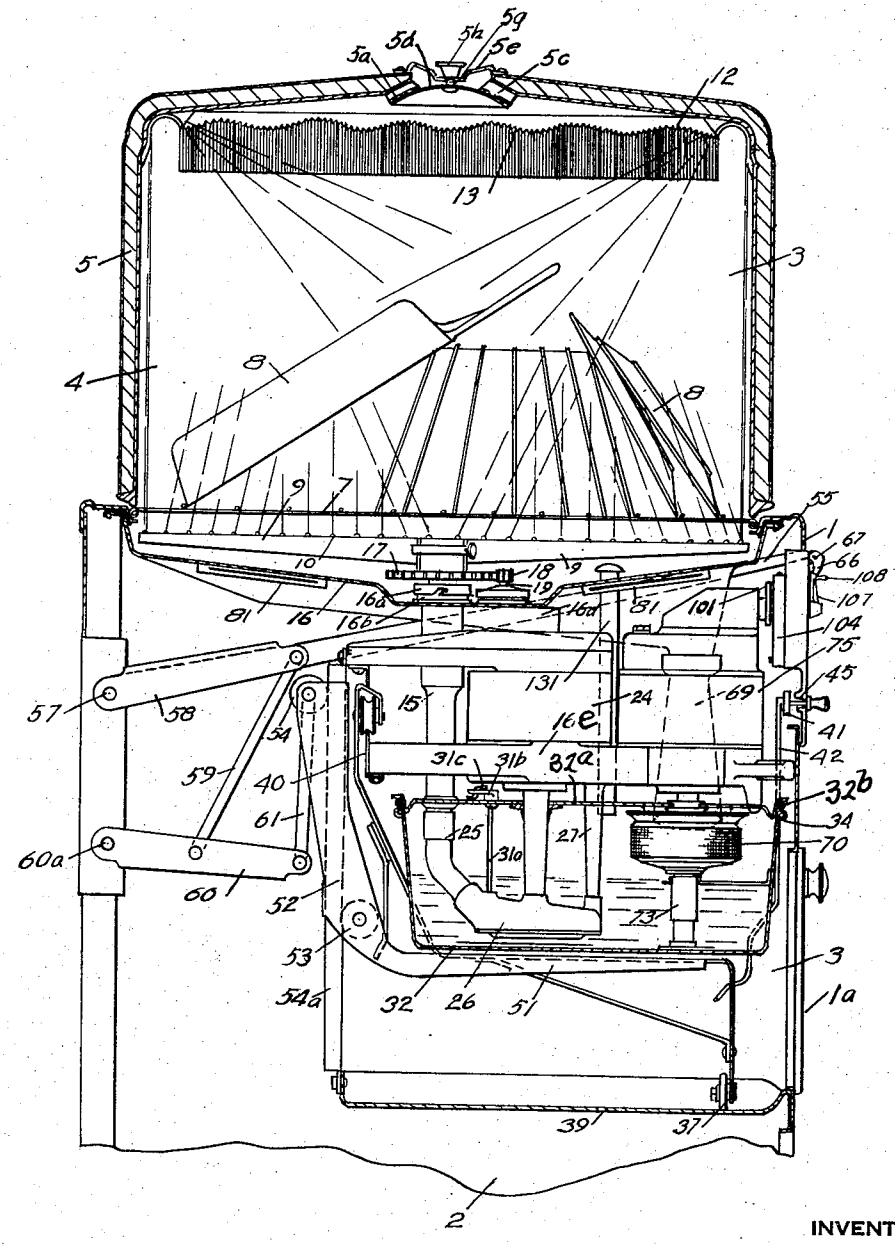
Feb. 19, 1952 E. W. VARS 2,586,398

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FIG. 2.



INVENTOR

Ethan W. Vars

Feb. 19, 1952 E. W. VARS 2,586,398

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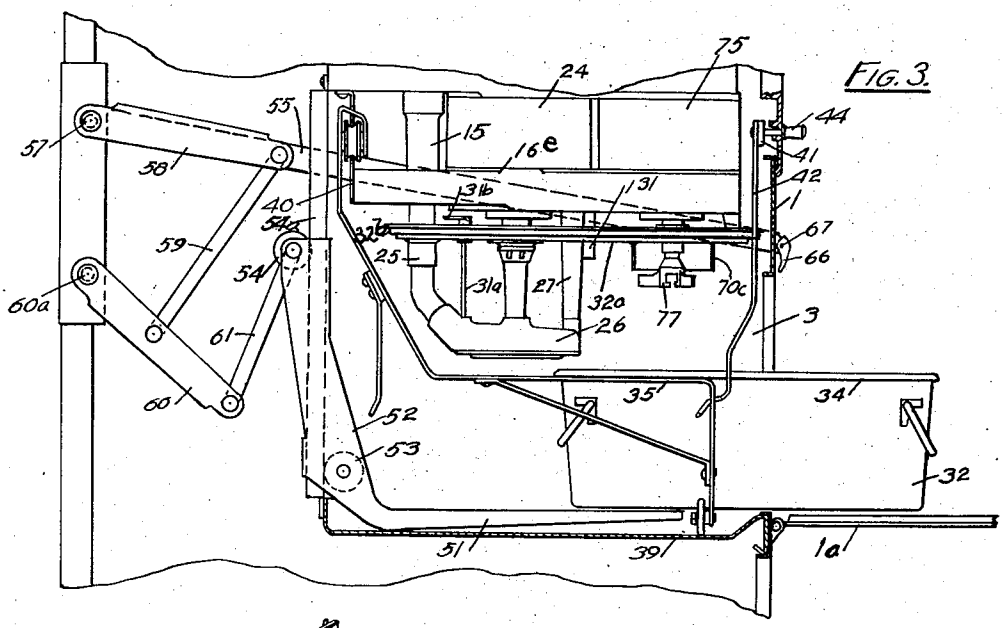


FIG. 3.

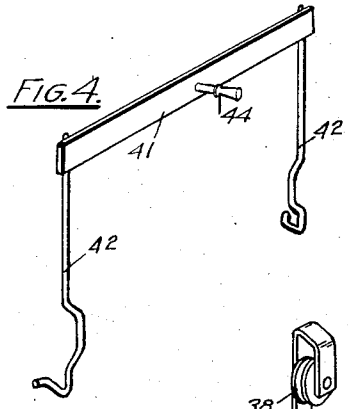


FIG. 4.

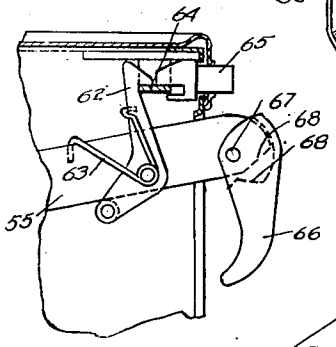


FIG. 3a.

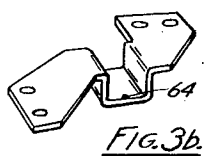


FIG. 3b.

FIG. 5.

INVENTOR

Ethan W. Vars

Feb. 19, 1952 E. W. VARS 2,586,398

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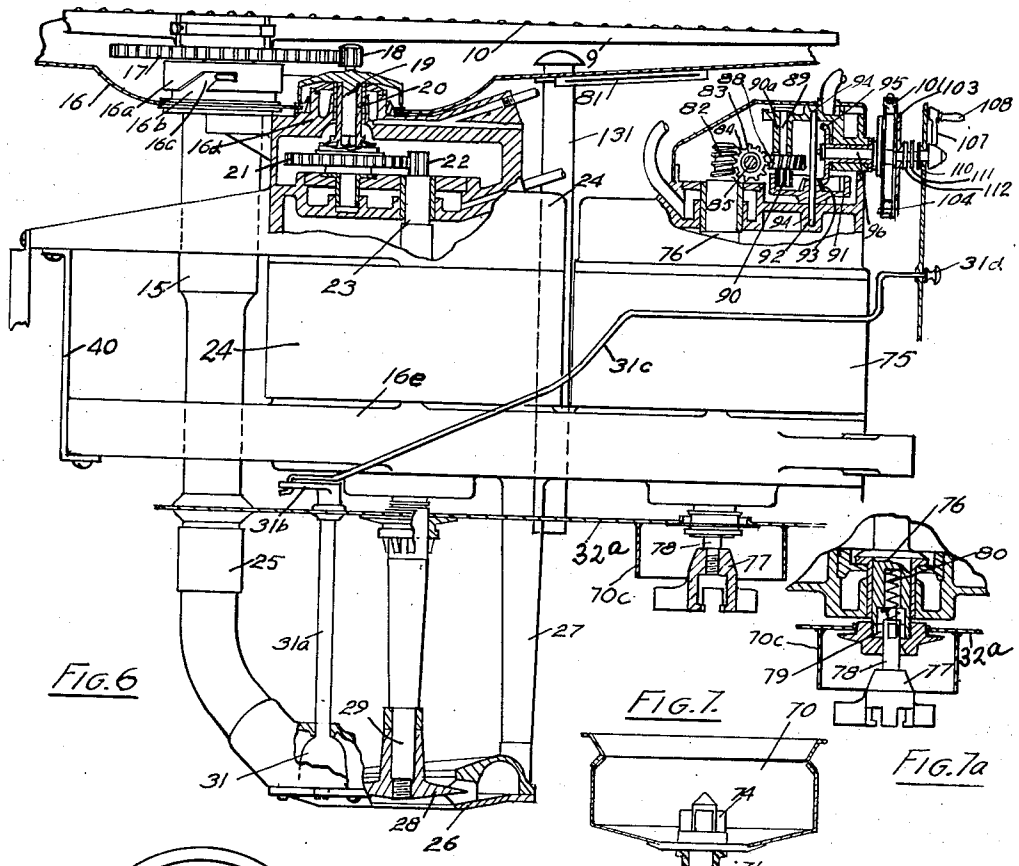


FIG. 6

FIG. 7.

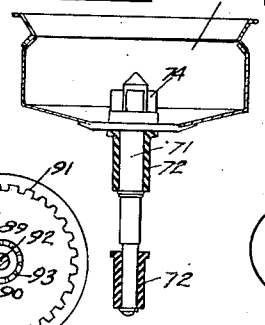


FIG. 7a

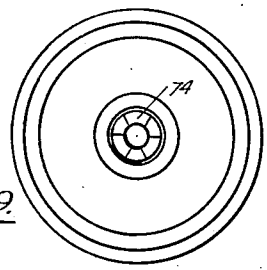


FIG. 9.

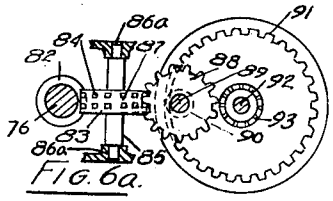


FIG. 6a.

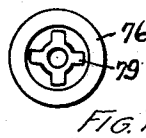


FIG. 7b.

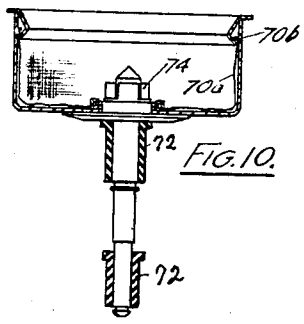


FIG. 10.

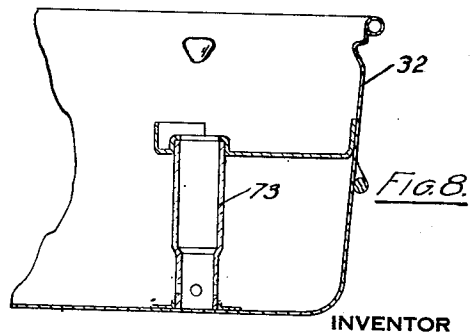


FIG. 8.

INVENTOR

Ethan W. Vars

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SPRAY-TYPE DISH-WASHING MACHINE HAVING A CIRCULATING PUMP AND PLURAL ROTATABLE STRAINER MEANS SELECTIVELY COOPERABLE THEREWITH

Filed May 2, 1944

6 Sheets-Sheet 5

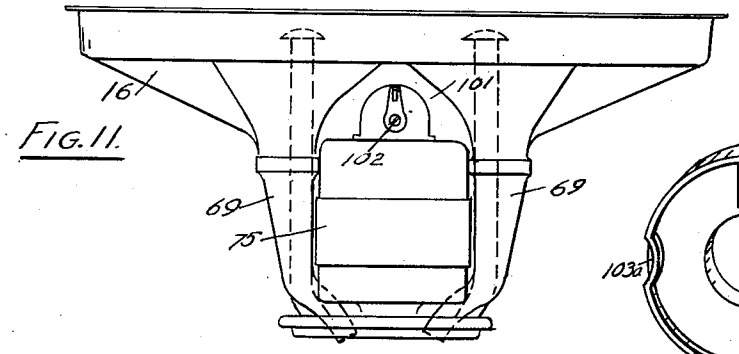


FIG. 11.

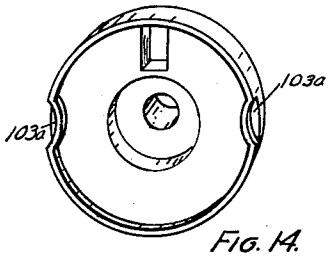


FIG. 14.

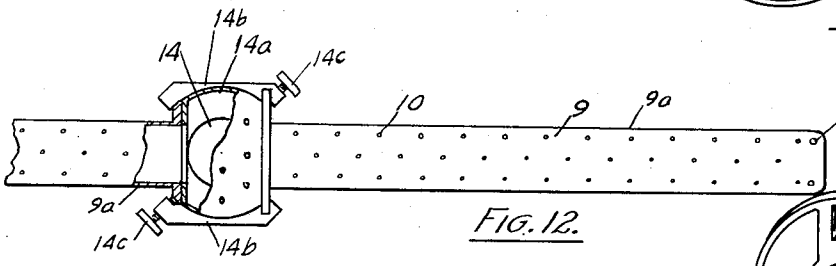


FIG. 12.

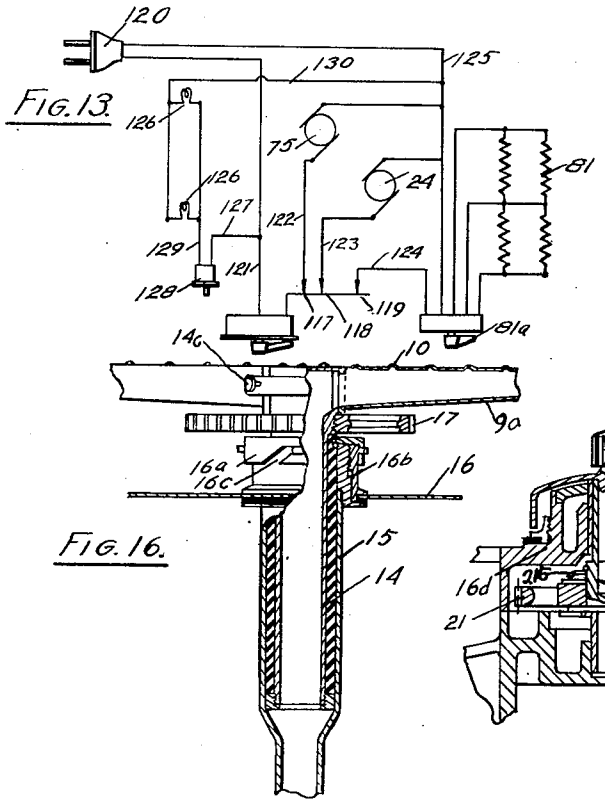


FIG. 13.

FIG. 16.

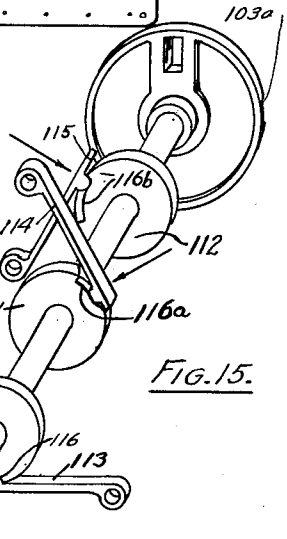


FIG. 15.

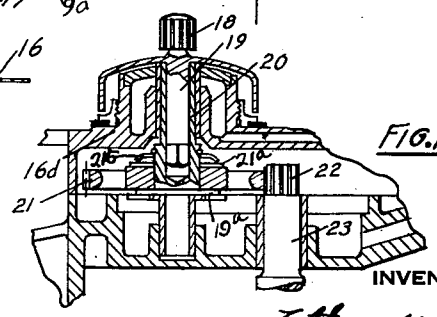


FIG. 16a

INVENTOR

Ethan W. Vars

Feb. 19, 1952 E. W. VARS 2,586,398

SPRAY-TYPE DISH-WASHING MACHINE HAVING A CIRCULATING PUMP AND PLURAL ROTATABLE STRAINER MEANS SELECTIVELY COOPERABLE THEREWITH

Filed May 2, 1944 6 Sheets-Sheet 6

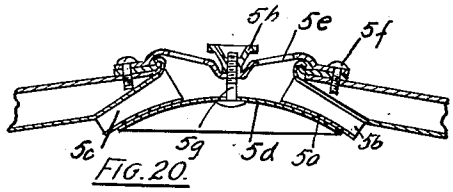


FIG. 20.

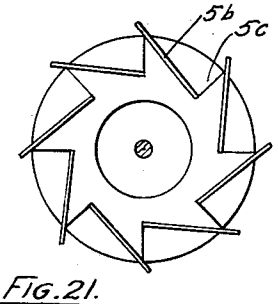


FIG. 21.

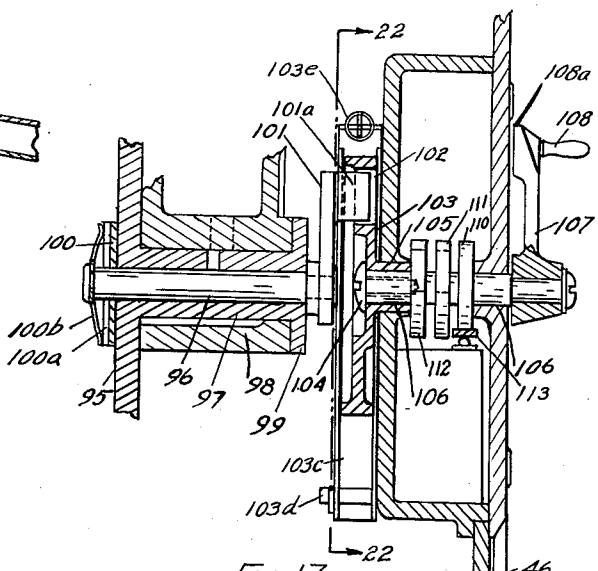


FIG. 17.

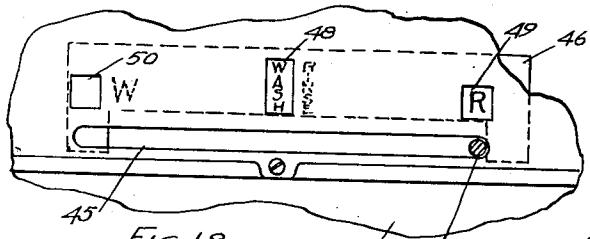


FIG. 18.

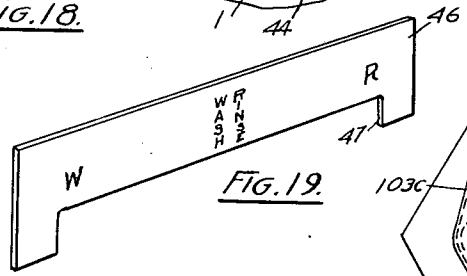
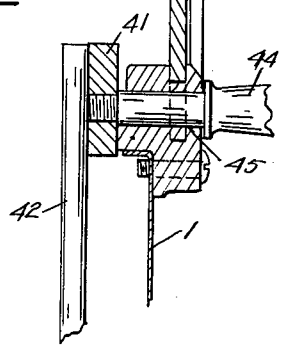


FIG. 19.



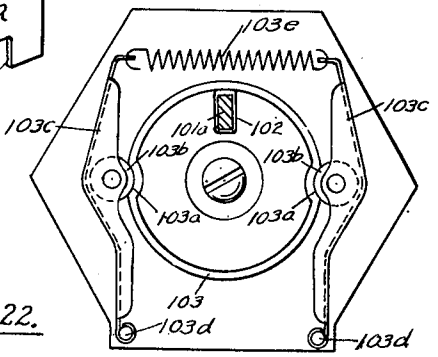


FIG. 22.

INVENTOR

Ethan W. Vars

Patented Feb. 19, 1952

2,586,398

UNITED STATES PATENT OFFICE

2,586,398

SPRAY-TYPE DISH-WASHING MACHINE HAVING A CIRCULATING PUMP AND PLURAL ROTATABLE STRAINER MEANS SELECTIVELY COOPERABLE THEREWITH

Ethan W. Vars, Bellefonte, Pa.

Application May 2, 1944, Serial No. 533,736

12 Claims. (Cl. 134—58)

1

The present invention is designed for washing dishes.

In carrying out the invention, the dishes are placed in the washing compartment, and may be set in position on a rack therein. Sprays of water rotatably applied, strike the dishes from all angles and wash them. The washing water is supplied by means of a pump. The wash water supplying the pump is supplied from a pan which, when the pump is to be operated, is elevated into position so as to immerse the pump.

After the water leaves the dishes, it is drained back to the pan or receptacle carrying the supply of wash water. Preferably the water is heated as it passes over this drain so that as it is recirculated, the water may be maintained at a high temperature.

As the water drains back to the receptacle, it is received in a rotating strainer. The centrifugal action of the strainer forces the water through the straining mesh but retains the particles of solids that may be in the wash water. By reason of this high straining pressure, it is possible to maintain the circulation even though there is quite an accumulation of solids.

The strainer is carried by the pan itself and is moved into driving position as the pan is elevated. As soon as the pan is lowered after the completion of the operation, the strainer is released from the driving mechanism and can be readily removed so as to empty the solids and the pan as removed is free from the solids collected in the strainer.

In order that the dishes may be rinsed, a second pan or receptacle is supplied which is adapted to be brought into position under the pump and elevated so as to immerse the pump in the rinsing water. This rinse water is circulated as long as necessary to completely rinse the dishes and the water is heated as it drains back to the pan so that the rinse water may have a high degree of temperature.

Means are provided for shifting the pans and for elevating them and holding them in operative position. Control mechanism is supplied for the driving motor and timing mechanism is provided so that the circulation may be made long or short, depending on the condition of the dishes.

Features and details of the invention will appear from the specification and claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings as follows:

Fig. 1 shows a front elevation of the washer;

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Fig. 2 a sectional view through the working portion of the washer;

Fig. 3 a sectional view showing the mechanism for elevating the pan or receptacle;

Fig. 3*a* a detail of a lifting lever;

Fig. 3*b* a perspective view of a latch plate;

Fig. 4 a detail of a shifter for shifting pans;

Fig. 5 a perspective view of a shifting rack;

Fig. 6 a view partly in section showing the rotating spray driving mechanism, the pump and timing mechansm;

Fig. 6*a* a plan view of timer gearing;

Fig. 7 a detail view of a strainer;

Fig. 7*a* a sectional view of the mechanism for driving the strainer;

Fig. 7*b* a plan view of a splined strainer connection with a rotor head;

Fig. 8 a sectional view of the pan support for the strainer;

Fig. 9 a plan view of the strainer;

Fig. 10 a sectional view of an alternate strainer;

Fig. 11 an elevation of the draining mechanism;

Fig. 12 a plan view of the rotating nozzle;

Fig. 13 a wiring diagram;

Fig. 14 a perspective view of a time setting disc;

Fig. 15 a switch controlling shaft for the time setting mechanism;

Fig. 16 and Fig. 16*a* sectional views showing the driving mechanism for the rotating nozzle;

Fig. 17 a sectional view of the timing mechanism;

Fig. 18 an enlarged elevation showing the pan shifter and indicators;

Fig. 19 an indicator plate for the shifter;

Fig. 20 a sectional view of the vent in the cover of the washing compartment;

Fig. 21 a plan view of a part of the ventilating structure; and

Fig. 22 a section through Fig. 17 in the direction of the arrows showing cam and retaining mechanism.

1 marks a case. The case is provided with a storage compartment 2, a compartment 3 for the spraying mechanism, and a washing compartment 4. The washing compartment has a cover 5 which is hinged at 6. The cover is provided with a vent. This has the plate 5*a* with vanes 5*b* forming a vent passage 5*c*. The plate 5*a* is clamped to the underside of the cover by a clamping plate 5*d*. Cross arms 5*e* are secured to the top by screws 5*f*. A clamping bolt 5*g* passes through the clamping plate 5*d* and cross arms and is secured by a nut 5*h*.

The washing compartment is supplied with a wire rack 7 with relation to which the dishes 8 may be arranged so as to be in position to receive the washing sprays. A number of racks may be supplied if desired so that the dishes on the one may be washed while those on the other are being rinsed.

A rotating spray nozzle 9 has jet openings 10. These jet openings are arranged at different angles so as to assure a direction of spray that will strike all portions of the dishes. An enlarged jet 11 is arranged at each end of the nozzle 9, this jet being thrown to the top of the cover and striking a deflecting plate 12. The deflecting plate surrounds the cover and has variations 13 so that the spray from the deflector plate is given different directions as the jet from the opening 11 rotates.

The rotating nozzle is mounted on a hollow spindle 14. The nozzle has separate arms 9*a* (Figs. 12 and 16). Each arm terminates in a plate shaped base. These bases are clamped against a head 14*a* on the spindle 14 by bars 14*b* which extend from base to base and are set up by screws 14*c*. The spindle 14 extends into bearings in a bearing sleeve or tube 15. A drain plate 16 is arranged under the washing compartment and the bearing sleeve extends through this. A gear 17 is fixed on the spindle 14 and a bearing cap 16*a* is mounted on a support 16*b* extending from the plate 16. The cap is connected with the support through a bayonet joint 16*c* (Fig. 6) so that the nozzle assembly can be readily removed from the machine. The gear 17 fixed on the spindle 14 meshes with a gear 18 (see Fig. 6). The gear 18 is fixed on a shaft 19 carried in a bearing 20 supported by the drainage plate and an extension of the frame 16*d*. A gear 21 is connected to the shaft 19 through a friction clutch. The shaft 19 has a shoulder 19*a* (Fig. 16*a*) and the opposite face of the gear 21 is engaged by plate 21*a* pressed into engagement by a spring 21*b*, thus providing the friction for driving the shaft. The gear 21 meshes with a gear 22. The gear 22 is fixed on the rotor shaft 23 of a motor 24, the motor being mounted on a frame 16*e* which frame is carried by the case.

The tube 15 is extended by a tube 25 to a centrifugal pump 26 carried by supports 27 extending from the frame. A pump rotor 28 is carried by a shaft 29 connected to the rotor shaft 23 of the motor 24.

A valve 31 is arranged in the discharge of the pump and is controlled by a shaft 31*a* and a lever arm 31*b*. A control rod 31*c* extending from the knob 31*d* at the front of the case and connected with lever arm 31*b* provides means for the convenient control of the valve from the control panel of the machine. This valve permits the control of the flow.

The water for washing is provided in receptacles 32 and 33, the receptacle 32 carrying wash water, the receptacle 33 rinse water. These receptacles are introduced through a door 1*a* on the case. These receptacles have flanges 34 around the top and these flanges form a support for the pan being slid onto and supported by bars 35 forming a part of a pan rack 36 (see Fig. 5). The pan rack has rollers 37 and 38, the rollers 37 operating on a bottom plate 39 and the rollers 38 operating on a track 40 carried by the frame.

A shift plate 41 has rods 42 extending from the shift plate and extending into openings 43 in the bars 35. A shift handle 44 is arranged on the plate 41 and extends through a slot 45 in the case. By manipulating the shifting handle the pan rack may be shifted so as to bring either the washing pan or the rinsing pan under the pump.

An indicator is provided for indicating the location of the pan. An indicating plate 46 is slidingly mounted on the case and has a shoulder 47 in the path of the handle 44. This plate has the legends "Wash," "Rinse," "W" and "R," and these are brought to windows 48, 49 and 50 respectively indicating the pan locations.

A pan lifting arm 51 has an upright 52, and this upright is provided with rollers 53 and 54 operating on a vertical track 54*a*, the track being secured to a cross member of the frame. The arm 51 is sufficiently broad to give the proper support to the pans. When the arm 51 is in its lower position, the pan rack carries the pan over it as they are moved from position to position. A lever 55 extends through a slot 56 in the case and is fixed on a shaft 57 rotatably mounted in the frame. An arm 58 is fixed on the shaft 57 and swings with it. A link 59 connects the end of the arm 58 with an arm 60 pivoted at 60*a* on the frame. A link 61 connects the arm 60 with the upright 52 so that as the lever 55 is moved up, it lifts the arm 51 and the pan that may be immediately in place over it, elevating the pan into position to submerge the pump and elevating the strainer into engagement with the driving mechanism.

A latch 62 is pivoted on the lever 55 and has a spring 63 which urges the latch toward latching position. The latch engages a plate 64 which is secured on the frame. A push pin 65 is provided for detaching the latch. When the lever is in its upper position, the latch automatically locks and holds the pan in the upper position and when the lever is to be lowered, the push pin is operated permitting the return of the lever.

In order to reduce the extension of the lever, a handle 66 is pivoted at 67 on the end of the lever, the handle and lever having interlocking shoulders 68 limiting the swinging movement of the handle. When the handle is not in operation, it drops down out of the way.

The water as it drains back from the washing compartment is carried by tubes 69 (best shown in Fig. 11) into a strainer 70. The strainer is mounted on a spindle 71 which is carried by bearings 72. The bearings are slidably mounted in a sleeve 73 mounted in the pan so that the strainer with its bearings may be readily withdrawn from the sleeve for cleaning purposes.

Clutch jaws 74 are arranged on the upper end of the spindle 71. A motor 75 has a rotor 76 (see Fig. 7*a*) which is connected with a clutch member 77 adapted to lock with the detent 74. The connection between the clutch member and the rotor is through a shaft 78 which is splined in a head 79 and the shaft 78 is yieldingly held in the lower position by a spring 80. As the strainer is elevated and the clutch member 74 reaches the member 77, the spring yields until the clutch elements come into register, and then the engagement is completed. After the parts are elevated, the operator sets the switch mechanism for the automatic operation. At the completion of the operation the strainer is stopped, the pan is retracted, and this releases the strainer.

An alternative form of strainer is shown in Fig. 10. Here a bag 70*a* is arranged in the strainer having a wire ring 70*b* at its top which is secured in the upper periphery of the strainer. This bag is removable and thus facilitates cleaning. The edge of the bag is gripped between the ring 70*b*

and the wall of the strainer and can be thus readily removed for cleaning.

In order to maintain the temperature of the water, electric heaters **81** are arranged under the drain plate **16** and are connected through the wiring with a source of current.

The electric control for controlling the motors and heating element is indicated in the wiring diagram (Fig. 13). The mechanism is as follows (see Fig. 6*a*):

A worm **82** is fixed on the upper end of the rotor shaft **76** (see Figs. 6 and 6*a*). The worm drives a worm gear **83** having worm teeth **84**. It is mounted on a shaft **85** and the shaft is journalled in bearings **86***a*. The worm gear is also grooved at **87** with the pitch of a worm, this groove extending through the teeth. This worm operates on a worm gear **88**. The worm gear **88** is fixed on a shaft **89** journalled in bearings **90***a* on the frame.

A gear **90** is fixed on the shaft **89** and meshes an internal gear **91**. The gear **91** is fixed on the shaft **92**. This shaft is mounted in bearings **94**. A bevel gear **93** is fixed on the shaft **92** and meshes a bevel gear **95**. The gear **95** is journalled on a shaft **96** and drives the shaft through a friction drive **100** (see Fig. 17), this friction drive comprising a drive plate **100***a* fixed to shaft **96**. A spring washer **100***b* presses the plate **100***a* against the face of gear **95**. Gear **95** has an extending hub **97** journalled in bearing **98**, the parts of which may be separated to permit of the assembly. The hub extension **97** has a flange **99** which retains the gear in the bearing. An arm **101** is fixed to the end of shaft **96**. This arm has a projection **101***a* that extends into a slot **102** in a disc **103**. Disc **103** is fixed to shaft **105** by screw **104**. The shaft **105** extends through journals **106** and an arm **107** is fixed on the outer end of this shaft. This arm is provided with a handle **108** and a pointer **108***a* which is adapted to swing over dial **109**. The arm has a neutral stop position against a bar **108***b* (see Fig. 1).

The shaft **105** has three switch throwing cams **110**, **111** and **112** (see Figs. 15 and 17), operating the switch arms **113**, **114** and **115** respectively, and these arms control switches **117**, **118** and **119**. Each of the cams has a notch **116**, **116***a*, **116***b*. Notch **116***b* is longer than notch **116***a* which is longer than the simple notch **116** so that, as shaft **105** returns to neutral position, switch **119** will first be opened, then switch **118** and finally switch **117**. When the shaft is in neutral position with the arm **107** against the pin **108***b*, the switches are thrown in contact as the cam arms move out of the notch. The contacts are so arranged on the several switch arms to first close the switch through cam **110**, then the switches through cams **111** and **112** respectively in sequence.

A plug **120** connects with a source of electrical supply. A wire **121** extends to the switches **117**, **118** and **119**. A wire **122** runs from the switch **117** to the motor **75**, a wire **123** from the switch **118** to the motor **24**, and a wire **124** from the switch **119** through a switch **81***a* to the heater **81**. The return wires from the heater, motors **24** and **75**, return to the wire **125** which leads back to the plug. Lights **126** are connected with the line **121** by a wire **127** which extends to a switch **128** and from this switch to the lights by a wire **129**. A wire **130** leads from the lights to the return wire **125**.

With this arrangement, it will be seen that as the shaft **105** is thrown by means of the arm **107**,

the pointer **108***a* may be carried over the dial giving the period of operation that may be desired. The farther the shaft is swung, that is, the farther the pointer is carried over the dial, the farther the notches are carried along the switches arms. The shaft **105** is continuously urged to rotate in a return direction by the friction drive **100** so that immediately the arm **107** is released, this return movement commences.

As before stated, as the arm is swung to set the parts in motion, the strainer is first started, the pump follows, then the heater, and on the return movement the heater is first cut off, the pump stopped, and then the strainer. This assures the cutting off of the heater before the flow of water ceases and it assures the operation of the strainer until the last water delivered to the washer has passed through the strainer.

In order to yieldingly maintain a neutral position, the disc **103** is provided with depressions **103***a*. Rollers **103***b* are adapted to enter the depressions when the shaft reaches the neutral position. The rollers are journalled in arms **103***c*. The arms are pivotally mounted on pins **103***d* and are yieldingly drawn together by a spring **103***e*.

The general operation of the washer is as follows: The dishes are placed on the rack spaced from the sides of the cover so as to permit the upflow from the outer or larger jets of the rotating nozzle. The cover is closed. Pans **32** and **33** are introduced through the door into proper position on the rack. The arm **51** is lifted, carrying the pan over it, by means of the lever **55** and when brought to its elevated position, the lever is latched by a latch **62** (Fig. 3*a*) so as to hold it during the desired washing operation. This upward movement of the washing pan carries the strainer into upper position and engages the driving clutch **77** so that the strainer is ready to operate. The arm **107** is moved to a position giving the desired time of washing. The strainer begins to spin, the water begins to flow into the washer from the pans and the heater begins to heat so as to maintain the heat of the water and, if desired, to increase the temperature, the water in the pans being ordinarily initially hot.

As the rotating nozzles begin to operate, jets of water are directed against the dishes from all directions. As the large jets extending around the edge just inside the cover progress along the deflector plate **12**, the fluted surfaces of the deflector plate give directions to the deflected jet in various directions as the nozzles proceed with their rotation. This is important in that there is a jet action with impact at all points of the dishes so as to assure perfect cleaning. The steam or air which is expanded in the cover is vented so that there is no tendency for the cover to open.

After the proper period of washing, the lever **55** is unlatched and the carriage or rack is moved sidewise by means of the handle or pin **44** which is slid along the slot to bring the rinsing pan **33** into position under the pump and over the arm **51**. The arm **51** is then lifted, lifting the pan **33** into position with relation to the pump and rinsing water is run through the apparatus in the same manner as the washing water.

The time for the rinsing may be controlled through the arm **107** at any length of time desired.

At the completion of the rinsing, the lever **55**

is unlatched and the rinsing pan lowered to the lower position, the door 1a is opened and the pans removed. By placing the strainer in the wash pan, the strainer is removed with the wash pan or receptacle so as to be removed from the case with the receptacle and being removable, the strainer may be readily lifted for empyting and cleaning. The cover is then opened and the dishes removed.

The desired temperature of water, it will be noted, may be controlled by the length of operation, the heating elements being sufficient to increase the water temperature as the flow continues. Thus both as to washing and rinsing, a high degree of temperature may be attained in the water.

In the operation of the apparatus, the return flow of liquid to the enclosed receptacle has a tendency to create sufficient pressure in the receptacle to discharge the liquid so agitated through any openings from the receptacle. In order to obviate this, vent tubes 131 are provided which connect the washing and rinsing compartment 4 with the spray mechanism compartment 3 (see Figs. 2 and 6; also shown in dotted lines, Fig. 11).

The action of the strainer on the material as the material is deposited to the strainer tends to throw the material upwardly and unless restrained, may pass over the top of the strainer to the receptacle. To avoid this a baffle ring 70c passes inside the strainer when the strainer is elevated.

What I claim as new is:

1. In a dish washer, the combination of a pump, a removable water receptacle for retaining water and adapted to be brought into pumping relation with said pump, a dish support, a spray device for receiving water from the pump, means for returning the water to said receptacle, a rotatable strainer removably mounted on said receptacle disposed in position for the water to pass therethrough in its return to said receptacle, means carried by the washer for driving said strainer, and devices respectively connected to the strainer and driving means adapted to be operatively connected to one another when the receptacle is moved in pumping relation with the pump.

2. In a dish washer, the combination of a pump, a water receptacle for retaining water and adapted to be brought into pumping relation with said pump, a dish support, a spray device for receiving water from said pump, means for returning the water to said receptacle, a rotatable strainer removably mounted on said receptacle disposed in position for the water to pass therethrough in its return to said receptacle, means carried by the washer for driving said strainer, and devices respectively connected to the strainer and driving means adapted to be operatively connected to one another when the receptacle is moved in pumping relation with the pump, said connecting means comprising a clutch having engaging parts, the parts being yieldable to permit the setting of said clutch after contact of the engaging parts.

3. In a dish washer having a washing chamber, the combination of a pump for forcing a flow of liquid into dish washing relation, a motor driving said pump, a rotatable strainer for receiving the liquid from the washing operation, a second motor driving said strainer, and controls for the motors throwing the motors into and out of action in sequence to first start said strainer and then said pump.

4. In a dish washer having a washing chamber, the combination of a pump for forcing a flow of liquid into dish washing relation, a motor driving said pump, a rotatable strainer for receiving the liquid from the washing operation, a second motor driving the strainer, controls for the motors throwing the motors into and out of action in sequence to first start said strainer and then said pump, and means varying the time during which the motors operate.

5. In a dish washer having a washing chamber, the combination of a pump for forcing a flow of liquid into dish washing relation, a motor driving said pump, a rotatable strainer for receiving the liquid from the washing operation, a heater for operating on the flowing liquid before said liquid flows into dish washing relation, a second motor driving said strainer, controls for said motors and said heater throwing said motors and said heater into and out of action in sequence to first start said strainer, then said pump, and then the heater, and control means for varying the time period in which said motors and said heater are operated.

6. In a dish washer having a washing chamber, the combination of a pump for forcing a flow of liquid into dish washing relation, a motor driving said pump, a rotatable strainer for receiving the liquid from the washing operation, a heater for operating on the flowing liquid before said liquid flows into dish washing relation, a second motor driving said strainer, and controls for said motors and said heater throwing said motors and said heater into and out of action in sequence to first start said strainer, then said pump, and then said heater, and to cut off said motors and said heater in reverse sequence.

7. In a dish washer, the combination of a pump, a pair of removable water receptacles, a carriage on which said receptacles are mounted adapted to place either receptacle in register with said pump, means for lifting said receptacle in register with said pump into pumping relation with said pump, a spray device for receiving liquid from said pump, a dish support in position to receive spray from said spray device, means for returning liquid from said spray device to said receptacle in register with said pump, a heater in position to heat the flowing liquid, a rotatable strainer mounted in each of said receptacles and removable therewith and positioned to receive the returning liquid, a motor for driving said pump, a second motor for driving that strainer which is positioned to receive the returning liquid, a case enclosing said receptacles, said carriage, said lifting means, said spray device, said dish support, said return means, said heaters, said rotatable strainers, and said motors, and control devices manually operable from without the case controlling the movement of said receptacles, said motors and said heater.

8. A dishwashing machine comprising the combination of a dish support, a rotary nozzle adapted to direct jets of water upon dishes on said support, a pump for forcing water through said nozzle, a pan beneath said support for collecting water draining from said dishes, said pan having a discharge opening, a removable receptacle for water, means for supporting said receptacle in alignment with the intake of said pump and said discharge opening, and means for lifting said receptacle to bring the water therein about the pump intake, whereby water in said

receptacle is forced by the pump through the rotary nozzle upon the dishes and drained therefrom through said pan back to the receptacle.

9. A dishwashing machine comprising the combination of a dish support, a rotary nozzle adapted to direct jets of water upon dishes on said support, a pump for forcing water through said nozzle, a pan beneath said support for collecting water draining from said dishes, said pan having a discharge opening, a pair of removable receptacles, one being adapted to receive wash water and the other rinse water, means for shifting said receptacles laterally to bring one or the other thereof into alignment with the intake of said pump and said discharge opening to select one of said receptacles for cooperation with the pump, and means for lifting the selected receptacle to bring the water therein about the pump intake, whereby water in said receptacle is forced by the pump through the rotary nozzle upon the dishes and drains therefrom through said pan back to the receptacle.

10. A dishwashing machine comprising the combination of a casing including a horizontal wall forming the bottom of a pump chamber and a horizontal rail, a dish support mounted on said casing, a rotary nozzle adapted to direct jets of water upon dishes on said support, a pump within the pump chamber for forcing water through said nozzle, a pan beneath said support for collecting water draining from said dishes, said pan having a discharge opening, a laterally shiftable receptacle support having a pair of rollers engaging said horizontal wall and another pair of rollers engaging said horizontal rail, a pair of receptacles, one for wash water and the other for rinse water, removably mounted on said receptacle support, means for shifting said receptacle support laterally to select one or the other of said receptacles for cooperation with the intake of said pump and said discharge opening, and means for lifting the selected receptacle to bring the water therein about the pump intake, whereby water in said receptacle is forced by the pump through the rotary nozzle upon the dishes and drains therefrom through said pan back to the receptacle.

11. A dishwashing machine comprising the combination of a casing including a horizontal wall forming the bottom of a pump chamber, a horizontal rail and a vertical rail, a dish support mounted on said casing, a rotary nozzle adapted to direct jets of water upon dishes on said support, a pump within said pump chamber for forcing water through said nozzle, a pan beneath said support for collecting water draining from said dishes, said pan having a discharge opening, a laterally shiftable receptacle support having a pair of rollers engaging said horizontal wall and another pair of rollers engaging said horizontal rail, a pair of receptacles, one for wash water and the other for rinse water, removably mounted on said receptacle support, means for shifting said receptacle support laterally to select one or the other of said receptacles for cooperation with the intake of said pump and said discharge opening, a lifter slidably mounted on said vertical rail and having a lifting arm extending forwardly beneath the bottom of the selected receptacle, and means for raising said lifter to bring the water in the selected receptacle about the pump intake, whereby water in said receptacle is forced by the pump through the rotary nozzle upon the dishes and drains therefrom through said pan back to the receptacle.

12. A dishwashing machine comprising the combination of a casing including a horizontal wall forming the bottom of a pump chamber, a horizontal rail and a vertical rail, a dish support mounted on said casing, a rotary nozzle adapted to direct jets of water upon dishes on said support, a pump within the pump chamber for forcing water through said nozzle, a pan beneath said support for collecting water draining from said dishes, said pan having a discharge opening, a laterally shiftable receptacle support having a pair of rollers engaging said horizontal wall and another pair of rollers engaging said horizontal rail, a pair of receptacles, one for wash water and the other for rinse water, removably mounted upon said receptacle support, means for shifting said receptacle support laterally to select one or the other of said receptacles for cooperation with the intake of said pump and with said discharge opening, a lifter slidably mounted on said vertical rail and having a lifting arm extending forwardly beneath the bottom of the selected receptacle, a lever pivoted in the casing at the rear thereof and extending forwardly through the front of the casing, and linkage connecting said lever with said lifter, whereby lifting the forward end of said lever raises said lifter and lifts the selected receptacle to bring the water therein about the pump intake.

ETHAN W. VARS.

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