

Oct. 18, 1927.

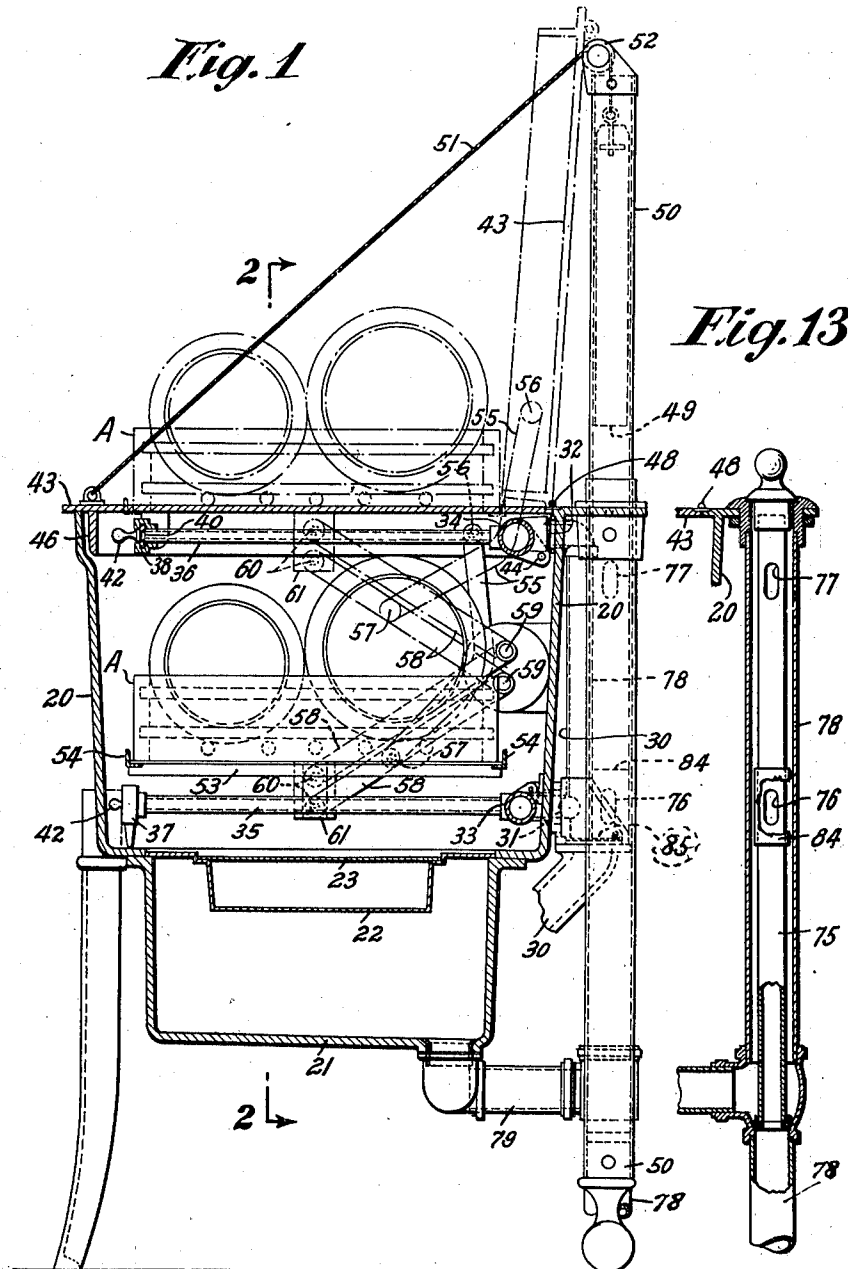
C. A. MURDOCH

1,645,869

WASHING MACHINE

Filed April 8, 1924

5 Sheets-Sheet 1



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5 Sheets-Sheet 2

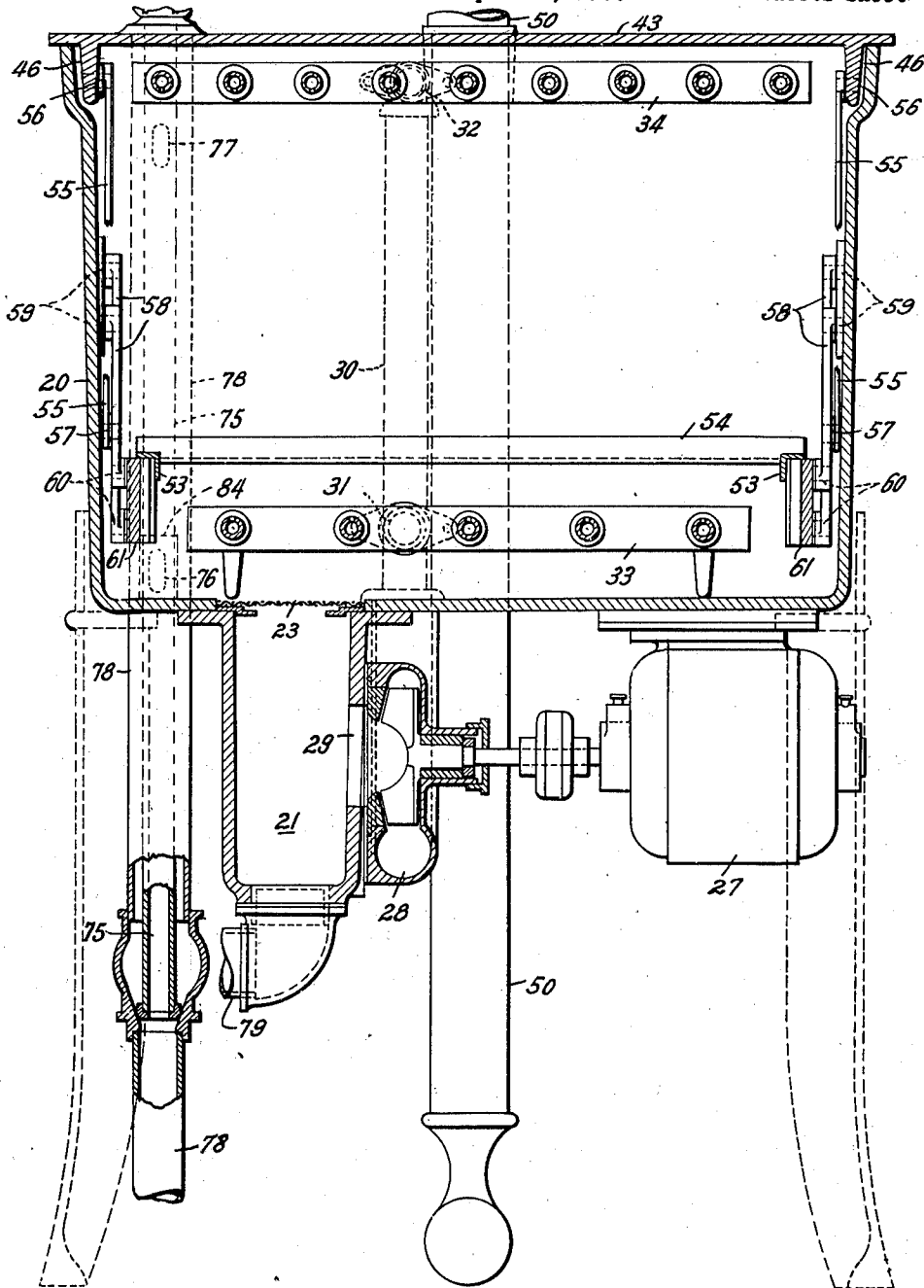


Fig. 2

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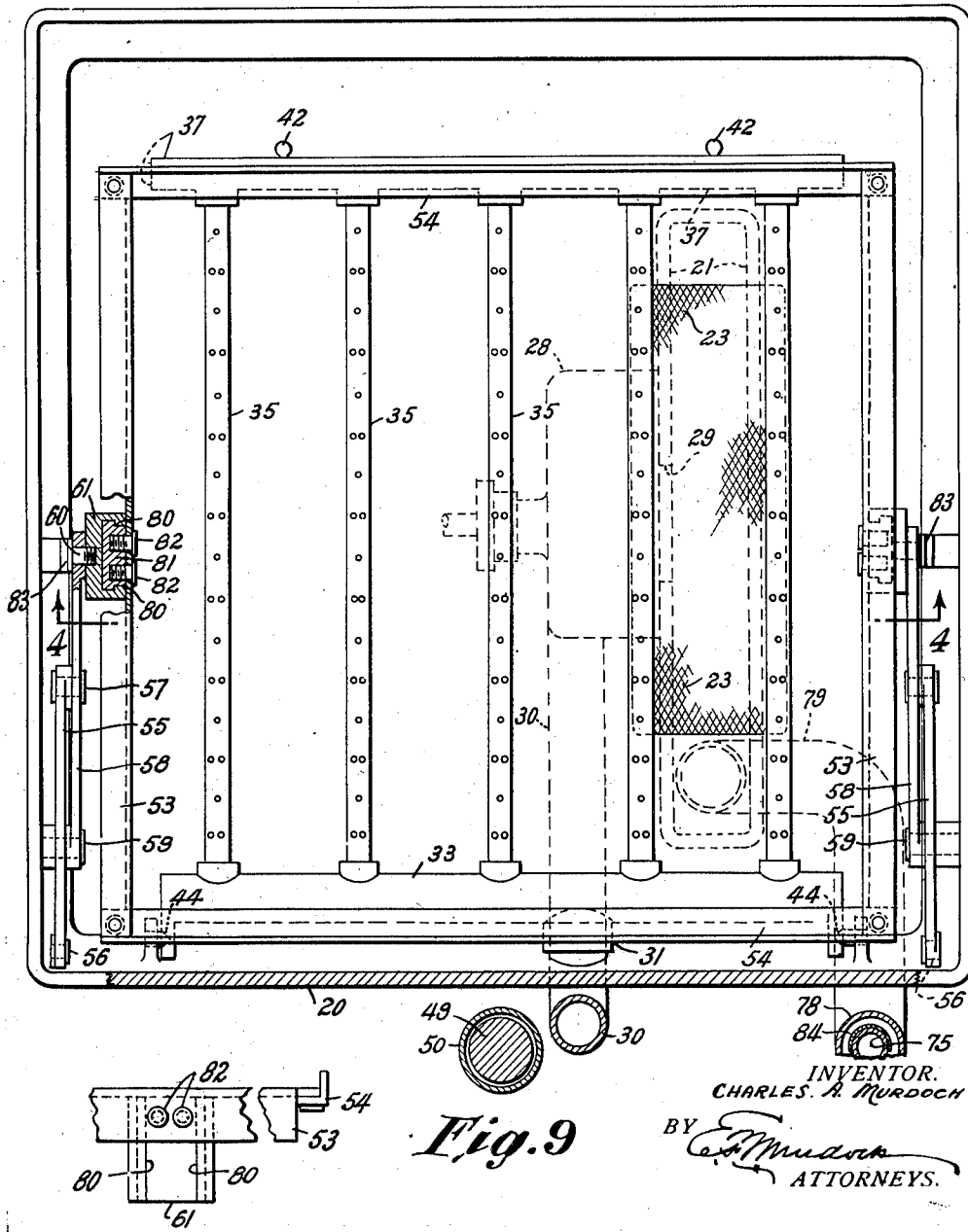
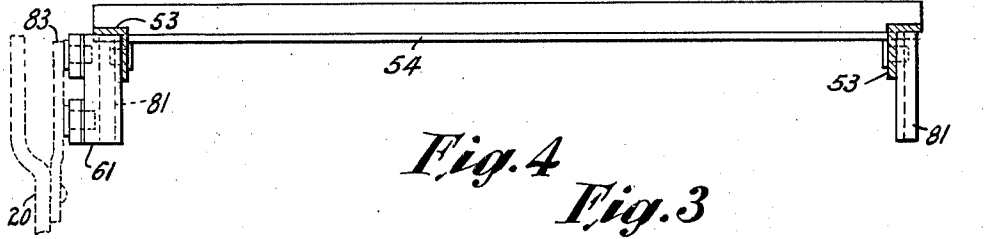
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5 Sheets-Sheet 3



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5 Sheets-Sheet 4

Fig. 6

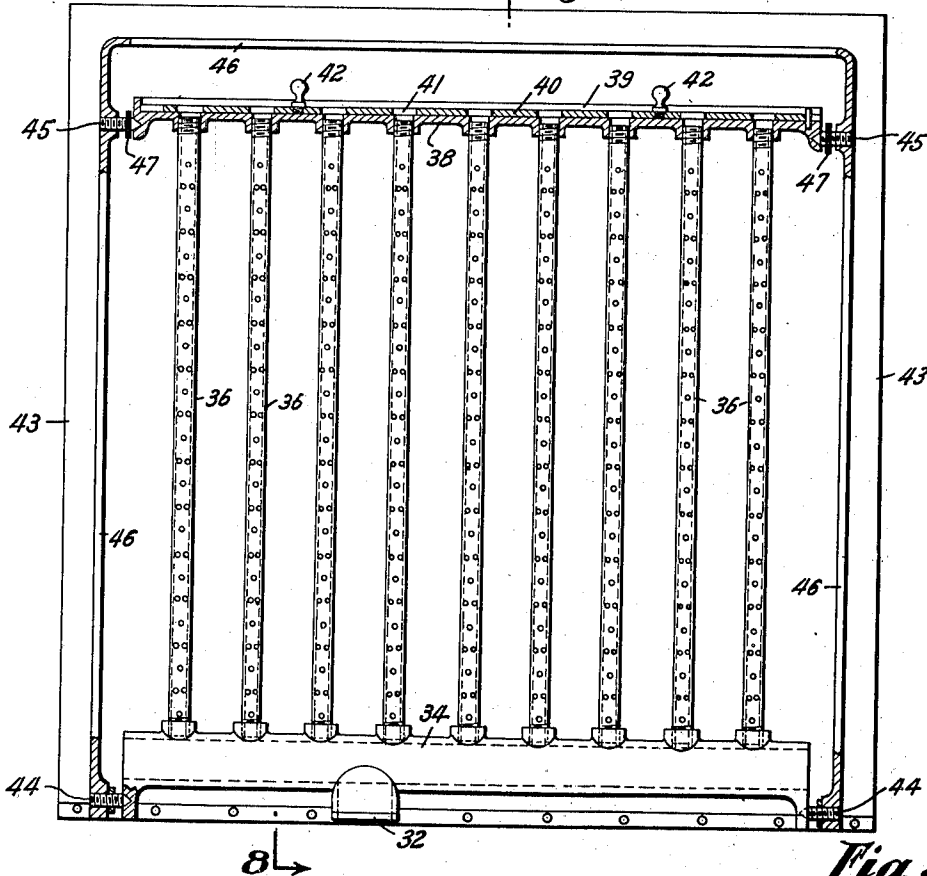
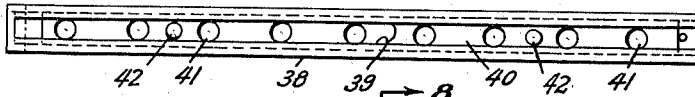


Fig. 5

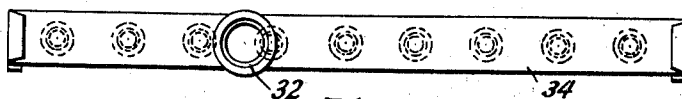


Fig. 7

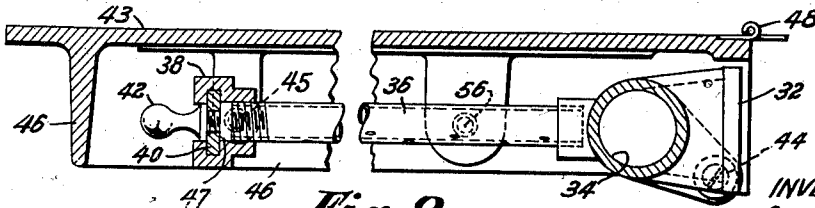


Fig. 8

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WASHING MACHINE

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Fig. 10

Fig. 11

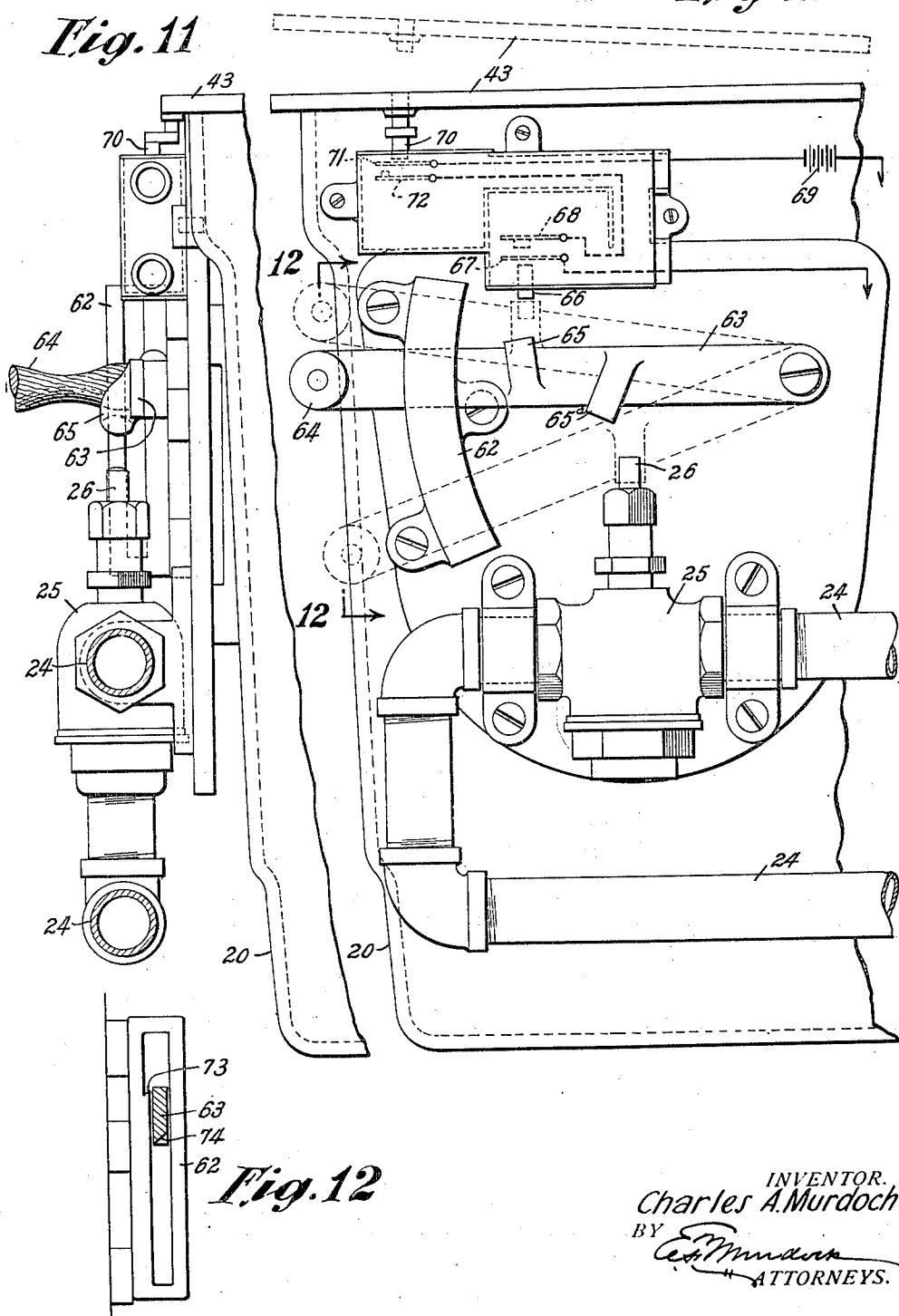


Fig. 12

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UNITED STATES PATENT OFFICE.

CHARLES A. MURDOCH, OF NEW YORK, N. Y.

WASHING MACHINE.

Application filed April 8, 1924. Serial No. 704,905.

Among the principal objects which the present invention has in view are: To provide a machine of the character mentioned arranged to accommodate the manual operations incident to the employment of the machine; to prevent accidental dislodgment of cleansing fluid on the person of the attendant while operating the machine; to readily facilitate the cleansing of the parts of the machine; to facilitate the regulation of the overflow of water in the machine; to conveniently counterbalance the covering washing member; to provide a construction which may be conveniently disassembled for cleansing and other purposes.

Drawings.

Figure 1 is a longitudinal section of a washing machine, constructed and arranged in accordance with the present invention.

Figure 2 is a transverse section on enlarged scale, the section being taken as on the line 2—2 in Figure 1.

Figure 3 is a plan view of the body of the machine the covering member being removed to show the bottom tray.

Figure 4 is a cross section of the tray, the section being taken as on the line 4—4 in Fig. 3.

Figure 5 is a bottom plan view of the cover and spraying grid mounted thereon.

Figure 6 is a front edge view thereof.

Figure 7 is a rear edge view thereof.

Figure 8 is a vertical cross section of the cover and spraying grid connected therewith, the section being taken as on the line 8—8 in Figure 5.

Figure 9 is a detailed view fragmentary in character showing the means for mounting the supporting blocks of the dish rack.

Figure 10 is a side elevation of a fragment of the side of the machine, showing the starting switches and water supply control valve with which the machine is provided, the view being on enlarged scale.

Figure 11 is an edge view of the same.

Figure 12 is a section of the starting lever and edge view of the guard therefor, the sections being taken as on the line 12—12 in Figure 10.

Figure 13 is a vertical section of the waste pipe and parts associated therewith.

Description.

As seen in the drawings, the machine here-

in disclosed embodies a tank 20. The tank is preferably furnished with a detachable sump basin 21. A drain pan 22 and screen 23 serve to prevent undesired particles passing from the interior of the tank to the sump basin 21.

Water is supplied to the tank by the pipe 24. The pipe 24 is suitably connected with the city or other supply. A spring closed valve 25 is mounted on the pipe 24. The valve 25 has an extended valve 26 which is manually depressed to open the valve whenever water is required for the operation of the machine and during the rinsing action thereof. With this object in view it will be understood the valve is closed and the supply of water is suspended until whenever the stem 26 is manually depressed. The limited quantity of water usually supplied to the tank is circulated with more or less violence by means of the electric motor 27 and the pump 28 driven thereby. As seen in Figure 2 of the drawings, the pump 28 has open communication with the sump 20 through the passage 29 in the side of the said sump basin.

The operation of the pump 28 is of the usual character of pumps of this type. The water delivered therefrom enters the pipe 30 which has two outlets registering with the inlets 31 and 32. The water delivered to the inlets 31 and 32 enters the lateral distributing pipes 33 and 34, best seen in Figures 3 and 5 of the drawings. Connected with and extended from the pipes 33 and 34 are spray pipes 35 and 36 respectively. The pipes 35 serve the double purpose of a dish holding rack and as spray members. The pipes 36 are relied upon chiefly for spraying the charge held within the tank 21 and upon the rack formed by the pipes 35. To this end the pipes 36 are greater in number and are provided at closer intervals with spray openings for the water or other detergent employed in the washing.

Both series of pipes are united by their forward ends with channel bars 37 and 38.

As shown in Figure 6 of the drawings, the bar 38 has overhanging flanges 39 that form runways for a slide bar 40. The slide bar 40 is provided with a series of openings 41 which are slightly larger than and adapted to register with the openings in the pipes 36, see Figure 5 of the drawings. To shift the bar 40 the same is provided with handles

42 which in service are disposed adjacent the forward edge of the lid 43 with which the machine is provided.

From the foregoing it is obvious that whenever the pipes 35 and 36 become foul or require cleansing, the operator may move the slide bars 40 with which the said handles are connected so as to place the openings 41 in register with the pipes 30 and 36. When in this position it is evident a swab brush or other desirable device may be thrust through the pipes 35 and 36 to remove any foreign matter deposited therein, or adhering thereto. It is obvious that after the swabbing has been completed the slide bars 40 could be left in open position when the cover 43 was lowered and the water supply turned on. In this way any deposit released by the swabbing would be voided through the end openings of the pipes 35 and 36.

As seen best in Figures 5 and 8 of the drawings, the spray member or grid formed by the pipes 34 and 36 are mounted by screws 44 and 45 upon the lid 43 and within the flange 46 thereof. It will be noted that the screws 45 are of special construction having knurled sections 47 by which the screws may be easily manipulated to retract them for withdrawal from engagement with the bar 38. When the screws 45 are withdrawn, it is obvious that the spray member or grid can be swung on the pivots formed by the screws 44. This permits a partial separation of the spray member or grid and the lid 43, a desirable feature for the purposes of sanitation.

The lid 43 as best seen in Figure 1 of the drawings has hinges 48 connecting it with the tank 20. It will be noted that the upper spray member is suspended from the lid 43 and contained within the flange 46 thereof, and that when the lid is raised as shown by the broken line in Figure 1, the inlet 32 is removed from the pipe 30, the joint normally formed between the pipe 30 and the inlet 32 is a butted sealtight joint. The lid 43 is maintained in elevated position by a counter-weight 49 suspended in a hollow tubular standard or leg 50. The weight 49 is suspended by a cable 51 extended over a pulley 52 at the upper end of the standard 50. It is obvious that the counterweight 49 being thus housed is free from the objectionable feature of interference with surrounding articles or persons when said cover is being raised or lowered.

As shown best in Figure 1 of the drawings, the dishes for the washing of which the present machine is particularly designed, are held in trays such as indicated by the letter A in Figure 1 of the drawings. The tray is provided with the usual rack rods and has the usual sides for preventing the dishes falling.

To hold the tray, I provide a skeleton platform having side bars 53 and 54. The flanges of the bars 54 are upstanding, while the flanges of the bars 53 are dependent. This structure can be best seen in Figures 3 and 4 of the drawings. The flanges of the bars 54 being transversely disposed, affords guides to assist in sliding the trays A, laterally upon and from the machine after the washing process has been completed. The trays thus delivered from the machine are disposed on a table or drain-board which is of the same height as the top edge of the tank 20. The offset of the upper edge of the tank 20 permits such table or tables to drain into said tank.

It will be noted that as the horizontal sections of the bars 54 are slightly below the corresponding sections of the bars 53, the latter or following edge of the tray A, when being moved laterally over the platform drops to the lower level with the resultant that the advanced or forward edge of the tray is elevated to override any obstruction, and the lowered edge of the tray engages the edge of the bars 53 to arrest the delivery of the tray and to avoid spilling the same. The platform thus formed by the bars 53 and 54 is supported by the lid 43. To this end the cover 43 is provided with swing arms 55.

The arms 55 are pivoted at 56 in the pendent flange 46 of the said cover. The construction is seen in Figures 1 and 8 of the drawings. As shown in Figure 1 of the drawings the arms 55 are bent, the purpose being to avoid interference with the tray A, when the same is being removed from the machine after the washing operation has been completed.

The arms 55 are pivotally connected by pins 57 with the lowermost members of the parallel links 58. The links 58 are disposed in parallel arrangement and are pivotally connected at 59 with the side of the tank 20 and at 60 with the socket plates 61. The construction and arrangement maintains in all elevations of the tray, the parallel disposition thereof.

In Figure 1 of the drawings, there is shown in full lines the lower position of the platform with the tray A, thereon, and in broken lines the elevated position of the said platform and tray and the corresponding position of the cover 43. It is obvious that in all positions of the platform and the tray, the weight 49 will counterbalance and hold the tray and support therefor in the position desired.

When the tray with its load or charge of crockery has been disposed on the platform 53 and 54, the cover 43 is lowered, the platform and tray is lowered to the position shown in full lines in Figure 1 of the drawings. The supply of water is now turned on

by depressing the stem 26 to open the valve 25. This is done by depressing the lever 63, the operator engaging the handle 64 for that purpose.

If the lid 43 be closed when the lever 63 is lifted from the position shown in Figure 10 of the drawings, the lug 65 thereon engages to lift the plunger 66, which closes the electric switch blade 67 upon its mate 68. This completes the electric circuit incorporating the source of electricity which in the present case is shown as a battery 69 and the motor 27.

It will be noted that when the lid 43 is closed, the plunger 70 depresses the spring switch blade 71 to contact with the switch blade 72, the switch blades being in the electric circuit above referred to. It will be noted in this connection that until the lid 43 is closed, the operating electric circuit cannot be completed even though the switch lever 63 is moved to operating position or not.

In Figure 12 of the drawings, the lever 63 is shown within the guard plate 62 provided therefor. The lever 63 has a notch 74 provided to engage the inclined surface 73 with which the guard plate 62 is provided. It will be seen that when the lever 63 is lifted to its uppermost position, the inclined surface 74 of the guard plate can be engaged by the notch 73 provided the lever 63 is moved in line therewith. The continuation of the machine when not directly attended is thus insured.

The water level in the tank 20 is controlled by the movement of a tubular valve 75. The valve 75 is open at the lower end and adapted to close the waste pipe 78. A sliding cover 83 is movable lengthwise the pipe 78 to rest over to cover the orifices 76 provided in the valve 75. The waste pipe 78 is suitably connected with the service plumbing and with the sump 21 by means of the branch pipe 79.

It is obvious that as the cover 84 closes or opens the orifice 76, the water level in the tank 20 is maintained at the level of the orifice 77. Any suitable arrangement for lifting the cover 84 may be employed to control the opening of the said orifice.

In the usual operation of the machine when constructed and arranged in accordance with the present invention, the handle 64 is depressed and held in the position shown in Figure 10 of the drawings by broken lines in the lower position. The stem 26 is depressed by the lug 65^a in line with the stem 26. This opens the valve 25 admitting water to the tank 20, while the lever 63 is in the lowered position. When sufficient water has been drawn in the tank 20 to overflow at the opening 76 the lever 63 is lifted or allowed to lift. The lid 43 is now

lowered to closed position, the platform and tray being disposed directly above the rack and the pipes 35 thereof. The lever 63 is then raised to the upper position where the lug 65 lifts the plunger 66 completing the electric circuit incorporating the switches 67 and 68, 71 and 72, battery 69, and motor 27.

The motor 27 drives the rotor of the centrifugal pump 28 which draws the water from the sump basin 21 to deliver it to the tank 20 through the pipes 30, 33, 34, 35 and 36. It will be understood that the flow speed of the water is controlled by the pump 28 with the result that if soap or other detergent has been placed in the tank, it together with the water in which it is suspended, will be agitated to provide suds, and for the washing process also it will be noted that the streams of water flowing from the pipes 35 and 36 are directed upon the crockery or other material with the result that same is cleansed.

The above action is continued until the cleansing having been completed, the lever 63 is depressed to break the electric circuit incorporating the motor 27. If it is desired to rinse the dishes, the lever 63 is moved to the lower position shown in Figure 10, in which position it is obvious the motor 27 is cut out, while the valve 25 is opened, thereby permitting the clear water to flow into the tank 20 and through the waste carrying with it the materials removed from the crockery and the soapy water with which the tank has been provided. When it is desired to suspend this operation, the lever 63 is lifted closing the valve 25.

Mention has been made above concerning the cleansing of the pipes 35 and 36 through the openings 41 provided in the slide bar 40. Provision is also made for the removal of the racks embodying the pipes 35 and 36. To this end the screws 44 which form the pivots on which the said racks swing, are retracted out of engagement with the said racks. The racks can then be removed from the tank. Before removing the lower rack having the pipes 33 and 35, it would be necessary to remove the platform. This is readily accomplished by lifting them out of engagement with the socket plates 61.

To this end, the socket plates have overhanging sides 80 which receive corresponding flanges on the slide blocks 81 to which the platform and the members 53 thereof are rigidly secured by screws 82, or other suitable means.

As seen best in Figures 4 and 9 of the drawings, the platform is steadied in its raised position by spring members 83 between which the platform, and particularly the levers 58 are forced when elevated in correspondence with the movement of the lid 43. The platform and parts associated

therewith are thereby held firmly, while the tray A, with its load of crockery is placed on the platform.

While the machine has been herein described as a dish washing machine, it is obvious that it may be employed for other uses such as laundry when it might be found desirable to remove the platform and in some cases one or both of the racks formed by the pipes 35 and 36, in which event, the removals are performed in the manner above recited.

As is shown by dotted lines in Figure 1 of the drawings, a flapper valve 85 is provided at the end of the pipe 30 which connects the pump 28 and the distributing pipes 33 and 34. The valve 85 is so constructed and arranged as to open upward when moved thereto by pressure on the column in the pipe 30. When, however, the pressure in the pipe 30 is suspended as when the pipe 28 is stopped the valve 85 closes and shuts off or retards the water entering the tank 20 from flowing through the pipe 30 into the sump 21. This arrangement is particularly advantageous when rinsing the dishes being cleaned.

Claims:

1. A washing machine comprising a tank, a lid pivoted to the tank, and means for circulating water through the tank, said means embodying a spraying rack pivotally attached to said lid to swing thereon for presenting the end of said rack for cleansing purposes in spaced relation to said lid.

2. A washing machine comprising a tank, a lid pivoted to the tank, a spraying rack disposed within the tank and beneath the lid, means for pivotally attaching the rack to the lid, and means for connecting or disconnecting the rack to the lid whereby the rack is caused to swing with the lid or be free to rotate on its pivot.

3. A washing machine comprising a tank, a lid for the tank, an article holding platform, and means associated with said lid for elevating and depressing said platform in correspondence with the movement of said lid, said means embodying lifting arms operatively connecting said platform and said lid, said lifting arms having a plurality of parallel members disposed to maintain said platform in a horizontal position, and socket members for holding said platform in its depressed position.

4. A washing machine comprising a tank, a lid for the tank, an article holding platform, and means associated with said lid for elevating and depressing said platform in correspondence with the movement of said lid, said means embodying lifting arms operatively connecting said platform and said lid, said lifting arms having a plurality of parallel members disposed to maintain said platform in a horizontal position, socket members for holding said platform in its depressed position, and socket blocks on said platform removably engaged in said sockets.

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