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G. WEBB

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DISH WASHING MACHINE

Filed March 30, 1927

Fig. 2

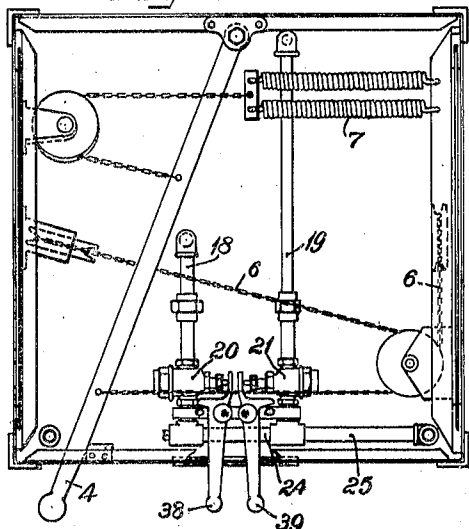


Fig. 3

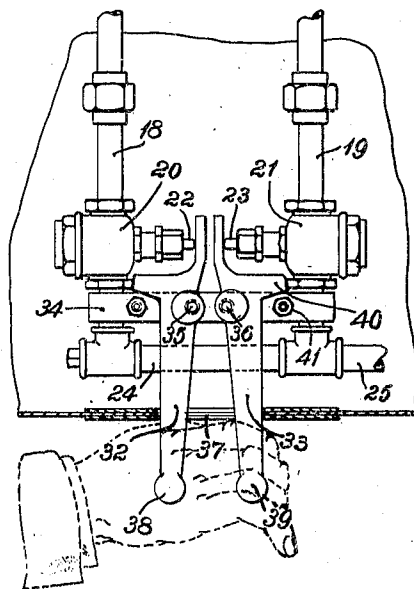


Fig. 4

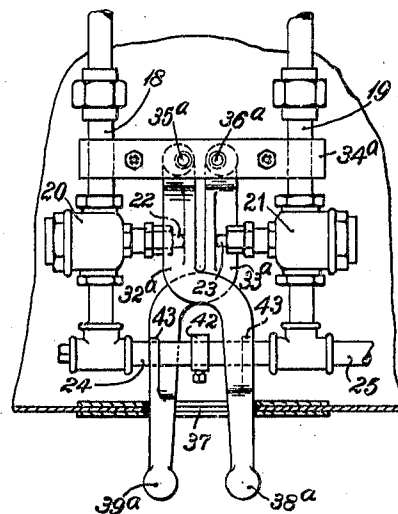
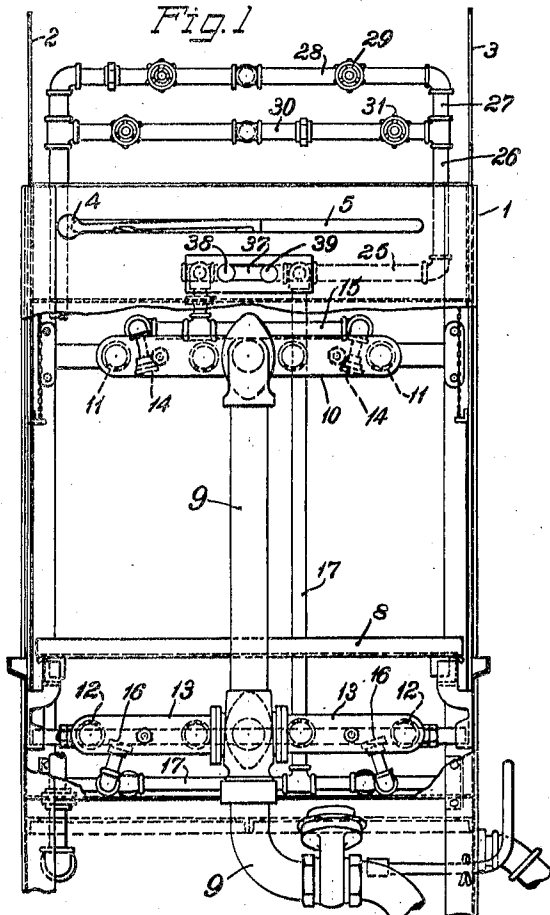


Fig. 1



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DISH-WASHING MACHINE.

Application filed March 30, 1927. Serial No. 179,564.

The invention is applicable primarily to a dish washing machine of the type shown in the copending application of George Webb and Frank D. Jenks for dish washing machine, Serial No. 120,710 filed July 6, 1926. The invention relates particularly to the valve mechanism for controlling the supply of rinsing water to the rinse spray devices which are located respectively above and below the dishes.

The construction as disclosed in the said application includes a single manually operable lever which is mounted and connected to operate two separate valves, one for controlling the flow of water to the upper rinse sprays and the other for controlling the flow of water to the lower rinse sprays. The arrangement is such that by moving the lever in one direction one valve can be opened and that by moving the lever in the other direction the other valve can be opened. With the said construction both valves cannot be opened at one time and this may be highly advantageous for installations for which the available water pressure is very low. Under such circumstances the water pressure may not be sufficient to effectively operate the upper and lower sprays simultaneously, and it may be, therefore, desirable to provide a construction which makes it necessary for the operator to open first one valve and then the other and which makes it impossible for him to open both of them at the same time and thus lose the efficiency of the rinsing operation.

While the construction as described may be desirable for installations having insufficient water pressure, I have found that in the majority of cases the water pressure is sufficient to permit the operation of both the upper and the lower rinse sprays simultaneously, and that a construction which prevents simultaneous operation of both rinse sprays is disadvantageous in such cases as it forces the operator to operate the upper and lower rinse sprays separately with a consequent loss of time. The principal object of the present invention is to provide a dish washing machine of the general type disclosed in the said Webb and Jenks application but having an improved valve mechanism incorporated therein which adapts the machine for convenient operation either

with low water pressure or with a higher and more satisfactory water pressure. In accordance with the invention the valves may be conveniently operated independently as in the prior construction when the water pressure is deficient, or they can be simultaneously operated when the water pressure is sufficient to permit such simultaneous operation.

A further object of the invention is to provide certain improved details of construction whereby the before stated general object of the invention is attained.

In the accompanying drawing I have shown two embodiments of the invention but it will be understood that these embodiments have been selected merely for purposes of illustration and that the drawing is not to be construed as defining or limiting the scope of the invention, the claims forming a part of the specification being relied upon for that purpose.

Of the drawing:

Figure 1 is a fragmentary front view of a washing machine embodying the invention, the lower part of the machine being omitted and a part of the front wall of the casing being broken away to show interior parts.

Fig. 2 is a plan view of the parts shown in Fig. 1, the top cover of the casing having been removed.

Fig. 3 is an enlarged fragmentary view similar to Fig. 2 but showing more clearly the details of the valve operating mechanism.

Fig. 4 is a view similar to Fig. 3 but showing an alternate valve operating mechanism.

Referring to the drawings, 1 represents as an entirety the main casing of the machine, this casing preferably being rectangular in form. In order that dishes to be washed may be introduced into the casing one of the side walls thereof is provided with a large opening and a door is provided whereby this opening may be closed during the washing operation. Preferably in order that the dishes may be placed in the machine at one side and removed therefrom at the other side, both of the side walls are provided with openings and two similar doors 2 and 3 are provided for closing these openings. The doors 2 and 3 are preferably mounted so as to slide vertically. For operating the doors a suitable manu-

ally operable mechanism is provided, this mechanism including a pivoted lever 4 which extends through a slot 5 in the front wall of the casing. The lever 4 is connected with the doors by means of chains 6, 6 which extend over suitable pulleys. A spring mechanism 7 may be provided to assist in opening the doors.

Suitable devices are provided inside of the casing for supporting the dishes to be washed, these devices being in register with the doors. Preferably the dishes are placed in trays or racks and when such racks are provided the supporting devices take the form of rails 8 which extend transversely of the casing in position to receive the racks as they are introduced through one of the doors.

Main spray devices are provided for delivering washing liquid forcibly against the dishes supported by the supporting devices. Ordinarily there are two separate sets of main spray devices, one being located below the dishes and the other above the dishes. As shown there is a main supply pipe 9 which extends vertically and which is preferably located at the front of the machine. A manifold 10 is located inside of the casing near the top and is connected with the supply pipe 9. A plurality of horizontal spray pipes 11, 11 are connected with the manifold 10 and extend horizontally across the casing above the space occupied by the dishes. The pipes 11, 11 are provided with slots or holes in their bottom portions through which the washing liquid is delivered downward against the dishes. Another set of main spray devices is located below the dishes and comprises spray pipes 12, 12 which are connected with the pipe 9 by means of a manifold 13, 13. The pipes 12, 12 have spray apertures in their upper portions through which washing liquid is delivered upward against the dishes. The washing liquid is supplied to the pipe 9 by means of a suitable pump (not shown).

In addition to the main spray devices which have been described, there are also provided two auxiliary rinsing spray devices oppositely located with respect to the space occupied by the dishes, ordinarily located respectively above and below the said space. As preferred and as shown, each of these auxiliary rinsing spray devices consists of nozzles connected with suitable supply pipes. Spray nozzles 14, 14 constituting the upper rinsing spray device are mounted above the dishes and are connected to receive water through piping 15. Spray nozzles 16, 16 constituting the lower rinsing spray device are mounted below the dishes and are connected to receive water through piping 17.

The upper and lower rinsing spray devices are supplied with fresh liquid, ordi-

narly hot water from a source outside of the machine. Ordinarily the rinse water is supplied directly from the city water mains under the normal pressure therein, being suitably heated before reaching the spray devices. The pipes leading to the beforementioned supply piping 15 and 17 are preferably located in the upper part of the casing immediately adjacent and preferably below the door operating mechanism, particularly the lever 4 thereof. There is a horizontal pipe 18 which connects with the piping 15 and a horizontal pipe 19 which connects with the piping 17. The pipes 18 and 19 are connected respectively with valves 20 and 21 which are normally closed but which are provided with horizontally extending stems 22 and 23 whereby they may be opened. These two stems project toward each other and are in alignment, or approximately so. Hot water is supplied to the valves 20 and 21 by means of pipes 24, 25, 26, 27 and 28. A valve 29 is provided in the pipe 28 for regulating the water supply. In order that steam may be admitted, either for the purpose of heating the water or for the purpose of being mixed with the water for spraying purposes, a steam supply pipe 30 is provided having a valve 31 therein. By regulating the valve 31 the amount of steam introduced into the rinsing water can be regulated.

In accordance with the present invention I avoid the use of a single lever for operating both of the valves 20 and 21 and in lieu thereof I provide two separate levers which are so mounted and so related to each other that important advantageous results are obtained. As shown most clearly in Fig. 3 there are two levers 32 and 33 associated respectively with the valves 20 and 21 and positioned to engage the stems 22 and 23 thereof, portions of the levers extending between the adjacent ends of the stems as shown. For supporting the levers there is provided a member 34 which preferably extends transversely between the two pipes 18 and 19 and is mounted directly thereon. The two levers are pivotally connected with the said transverse member 34 by means of pivot pins 35 and 36 respectively. The two levers extend forward through a slot 37 in the front wall of the casing so as to be within convenient reach of the operator at the front of the machine. They are provided with convenient handles or knobs 38 and 39 adapted to be engaged by the operator.

The spacing between the two handles 38 and 39 is preferably such that the operator can conveniently engage both of them at the same time with one hand, ordinarily the right hand. As clearly indicated in Fig. 3 the operator, by placing his hand loosely upon both handles and without closing his

hand, can operate either lever as desired to open the corresponding valve. By moving his hand toward the right he can move the lever 32 to open the valve 20 and admit water to the upper spray nozzles 14, 14. By moving his hand toward the left he can move the lever 33 to open the valve 21 and admit water to the lower spray nozzles 16, 16. It will be observed that while the two levers are thus independently movable to open the valves independently of each other they are nevertheless capable of being moved simultaneously to open the valves simultaneously. The operator, with his hand exactly in the position as shown in Fig. 3 and as required for independent lever movement, can operate both levers simultaneously by simply closing his hand and drawing the two handles 38 and 39 toward each other.

Preferably in order to make certain that one lever will not be moved so far as to obstruct the other I provide suitable stop means for the respective levers which prevent the movement of either of them beyond the vertical plane midway between them. As illustrated in Fig. 3 each lever is provided with an arm 40 which is adapted to engage a suitable stop such as a bolt head or nut 41 located at the top of the transverse member 34. I also provide suitable stop means for limiting the outward movement of the levers and preferably for this purpose the slot 37 is made of such a length that the levers engage or approximately engage the ends of the slot when in their outermost positions as shown in Fig. 3.

In Fig. 4 I have shown an alternate construction wherein the levers are pivoted at the rear of the valves instead of in front of the valves. For supporting the levers there is provided a transverse member 34^a carried by the pipes 18 and 19. Two levers 32^a and 33^a are provided which are pivoted to the transverse member 34^a at 35^a and 36^a respectively. The levers extend forward through the slot 37 and are provided respectively with handles 38^a and 39^a adapted to be engaged by the operator's hand as already fully explained in connection with Fig. 3. In view of the fact that the two levers are pivoted behind the valves instead of in front of them, it is necessary that the handles 38^a and 39^a of the two levers be reversed with respect to the respective valve stems. It will be observed that the lever 32^a which operates the valve 20 has its handle 38^a at the right and that the lever 33^a which operates the valve 21 has its handle 39^a at the left. As illustrated the two levers are so formed that the lever 33^a extends under the lever 32^a. With the handles 38^a and 39^a of the two levers reversed as shown the operation is exactly the same as that already described.

In lieu of the arms 38 for limiting the

movements of the levers toward each other, I provide a collar 42 on the pipe 24 which is engaged directly by the said levers to limit the inward movements thereof. Preferably the levers are provided with lugs 43, 43 which extend respectively over and under the pipe 24 to prevent any upward or downward movements.

What I claim is:

1. In a washing machine for dishes or similar articles, the combination of a main casing having an opening at one side for the admission of dishes to be washed, means in the casing in registry with the opening for supporting the dishes, two rinsing spray devices in the casing respectively above and below the supporting means, two liquid supply pipes respectively connected with the spray devices, normally closed valves for the respective pipes, and two independently movable manually operable levers connected respectively with the said valves and each movable toward the other to open the corresponding valve.

2. In a washing machine for dishes or similar articles, the combination of a main casing having an opening at one side for the admission of dishes to be washed, means in the casing in registry with the opening for supporting the dishes, two rinsing spray devices in the casing oppositely located with respect to the supporting means, two liquid supply pipes respectively connected with the spray devices, normally closed valves for the respective pipes, and two independently movable manually operable levers connected respectively with the said valves, each lever being movable toward the other to open the corresponding valve and the two levers being closely spaced to permit their simultaneous operation by one hand of an operator to open both valves.

3. In a washing machine for dishes or similar articles, the combination of a main casing having a horizontal slot at the front and having an opening at one side for the admission of dishes to be washed, means in the casing in registry with the opening for supporting the dishes, two rinsing spray devices in the casing respectively above and below the supporting means, two liquid supply pipes respectively connected with the spray devices, normally closed valves for the respective pipes, and two independently movable manually operable levers connected respectively with the said valves, the said levers projecting forward through the said slot and being each movable toward the center of the slot and toward the other lever to open the corresponding valve.

4. In a washing machine for dishes or similar articles, the combination of a main casing having an opening at one side for the admission of dishes to be washed, means in the casing in registry with the opening for

supporting the dishes, two rinsing spray devices in the casing respectively above and below the supporting means, two liquid supply pipes respectively connected with the spray devices, normally closed valves for the respective pipes, the said valves having outward projecting inward movable stems and being arranged with the said stems extending toward each other in substantial alignment, and two independently movable manually operable pivoted levers each located in part between the said stems, one lever being movable in one direction to open one valve and the other lever being movable in the other direction to open the other valve.

5. In a washing machine for dishes or similar articles, the combination of a main casing having an opening at one side for the admission of dishes to be washed, means in the casing in registry with the opening for supporting the dishes, two rinsing spray devices in the casing respectively above and below the supporting means, two parallel horizontal liquid supply pipes respectively connected with the spray devices, normally closed valves for the respective pipes, the said valves having outward projecting inward movable stems and being arranged with the said stems extending toward each other in substantial alignment, a transverse member carried by the pipes and extending between them, and two independently movable manually operable levers pivoted to the

said member and each located in part between the said stems, one lever being movable in one direction to open one valve and the other lever being movable in the other direction to open the other valve.

6. In a washing machine for dishes or similar articles, the combination of a main casing having an opening at one side for the admission of dishes to be washed, means in the casing in registry with the opening for supporting the dishes, two rinsing spray devices in the casing respectively above and below the supporting means, two liquid supply pipes respectively connected with the spray devices, normally closed valves for the respective pipes, the said valves having outward projecting inward movable stems and being arranged with the said stems extending toward each other in substantial alignment, and two independently movable manually operable levers respectively engaging the valve stems and parallelly pivoted at one side thereof with handles at the other side thereof, one lever being movable in one direction to open one valve and the other being movable in the other direction to open the other valve and the said levers being arranged with their handles reversed with respect to the respective valve stems whereby movement of the handles toward each other causes the valve stems to move away from each other.

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