July 22, 1969 L. J. SCHAVERIEN 3,456,462

COMBINED SINK AND CLOTHING AND CROCKERY WASHING MACHINE

Filed May 1, 1967

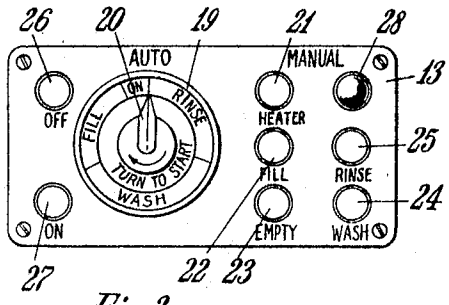


Fig. 2.

Fig. 1.

United States Patent Office 3,456,462 Patented July 22, 1969

3,456,462

COMBINED SINK AND CLOTHING AND CROCKERY WASHING MACHINE

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Filed May 1, 1967, Ser. No. 635,050
Int. Cl. D06f 35/00, 37/00
U.S. Cl. 68—4 2 Claims

ABSTRACT OF THE DISCLOSURE

An apparatus for use in quarters of limited space including a domestic sink provided with a waste outlet. An agitator is operably related to the interior of the sink for agitating water in the sink for washing clothes and crockery therein and spray nozzle means is positioned in the sink for the impingement of water upon the crockery therein for rinsing the crockery.

The invention relates to dishwashing and clothes washing machines.

The disadvantage of providing individual dishwashing and clothes washing machines, and also a domestic sink is firstly on account of the expense involved, and secondly on account of the space occupied by such separate apparatus. Particularly is this so in the case of apartments or small kitchens of flats and other small domestic living quarters.

The object of the present invention is to provide an apparatus for washing dishes and washing clothes and which also can be used as a domestic sink for the preparation of food and the washing of cooking utensils by hand and the like, which does not have the above mentioned disadvantages.

The invention is directed to a domestic sink provided with a waste outlet in which the improvement comprises an agitator for agitating water in the sink for washing clothes and crockery therein and spray nozzle means positioned in the sink for impingement of water upon crockery in the sink, to rinse the crockery.

The invention further pertains to a domestic sink as set forth in the preceding paragraph in which the spray nozzle means is positioned close to the top of the sink in order to spray the water directly onto the crockery.

The invention still further relates to a domestic sink as set forth above in which the spray nozzle means is positioned close to the top of the sink in order to spray the water onto the crockery by way of the agitator.

In one mode of construction in accordance with the invention, a stainless steel sink is provided with an agitator of the type which rotates in one direction and which comprises a wheel having radial blades, which is positioned in a circular recess in one side of the sink, and is driven by a belt from an electric motor below the sink. The source of rinsing water comprises one or more nozzles protruding into the sink, for example, in the back below the taps or faucets, which spray water onto the crockery in the sink during the rinsing process.

The supply to the nozzles incorporates a valve which may be linked with the plug of the waste, so that, when the sprays are turned on the waste is opened to allow the rinsing water to escape immediately. By this means, the residue of any soap or detergent on the article being washed is rinsed away.

Alternatively, the nozzle or nozzles may be attached to a lid for the sink.

In a further arrangement, the water from a nozzle is directed on to the rotating agitator thereby throwing the water over the articles and effectively rinsing them.

Also, a small electric water heater may be incorporated in the supply pipe to the nozzles to ensure that very hot water is available for the rinse, whereby the articles are heated and in consequence dry rapidly when the rinse is complete.

In a further form of construction in accordance with the invention, there is provided a timing and operating mechanism linked to the taps, the motor of the agitator, the sprays and the sink waste so that the following cycle of operations, for example, may be carried out automatically. After the crockery or other articles have been loaded into a wire basket and placed in the sink and a suitable quantity of washing medium has been introduced, a washing sequence is initiated by a control switch. The waste is closed and the sink is filled automatically to the required level, and the agitator activated for a predetermined period of time. The agitator is then stopped, the waste opened to allow the dirty water to escape, the jets or spray of water turned on for a predetermined period of time, with the water continuing to escape and the cycle is complete.

The timing and operating mechanism may also include means for injecting the required amount of washing medium into the sink at the appropriate moment, automatically.

The accompanying drawing shows, by way of example only, one embodiment of the invention in which:

FIGURE 1 is a view partly in section and partly in elevation of a sink constructed in accordance with the invention, and

FIGURE 2 is a view in elevation of the switching mechanism of the sink.

A metal sink **1** has a waste outlet **2** and an agitator **3** in the form of a wheel provided with radial spokes **4** which act as blades to agitate the water in the sink. The agitator is driven continuously in one direction by an electric motor **5** by way of a pulley **6**, a belt **7** and a pulley **8**. The motor and the pulley **6** are protected by a cover **9**.

The purpose of the agitator is to circulate water in the sink when clothes are being washed, or when crockery or other utensils are being washed.

There is provided below the outlet **2** an electric water heater **10**, which will raise the temperature of the water in the sink by circulation by way of the outlet **2** and has an axial passage therein with a grille for preventing clothes and other objects from entering the heater.

Below the heater there is provided a valve **11** operated by a solenoid **12**, which is controlled by a switching mechanism **13** described hereinafter, and which closes the outlet when the sink is to be filled for washing clothes or crockery and is open during the rinsing of the latter. In order that the sink may be used for normal preparation and cleaning of vegetables and like tasks, the outlet may be provided in addition with a manually operated closure or have a separate plug, seeing that the valve **11** is normally open when the automatic clothes and utensil washing system is not in use.

The heater **10** is provided with an automatic cut-out which operates if the temperature rises above a predetermined maximum temperature when, for example, water is inadvertently prevented from filling the heater by the closing of the outlet manually, when being controlled automatically by the control mechanism.

In the illustrated form of construction there are provided two alternative means for the entry of washing water, namely a cascade inlet **14** and a jet inlet **15**, each of which is controlled by a solenoid **16** and **17** respectively. These inlets are quite independent of any bibcocks, with or without a swan-neck which may be provided for normal use of the sink.

If an adequate supply of hot water is available, the inlets **14** and **15** may be connected thereto, but alterna-

tively thereto or in addition to a normal supply, an electric water heater of the "instant" kind may be provided which will raise the temperature of the water to the required extent as it passes through, and which may be controlled by a thermostat.

There is also provided a level control switch **18** for the water, which, for example, may be of the pressure type, which in conjunction with the solenoids **16** and **17** controls the depth of water in the sink. When the sink is used for washing clothes the level may be set to rise well above the agitator, but when utensils are being washed the level need be only three or four inches up the sink.

In a fully automatic arrangeemnt there may be provided a rotary control with a dial and operated either by a spring or an electric motor, depending upon which is required by the cycle of operations provided, as shown in FIGURE 2. In addition, push knobs or buttons **20–27** may be provided, which over-ride the automatic switch and allow separate steps of the process to be carried out independently.

After having loaded the sink with crockery, in a basket provided, the knob **20** is turned clockwise 360° and the "ON" button **27** pressed to switch on the current and a warning light **28** is lit. As the knob **20** turns anti-clockwise firstly, the outlet valve **11** is closed and water is allowed to enter the sink by way of the cascade inlet **14**, and the water rises two or three inches, as pre-set, and when this height has been reached the water is turned off by the action of the level control **18**. It can be arranged that at this stage the water in the sink is heated by the heater **10**, which is activated as the water is turned off. For this to be possible it is preferred to provide a thermostat upon the sink which turns off the heater when the water has reached the desired temperature.

When the heater **10** is used, the control knob is allowed to turn to the next step in the process when the heater is deactivated by the thermostat, or when the heater **10** is not used, when the water has reached the desired level. The motor **5** is now activated and the water is agitated to clean the utensils for a predetermined period, say five minutes, after which the motor is stopped and the outlet valve **11** is opened, the sink empties and the utensils are rinsed by water from the jet inlet **15** also for a predetermined period, say two minutes. The sink empties faster than the in-coming water from the jet can fill it and the level therefore does not rise. The utensils dry by the retained heat.

Detergent can either be put in the sink manually before the washing cycle commences, or it can be arranged to be inserted automatically as a liquid or a powder.

The automatic cycle of operation may be interrupted at any time by pressing the "OFF" button **26** and be continued by pressing the "ON" button **27**. Alternatively, the apparatus may be operated manually by pressing the buttons **21–25** in conjunction with the "ON" and "OFF" buttons **27** and **26**.

In a still more comprehensive arrangement, a second rotary control dial and knob can be provided having a cycle of operations appropriate to the washing of clothes, in which the jet **15** is not required and the sink is arranged to be filled to the higher levels required. The cycle may include the operation of the heater **10** if the water from the supply by the inlet **14** is not hot enough to operate the thermostat, while a cold water cascade inlet may be provided in addition, where one or more cold rinses are required.

The cycle of operations for washing clothes for a comprehensive arrangement might be as follows:

(a) close inlet valve,
(b) open hot cascade inlet,
(c) close inlet when water has reached the pre-set level,
(d) turn on water heater below sink to bring water up to selected desired temperautre e.g. "very hot," "hot" or "warm,"
(e) inject detergent,

(f) start motor and agitator for five minutes,
(g) stop motor and open outlet valve long enough to empty sink,
(h) close outlet valve,
(i) open hot or cold cascade inlet to fill sink for rinse,
(j) start motor and agitator for five minutes, repeat steps (g) (h) and (i) once or twice further to complete rinse.

It can therefore be seen from the above that a sink having the essential features of the invention may form part of a comprehensive apparatus for cleaning crockery or other utensils and the washing of clothes automatically, and that in the case of the cleaning of crockery and other utensils the water is emptied completely from the sink during the rinsing process and the impingement of the rinse water upon the articles ensures that any material left on them is effectively removed and washed down the waste.

In one of the simplest forms of arrangement the sink has a normal outlet with a plug, and there is provided an agitator driven by an electric motor for agitating the water. Also there is also provided a spray for rinsing the crockery being washed, controlled by a manually operated cock, and it can therefore be seen that a large variety of alternative arrangements can be provided from wholly manually controlled, partly automatically controlled and fully automatically controlled as above described. It is therefore to be understood that the above description is by way of example only and that details for carrying the invention into effect may be varied without departing from the scope of the invention claimed.

I claim:

1. An apparatus for use in quarters of limited space comprising a domestic sink, a waste outlet for the sink, an agitator operably related to the interior of the sink for agitating water in the sink for washing clothes and crockery therein, spray nozzle means positioned in the sink for the impingement of water upon crockery in the sink, to rinse the crockery, a water heating unit below the bottom of the sink to raise the temperature of the water therein, said water heater unit being a hollow vessel containing a circumferential heating element and a passageway therethrough connected above to the outlet of the sink and provided below with an outlet, a solenoid operated valve connected below the outlet from the unit for controlling the flow of water from the sink by way of the waste outlet, cascade inlet means, solenoid operated valve means controlling said spray nozzle means and cascade inlet means, and the solenoid operated valve which controls the flow of water from the sink being electrically associated with the solenoid operated valve means in such a way that the former valve means is open when the latter valve means are open.

2. The apparatus as claimed in claim **1** including a water level sensitive switch which closes the cascade inlet means and the spray nozzle means, which ever is in use, when the water reaches a predetermined level.

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U.S. Cl. X.R.

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