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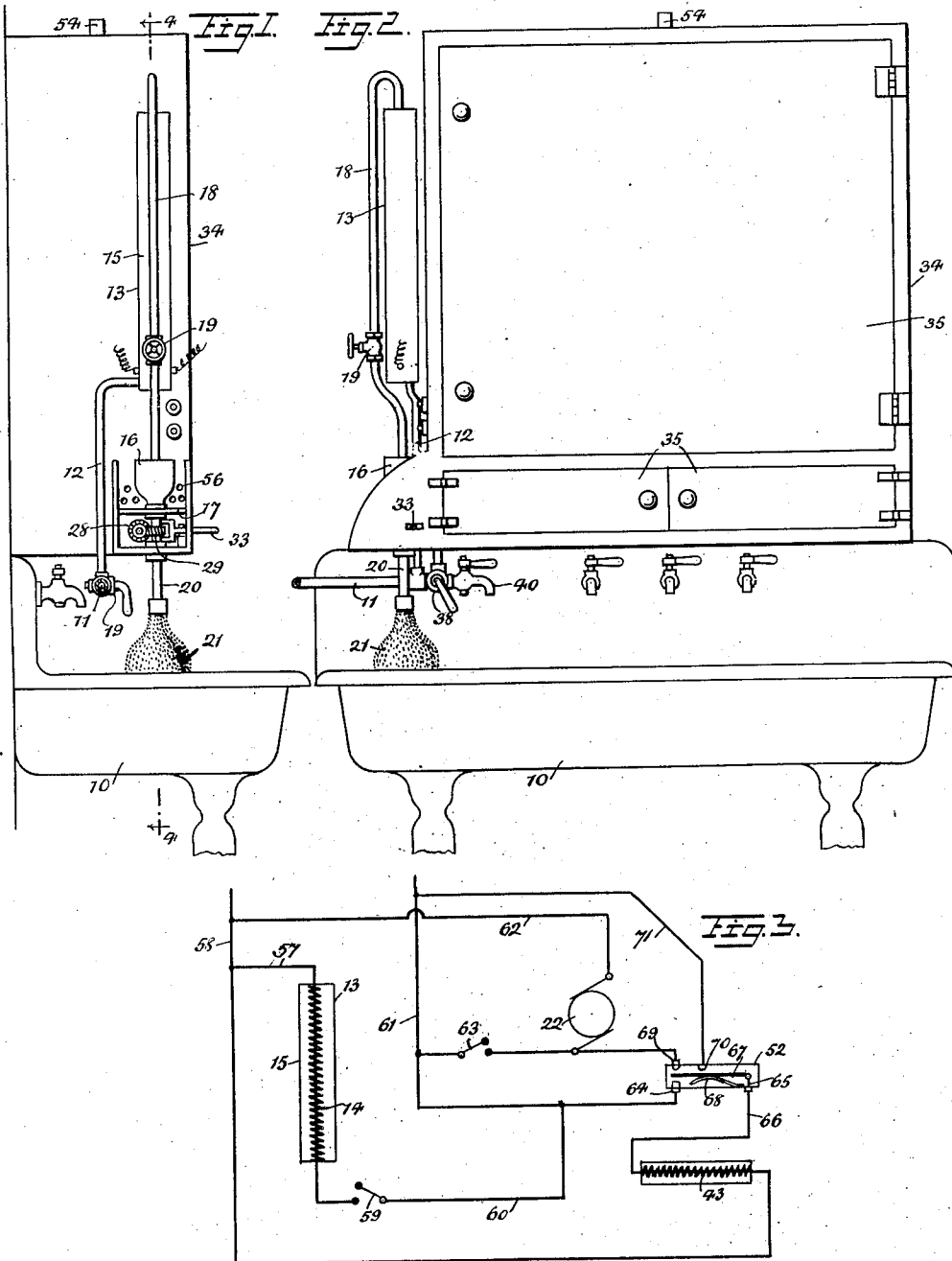
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W. H. LANCELOT ET AL

DISH WASHER AND DRIER

Filed June 15, 1927

2 Sheets-Sheet 1



WITNESSES

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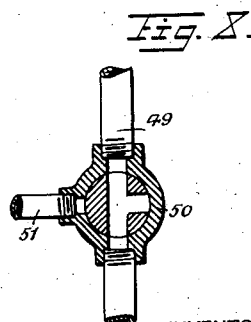
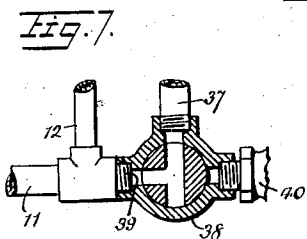
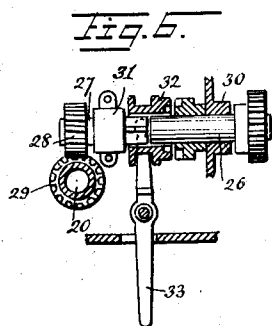
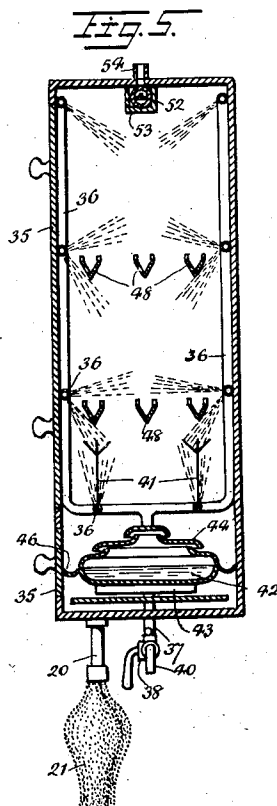
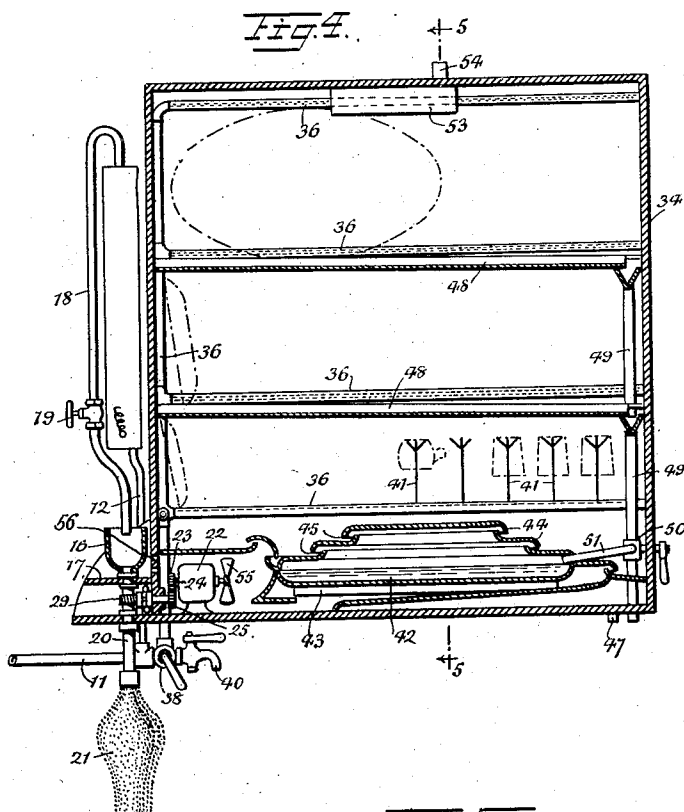
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UNITED STATES PATENT OFFICE.

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DISH WASHER AND DRIER.

Application filed June 15, 1927. Serial No. 199,008.

This invention relates to an apparatus for washing, rinsing and drying dishes, cups and glassware, and for scouring pots, pans and culinary articles, and is also adapted for burnishing and polishing culinary metal ware.

The principal object of the present invention is to provide an apparatus of the indicated character which embodies improved features whereby divers articles may be washed and dried and divers other articles may be scoured and burnished expeditiously with a minimum of manual labor.

The nature of the invention and its distinguishing features and advantages will appear when the following specification is read in connection with the accompanying drawing, in which—

Figure 1 is a side elevation of the apparatus.

Fig. 2 is a front elevation.

Fig. 3 is a diagrammatic view illustrating the electrical appurtenances and the manner in which they are electrically connected.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a detail sectional view of one of the features of the apparatus.

Fig. 7 is a sectional view through the control valve in the water feed pipe.

Fig. 8 is a sectional view through the control valve in the condensate drain tube.

Generally stated, the apparatus of the present invention comprises means for initially washing the comparatively flat ware, such as dishes, platters and the like; for washing cups, glasses, bowls, knives, forks and spoons; for scouring and polishing culinary metal ware; secondary means for steaming the said articles to remove any mineral residue left by the evaporation of water, upon the surfaces of said articles; means for drying the articles; and means for heating water, distributing and spraying cold water, and for draining parts of the apparatus.

Referring now more particularly to the several views of the drawing it will be apparent that the apparatus is associated with a sink 10 to which is led a cold water feed pipe 11 of a water supply system. The feed pipe 11 is connected by a pipe 12 with an electric water heater 13 including a heating unit 14 and a tank 15, with which the pipe 12 connects. A suitable cup 16 is provided and is supported

on a suitable fixed bracket 17. The cup 16 serves for containing a quantity of soap or other cleaning composition to provide an effective cleaning mixture when combined with hot water. Hot water is led to the cup 16 by a pipe 18 which connects with the upper end of the tank 15 in communication with the interior thereof, and which extends downwardly and terminates in the cup 16. The pipe 18 has a control valve 19. A hollow spindle 20 is mounted for rotation in bearings provided by portions of the bracket 17. The spindle 20 is in communication with the cup 16 at its upper end, and the lower end of the spindle is adapted for connection with divers cleaning elements such as brushes and burnishers. A brush 21 is shown in the present instance to the bristles of which water is fed through the spindle 20.

In order to rapidly rotate the spindle 20 and therefore the brush 21 or other element arranged on the spindle, there is provided an electric motor 22, the shaft of which transmits motion to the spindle 20 by virtue of a pinion 23 on the motor shaft 24, the pinion 23 meshing with the pinion 25 on a part 26 of a two-part shaft, the part 27 of which has a gear 28 which meshes with a gear 29 on the spindle 20. The shaft parts 26 and 27 are respectively mounted in bearings 30 and 31. A suitable clutch 32 is employed in conjunction with the shaft parts 26 and 27. The said clutch includes a yoke lever 33 which serves for manipulating the clutch for causing the rotation of the spindle 20 and for stopping the rotation thereof. The articles to be washed, cleaned or burnished are held against the rotating brush 21.

After the initial washing of the different articles, they are placed in a cabinet or casing 34 by the use of suitable racks (not shown) although the casing will include suitable supports for the racks or for some of the articles. The cabinet or casing 34 is arranged above the sink 10 and has suitable doors 35 which afford access to the interior of the casing. Arranged within the casing 34 are interconnected water distributing pipes 36 which are perforated for the purpose of spraying water against the articles arranged in the casing. The pipes 36 have connection as at 37 with a two-way control valve 38 which is connected with the feed pipe 11 as at 39. A faucet 40 is also connected with the valve 38. The valve 38 may be operated to allow water to pass from

the feed pipe 11 to the arrangement of pipes 36 and also to shut off the flow of water to the pipes 36 and to allow it to flow through the faucet 40. Suitable holders 41 are connected
 5 respectively with two of the pipes 36. These holders 41 may be of any preferred construction and serve for holding cups, glasses and similar articles to be washed.

After the articles have been rinsed with
 10 cold water, they are subjected to the action of steam which will be generated by virtue of means presently to be described. A comparatively shallow pan 42 is arranged at the bottom of the casing 34. The pan 42 is adapted to
 15 hold a quantity of water which is heated by an electric heater 43 arranged beneath the pan 42. Arranged over the pan 42 is a series of covers 44 spaced from each other as at 45 to liberate the steam generated which
 20 rises in the casing 34. These covers 44 prevent the water which is precipitated from the sprinkler pipes 36 from entering the pan 42. The water so precipitated enters a gutter 46 surrounding the pan 42 and passes out
 25 through a drain 47 into the sink 10. The steam which rises from the pan 42 condenses on the articles arranged in the casing 34, the condensation forming a film of water on each of the articles, which runs off into troughs
 30 or gutters 48 extending from one end of the casing 34 and terminating short of the other end so as to empty into drain tubes 49, the lower one of which has connected therein a two-way valve 50. A short tube 51 is con-
 35 nected with the valve 50 and leads to the pan 42. The valve 50 may be operated to cause water of condensation to pass from the troughs or gutters 48 into the pan 42 or to allow it to flow into the sink 10.

When the articles have been sufficiently
 40 rinsed by the water of condensation produced by the steam, the heater 43 is automatically turned off. This is accomplished advantageously by the use of a thermostat 52 of any preferred type which is arranged at the top of
 45 the casing 34 within the same. The thermostat 52 is caused to operate by the steam and heated air escaping through a channel 53 which communicates with an outlet 54.
 50 When the thermostat 52 operates to turn off the current flowing to the heater 43, the motor is caused to operate. The shaft 24 of the motor has secured thereto a fan 55 which
 55 sends a blast of air upwardly of the interior of the casing 34. The motor and fan are arranged in the casing 34 and one of the walls of the casing has openings 56 through which air enters the casing to be sent by the fan 55
 60 upwardly. The air forced upwardly in the casing 34 will dry the articles within the casing.

In Fig. 3 of the drawing there is shown a wiring diagram of the electrical connection of the heater 13, heater 43, motor 22, and ther-
 65 mostatic switch 52. Electric current is sup-

plied from a suitable source, and may advantageously be supplied from the alternating current supplied by the public service system. Current is supplied to the heating unit 14 of the heater 13 by a wire 57 connected with a
 70 feed wire 58 of the supply circuit, the current flowing through the unit upon the closing of a switch 59 in a wire 60 connected with the other feed wire 61 of the supply circuit. Current is supplied to the windings of the
 75 motor 22 by virtue of a wire 62 connected with one terminal of the motor winding and the feed wire 58, the current flowing through the winding of the motor upon closing a switch 63 in a wire connected between the
 80 other terminal of the motor winding and the feed wire 61. The thermostatic switch 52 includes a contact 64 connected with the feed wire 61, a terminal 65 connected by a wire
 85 66 with one terminal of the coil of the heater 43. The other terminal of the coil of the heater 43 is connected with the feed wire 58. The thermostatic switch 52 also includes a contact member 67 which is pivotally con-
 90 nected with the terminal 65 and is adapted to be moved into engagement with the contact 64 to close the circuit through the coil of the heater 43. A thermostatic member 68 is adapted to coact with the member 67 when
 95 the former is subjected to a certain degree of heat to move the member 67 to bridge contacts 69 and 70 to close the circuit through the windings of the motor 22. This will be fol-
 100 lowed by opening of the circuit to shut off current to the coil of the heater 43. The contact 70 is connected by a wire 71 with the feed wire 61.

From the foregoing it will be apparent that, when the switch 59 is closed, water in the tank 15 of the heater 13 will be heated
 105 because current will be flowing through the coil 14. Soap will be placed in the cup 16. When the valve 19 is open, hot water will flow into the cup 16 producing a soapy solution which will pass to the brush 21 through the
 110 spindle 20. The switch 63 may then be closed which will start the motor 22. By manipulating the lever 33 the clutch 32 will be operated to cause motion to be transmitted to the spindle 20 which will be rotated, also the
 115 brush attached to the spindle 20. The articles to be washed may be held against the brush 21 to be subjected to a cleaning or washing action. After these articles have been washed the switches 59 and 63 may be opened which
 120 will cease further heating of water in tank 15 and also the rotation of the motor 22. The contact member 67 may then be set by hand to engage the contact 64 to close the circuit through the coil of the heater 43 which will
 125 heat the water in the pan 42. Meanwhile the articles which have been washed may be arranged in suitable racks which will be placed in the casing 34. The valve 38 may then be
 130 operated to allow cold water to flow into the

pipes 36. The water is sprayed and rinses and cools the articles and then drops into the gutter 46 from which it is led to the drain 47 into the sink 10. The valve 38 is then closed.

5 Steam now begins to rise from pan 42 and condenses on the articles, forming a film of water thereon which collects and runs off into the gutters 48, and thence into the tubes 49 and 51 to the pan 42; the valve 50 being
10 opened for this purpose. This steaming of the articles will remove any mineral matter held in solution by the water used in the initial washing operation and subsequent spraying operation. When the articles have
15 been sufficiently rinsed by the condensing steam and have become heated so that steam no longer condenses upon them, the heater 43 will be turned off by the action of the thermostatic switch 52 which is caused to operate
20 by the steam and heated air escaping through the channel 53 and outlet 54. This action is followed immediately by current being shunted through the windings of the motor to set the same in motion causing the fan 55
25 to rotate. The rotation of the fan will produce a blast of cool air which will circulate upwardly in the casing 34 thereby drying the articles. When the temperature in the casing has been reduced to a certain degree, the
30 thermostatic switch 52 will again operate to cease the operation of the motor 22. If found advantageous, any other equivalent means may be used instead of this thermostatic switch as a means of performing the
35 functions described.

It is to be understood that divers cleaning elements may be applied to the spindle 20 so as to carry out scouring operations on metal ware such as pots and pans, and knives
40 and forks, also for burnishing such articles.

We claim:

1. In an apparatus of the class described, a casing, a pan at the bottom of the casing interiorly thereof, a heater beneath the pan,
45 means for conducting water to the pan, said heater serving for heating the water in the pan, said pan having a cover consisting of sections overlapping each other in spaced relationship to allow steam to rise from the
50 pan, and supporting means in the casing

above the pan for supporting divers articles to be steamed.

2. In an apparatus of the class described, a casing, an electric circuit including a heating unit, a motor, and a thermostatic switch; the
55 shaft of said motor having a fan, the fan arranged interiorly of the casing at the bottom thereof, the thermostatic switch arranged interiorly of the casing at the top thereof, said thermostatic switch embodying means to shut
60 off current to the heating unit and supply current to the motor to rotate the fan to cause cool air to circulate in the casing.

3. In an apparatus of the class described, a casing, means including a water pan arranged interiorly of the casing at the bottom thereof for producing steam, means including a fan arranged interiorly of the casing at the bottom thereof for producing a
65 blast of air in the casing; and means automatically operable for controlling the first and second mentioned means.

4. In an apparatus for cleaning divers articles, a casing, means for holding the articles to be cleaned in the upper part of the casing,
75 a receptacle at the bottom of the casing interiorly thereof, a heater beneath the receptacle, means for conducting water to the receptacle, said heater serving for heating the water in the receptacle to produce steam, said
80 receptacle having a cover which allows the steam to pass into the space in the casing above the receptacle, and means automatically operable to control the functioning of the
85 heater.

5. In an apparatus for cleaning divers articles, a casing, means for holding the articles to be cleaned in the upper part of the casing, a receptacle at the bottom of the casing interiorly thereof, a heater beneath the receptacle, means for conducting water to the receptacle, said heater serving for heating the
90 water in the receptacle to produce steam, said receptacle having a cover which allows the steam to pass into the space in the casing above the receptacle, and means responsive
95 to the temperature within the casing to control the functioning of the heater.

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