Jan. 10, 1928. 1,656,139

J. L. BRETON

DISHWASHING MACHINE

Filed Nov. 8, 1923 3 Sheets-Sheet 1

Fig. 1

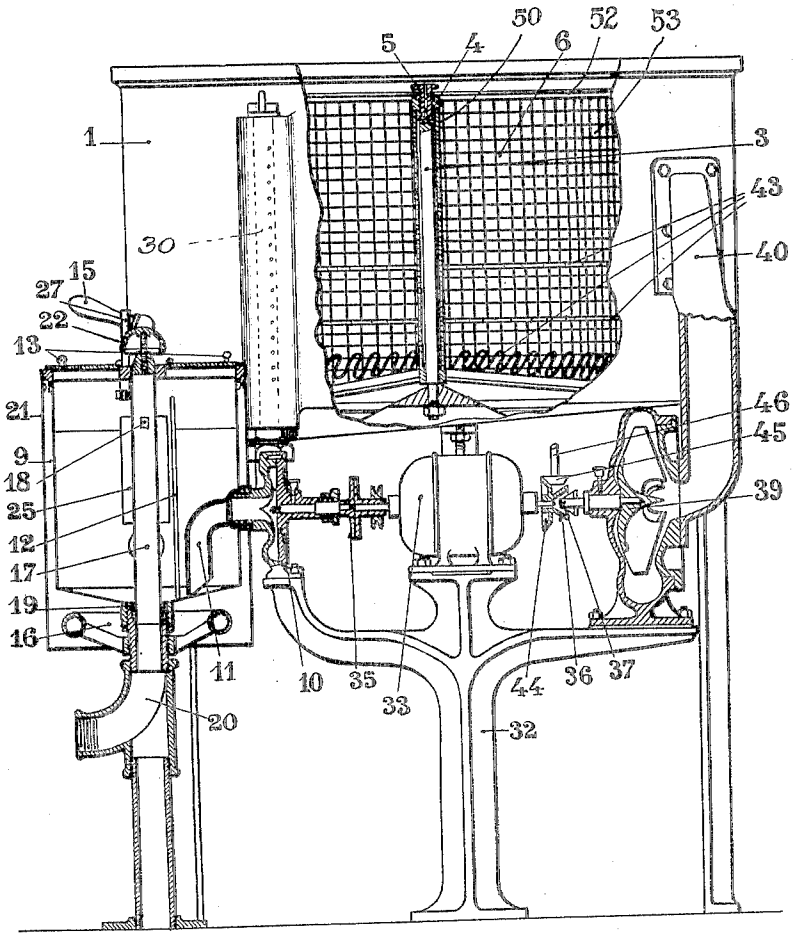

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Fig. 2

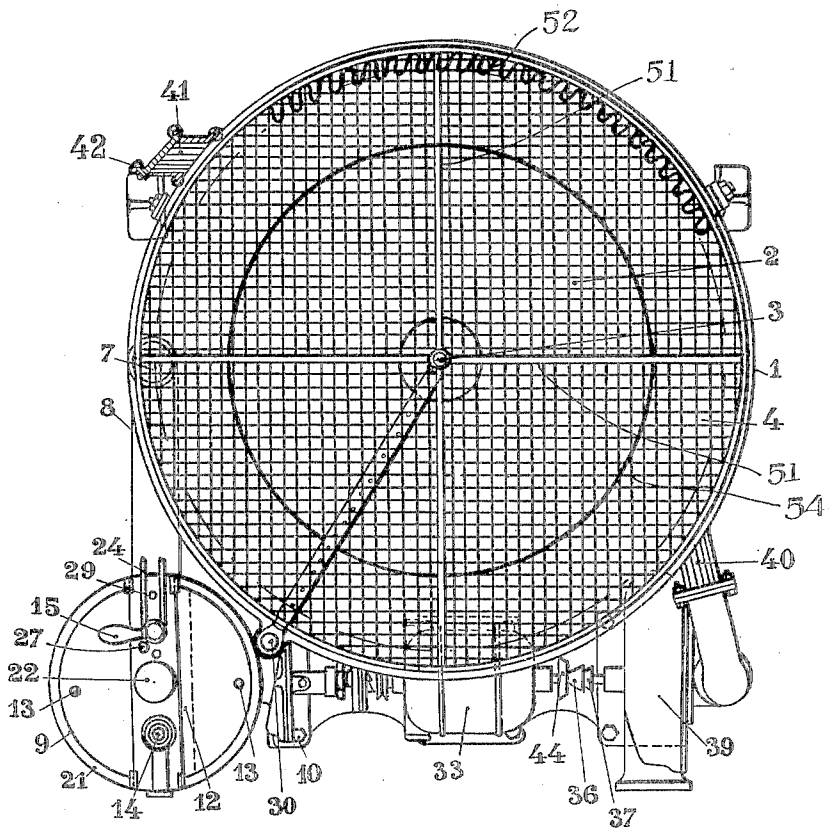

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Fig. 3

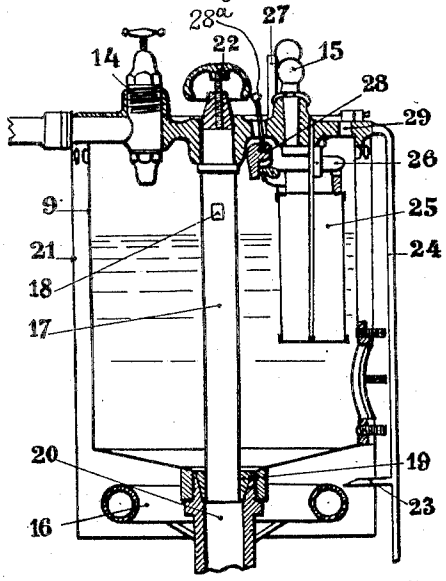


Fig. 6

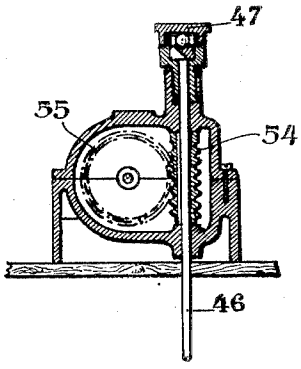


Fig. 5

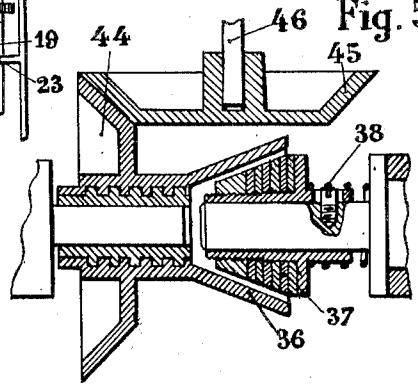
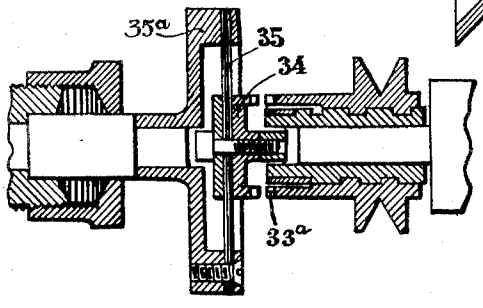


Fig. 4



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Patented Jan. 10, 1928. 1,656,139

UNITED STATES PATENT OFFICE.

JULES LOUIS BRETON, OF BELLEVUE, FRANCE.

DISHWASHING MACHINE.

Application filed November 8, 1923, Serial No. 673,542, and in France November 13, 1922.

The present invention relates to dish washing and drying machines.

The present invention comprises a dish washing and drying machine having a rotatable dish holding basket within a main receptacle, characterized by the rotation of the basket being successively produced by water jets acting upon the dishes as upon the paddles of a water wheel and then by an air stream acting upon the dishes as upon the blades of an air turbine.

The appended drawings show by way of example a constructional form of the said machine.

Fig. 1 is an elevational view of the complete domestic apparatus comprising a washing pump and a drying blower.

Fig. 2 is a plan view of the same.

Fig. 3 is a sectional view of the independent heater.

Figs. 4 and 5 are sectional views of automatic clutches controlling either the pump or the blower.

Fig. 6 is a sectional view of the speed reducing device for the control of the accessory devices.

In this machine, a cylindrical dish holding basket is supported by a pivot resting upon a central rod and is rotated successively by the force of water streams discharged by a centrifugal pump and then by the air blast from a blower whereby the washing and then the drying of the dishes are insured. The pump and the blower are operated in turn by the same electric motor.

The said arrangement in which the dish holding basket is used at one time as a hydraulic wheel for the washing and at another time as an air turbine for the drying, constitutes an important feature of the invention, and it offers the following essential advantages.

On the other hand, the blower produces the rotation of the said basket and provides for the drying motion of the washed dishes so as to obtain a very rapid drying by allowing the cover of the device to remain closed.

For this reason, it is feasible to make permanent use of the washing machine as a kitchen table.

A readily removable wire gauze strainer disposed in the feed boiler before the suction orifice of the pump overcomes the great drawback occasioned by again throwing upon the objects to be washed the débris which have been removed from such objects in the preceding operations.

By the general aggregate of this device I am enabled to perform the washing and rinsing operation with a very small quantity of hot water, thus obtaining a great saving of fuel for heating purposes. This saving is still further augmented by the direct heating of the water in the apparatus and the insulation surrounding the receptacle.

The apparatus consists of a cylindrical receptacle 1 holding at the centre of its bottom 2 the rod 3 which receives upon the ball 4 the pivot 5 of the dish holding basket 6. A circular trough having the form of an inclined ring surrounding the receptacle leads the water to the aperture 7, whence it is discharged through the pipe 8 into the heater 9.

The said heater consists of a cylindrical vessel 9 with a tapered bottom whose wall is traversed by the suction conduit of the centrifugal pump 10 which communicates at the lower part by means of the elbow 11. A strainer 12 serves to divide the said heater into two chambers, and it prevents the fragments removed by the washing water from being withdrawn by the pump and again sent upon the dishes.

The heater is closed by a cover having two hinged flaps which can be raised by the handles 13 for the ready cleaning of the strainer partition. Between the said flaps a diametral cross-piece holds the water inlet cock 14, the gas cock 15 of the burner 16, the guide and the control handle of the tube 17 which is provided with an overflow orifice 18, for raising the tapered emptying plug 19 for the discharge of the water through the conduit 20. A casing 21 apertured at the top covers the heater and its burner which it protects and whose efficiency it increases.

The said gas cock is so disposed that its handle 15 will, when in the open position, cover the handle of the emptying tube 22, so that one cannot raise this latter handle and empty the heater, without having closed the gas cock for extinguishing the burner while leaving the small igniting burner 23 in action by means of the gas supply pipe 24. During the emptying of the heater, the float 25 will raise by means of the lever 26 the rod 27 which closes the gas cock, and the latter can only be opened again when the fresh water placed in the heater for rinsing pur-

poses shall have raised the float and moved aside the obstructing rod. Upon reaching the proper level, the float releases a small weight 28 which drops upon a small hammer 28ª, and the latter will strike against the handle 22 of the said emptying pipe so as to produce an audible signal. This arrangement provides a mechanical water level alarm which is both simple and strong, and it requires no upkeep. A small opening 29 serves to hold a thermometer showing the temperature of the washing water.

The centrifugal pump 10 withdraws water from the heater and projects it upon the dishes in the rotating basket or holder through the apertured tubes 30 whereof one is placed horizontally according to a radius of the bottom of the said holder and the other is placed in the vertical position according to a generatrix of its cylindrical wall.

The motor, pump and blower group is placed upon a cast iron or aluminium base 32 of suitable shape which also forms one of the three feet of the apparatus. The motor 33, placed at the centre, drives on one side the centrifugal pump and on the other the blower, by automatic clutches of the inertia type which act in turn according to the direction of rotation whereby the pump and the blower can be successively operated by simply throwing the motor switch. Figs. 4 and 5 show two different types of these clutches, both giving excellent results. In Fig. 4, the movable mass is displaced upon a quick-motion screw and it is terminated by four saw teeth 33ª co-operating with four like teeth on the actuated shaft, but in order to dampen the sudden starting shock, the latter member is supported by an elastic india rubber disc 35 secured by a flat ring and various screws to a metal disc 35ª which is keyed to the shaft of the pump or blower. In the arrangement shown in Fig. 5, the saw-tooth clutch is replaced by a hollow cone 36 co-operating with the leather cone 37; the pressure required for a good coupling can be regulated by the spiral spring 38.

The centrifugal blower 39 withdraws the air through a conduit 40 opening into the cylindrical wall of the receptacle containing the said dish holder or basket. The said conduit 40 is divided up by a set of vertical wings made of light sheet metal, so as to avoid splashing of the wash water into the blower.

The air enters the apparatus through an inclined conduit 41 disposed in the cylindrical wall of the vessel and also provided with vertical wings chiefly intended to direct the flow of air upon the dishes in order to dry them while at the same time effecting the rotation of the basket. The opening is closed by a hinged door 42 during the washing, in order to prevent splashing of water.

The said dish holding basket has a central tube 50 upon whose upper part is disposed the pivot 5 resting upon the central rod 3.

To the central tube 50 are soldered or welded four members 51 each consisting of a single piece of T-iron bent at right angles with the flange inward; two angle-iron hoops 52 are soldered or welded to the exterior of the said members at the top and bottom; a cylinder 53 and a disc 54 formed of a large-meshed netting are mounted in the interior in order to constitute the bottom and the lateral wall of the basket or holder.

To the said netting are secured corrugated iron rings 43 whose loops have the same inclination as the edges of the plates.

The said arrangement, while securing the plates in a perfect manner, enables the maximum number to be placed in a holder of a given size, for instance 60 in a holder having 70 c/m. diameter, and it also allows of disposing (without any modification) plates or all kinds of dishes at will in any of the sections of the basket.

In order to control the accessory apparatus which may be disposed upon the table formed by the cover of the machine, one of the automatic clutches may comprise, instead of a grooved pulley, a tapered disc 44, Fig. 5, co-operating by friction with a like disc 45 which is keyed to the end of a vertical shaft 46 controlling (by a worm) a worm 54 wheel 55 disposed in a closed casing secured to the cover, Fig. 6. The proper adhesion of the two conical discs is ensured by the pressure exercised by the worm of the automatic clutch.

In order to disengage this additional control, it is simply necessary to raise the vertical rod with its tapered roller by means of the knob with bayonet joint 47, Fig. 6. This arrangement, which eliminates the belt, has the advantage of controlling the automatic coupling of the blower by the simple operation of the descent of the vertical shaft, causing at the same time the frictional contact of the two tapered rollers, so that the motor may control, by changing the direction of its rotation, the centrifugal pump or the blower.

The heating device for said apparatus is chiefly intended for use in kitchens having hot water piping; in this case, when the washing is completed, it is simply necessary to pour a fresh quantity of hot water into the apparatus, and the dishes can thus be rinsed at once. But when cold water alone is available, it is necessary to wait until this water placed in the heater is heated to the proper temperature by the burner, and this will require a certain time.

I claim:—

In a dish washing machine, the combination of a washing vat, a dish holding basket rotatable in this vat, and adapted to rotate in a

horizontal plane, means in said basket for holding the dishes in nearly radial positions, an air pump adapted to draw the air out of the said vat, an air inlet nozzle in the wall of said vat and directed towards the said dishes, a water pump adapted to inject washing water in the said vat, an engine placed between the said air pump and the said water pump and means for alternately coupling the said engine with the said water pump and with the said air pump.

In testimony that I claim the foregoing as my invention, I have signed my name.

JULES LOUIS BRETON.