

Feb. 25, 1930.

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1,748,296

WASHING AND DRYING MACHINE

Filed Dec. 14, 1926

3 Sheets-Sheet 1

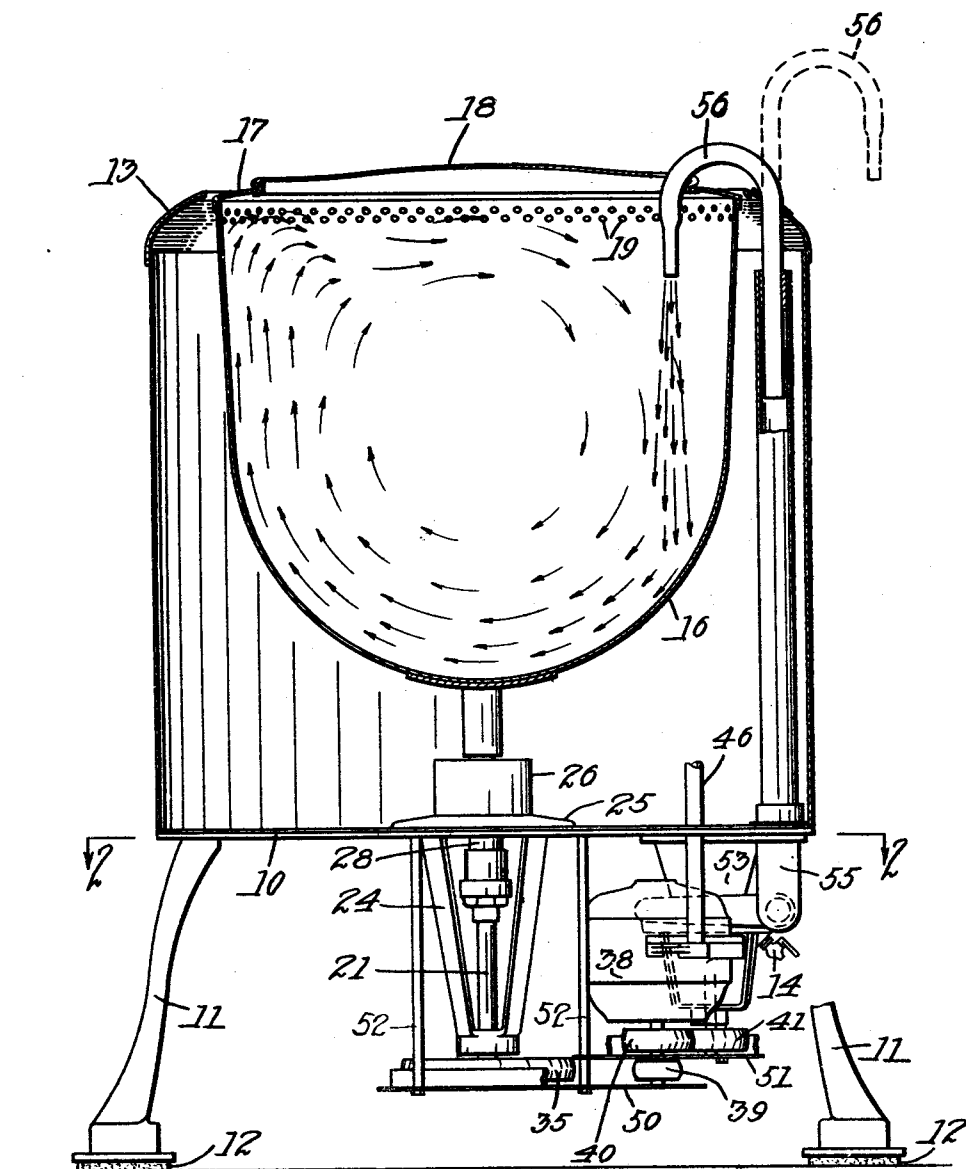


Fig. 1.

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3 Sheets-Sheet 2

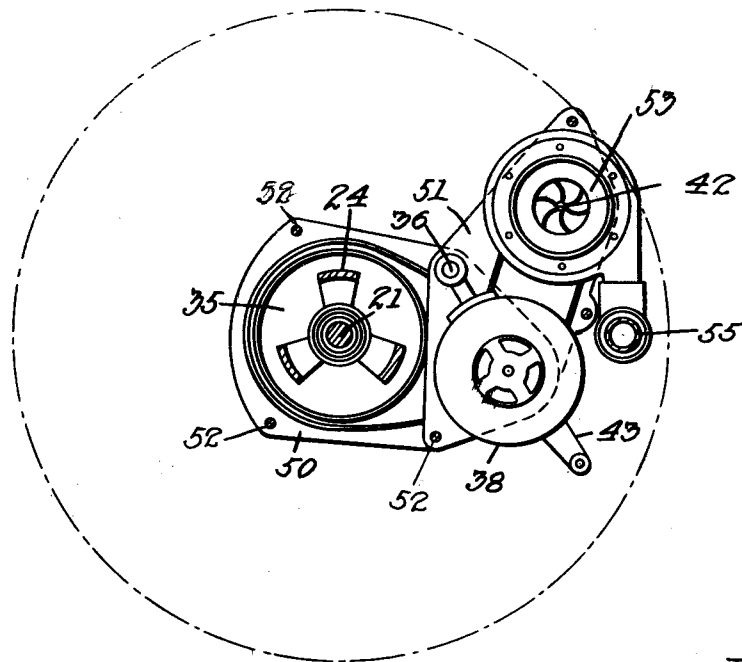


Fig. 2.

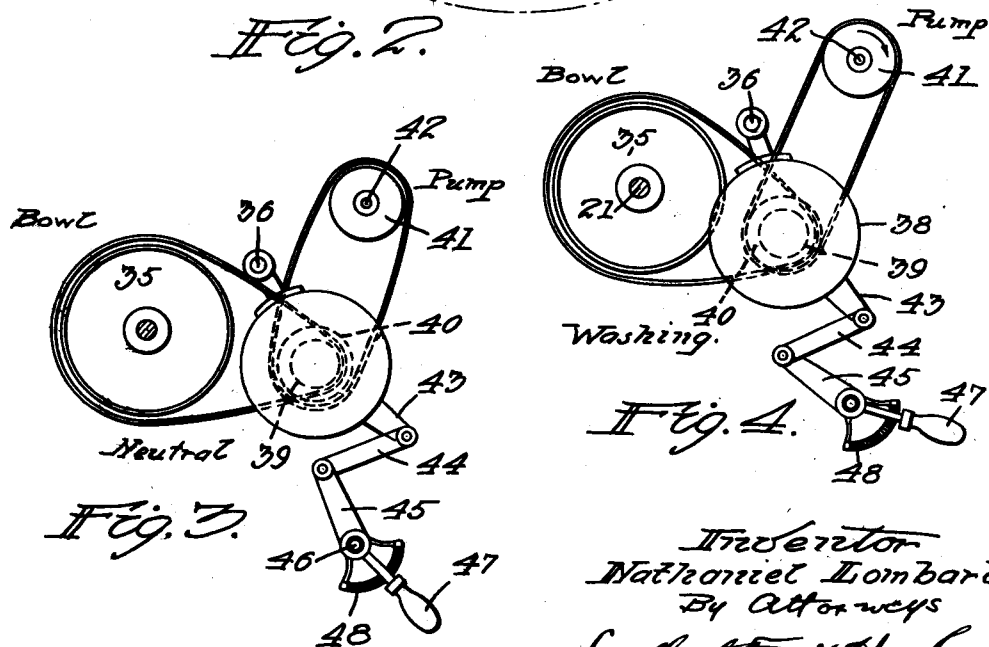


Fig. 3.

Fig. 4.

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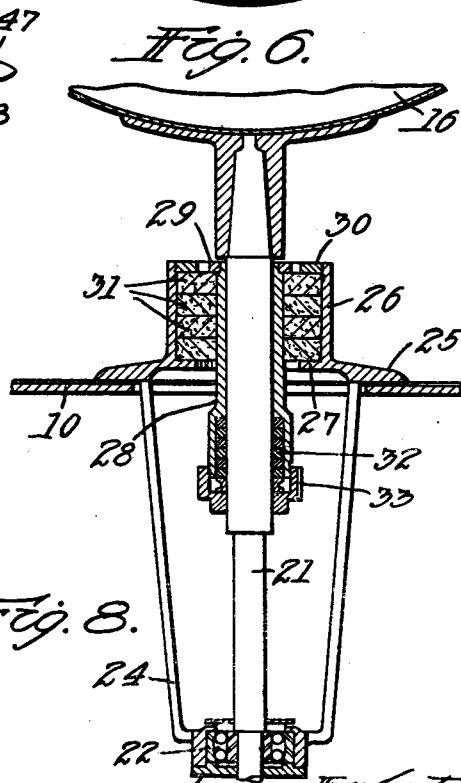
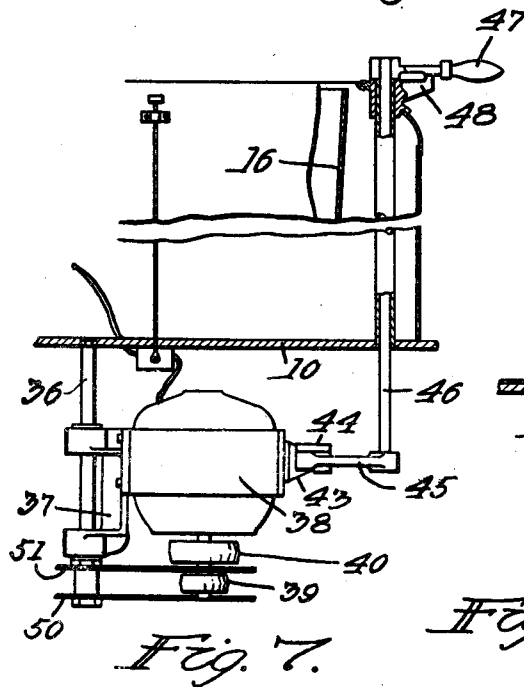
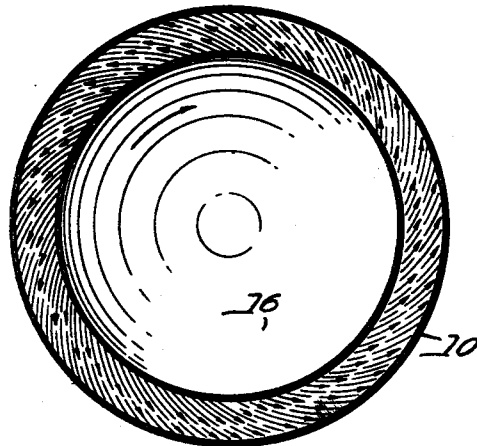
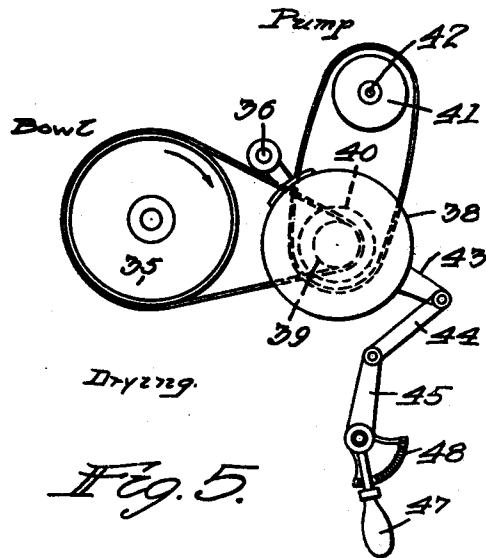
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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WASHING AND DRYING MACHINE

Application filed December 14, 1926. Serial No. 154,826.

This invention relates to a machine for washing and drying, chiefly for domestic use.

The principal objects of the invention are to provide a machine for these purposes having comparatively simple mechanism and capable of washing the clothing by employment of water currents without subjecting the clothing to the action of any mechanism liable to injure it and to construct it so that it can be changed very easily from a washer to a dryer in which the drying is done by centrifugal force.

The invention also involves driving means for operating a pump to force the water into the bowl for washing purposes, and means for rotating the bowl for drying purposes, in the form of a movable motor. This motor can be turned to two extreme positions, in one of which the water will be pumped and in the other of which the bowl will be rotated, each to the exclusion of the other.

The invention accordingly involves means for mounting the motor in a simple way to accomplish this purpose. It also involves an improved supporting bearing for the washing machine capable of holding the washing bowl properly in place and yet capable of some motion and means for thoroughly cushioning the motion.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a vertical central sectional view of a washing machine constructed in accordance with this invention;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1 with the tub indicated by a dot and dash line;

Figs. 3, 4 and 5 are plan views of the motor and belting for driving the bowl and pump, showing the three positions of the motor and the operation of the parts therefrom;

Fig. 6 is a plan of the bowl showing the action during drying;

Fig. 7 is a vertical sectional view taken radially and showing the means for operating the machine to connect the motor with the pump or bowl as may be desired; and

Fig. 8 is a central sectional view of the supporting and bearing device for the spindle of the bowl.

This machine is constructed preferably with an outer casing or tank 10 supported on legs 11 which are provided with rubber or other pads 12 at the bottom to absorb the vibrations. This tank is not designed to have any function in the operation except to receive the water driven out by the drying operation. At the top it is provided with a flange 13 extending inwardly as will appear and near the bottom with a drain cock 14 by which it may be drained.

Mounted in this tank is a bowl 16 which has a hemi-spherical bottom preferably and walls of conical form extending a little outwardly at the top. This bowl is provided with a flange 17 having a lid 18 which can be raised. Under the flange 17 around the top of the bowl are a series of perforations 19 which are designed for the discharge of the water during the drying as will appear. It will be seen that the flange 13 is turned inwardly all around so that it will receive any currents of water discharged through these perforations.

This bowl is fixedly mounted on a spindle 21 to be rotated thereby. This spindle is provided with a shoulder near the bottom and rests on a ball bearing 22, the inner face of the outer bearing of which is concave to allow a slight swinging motion of the spindle 21 about this bearing as a center. This bearing is supported on a plate 23 carried at the bottom by a series of arms 24 extending downwardly and which have a top plate 25, constituting an integral part of the frame. This top plate is secured to the bottom of the tank 10 on the inside. Within the receptacle the frame 24 has an integral hollow cylindrical housing 26 having a bottom 27 that has an opening giving ample space to receive the spindle and a sleeve 28, which the spindle carries, and to allow for side motion. At the top, this sleeve is provided with a screw thread and a nut 29 is screwed upon it, while on the interior of the cylinder 26 is another screw thread and an externally threaded nut 30 is set into it. These two

nuts 29 and 30 are in the same plane when in their final position but there is an annular space between them. Inside the chamber formed by the cylinder 26 are provided a set of rubber flat packing rings 31. On account of the space between the nuts 29 and 30 and the annular space inside the bottom 27, the spindle 21 is not held rigidly at this point but is capable of some vibration which is absorbed by the packing 31.

The sleeve 28 is also provided with a chamber at the bottom in which is a packing 32 of rubber discs or the like and its bottom is held in place by a gland 33 secured on it by a screw thread. In this way the bowl is held with comparative firmness but allowed some freedom of movement without transmitting any noise to the rest of the frame.

On the bottom of the spindle 21 is a pulley 35 by which this spindle is driven. Also mounted on the bottom of the receptacle 10 is a shaft 36 on which is pivoted by brackets 37, a motor 38. This motor has a pulley 39 for receiving a belt from the pulley 35. It also has a pulley 40 for receiving another belt that is on a pulley 41 which is carried by a pump shaft 42 and drives the same. The motor is adapted to swing about the shaft 36 and for this purpose is provided with a projecting bracket 43 which is connected by a link 44 with an arm 45 on a shaft 46. This shaft extends up through the casing 10 and, at the top, is provided with a handle 47 for operating it. This handle is adapted to be turned to three positions which are indicated as controlled by a segment 48 located in stationary position at the top of the machine.

As will be seen from Figs. 3, 4 and 5 the handle 47 can be turned to neutral position shown in Fig. 3 in which case both the belts described will be loose. They fall down from their pulleys which are crowned, of course, and rest on plates 50 and 51 which are supported by rods 52. Now if the handle 47 is turned to the right as shown in Fig. 4 the motor is pulled over to the left and the belt of the pump pulley 41 is tightened. This operates the pump in a manner that will be described.

On the other hand, if the handle 47 is turned to the left hand extreme position, the belt on the pulleys 35 and 39 will be tightened while the pump belt will be loosened as shown in Fig. 5. This results in rotating the bowl.

The operation of the machine is very simple. When the handle 47 is in the position shown in Fig. 4, the pump 53, which is on the shaft 42 on which the pulley 41 is mounted, will be rotated. This pump delivers water from the tank 10 directly into a pipe 55 which has a nozzle 56 that can be raised and lowered and turned to the positions indicated in Fig. 1. In the dotted line position the nozzle is out of the way of the water and clothing in the rotating tub. In the full line position this extends down into a recess

in the cover 18 and delivers the water into the bowl as indicated by the arrows in that figure. The bowl in this state is stationary and the washing is all accomplished by circulation of the water at a high speed therein. When it is desired to stop the washing operation the handle 47 is turned to the neutral position as indicated in Fig. 3 and the pump stops by loosening of the belt.

The drying operation is performed by turning the handle 47 by which the belt of the pulleys 35 and 39 is tightened and the bowl is rotated at a high speed. The rotation is sufficient to cause the water to creep up the sides of the bowl and be forced out of the openings 19 against the cover 18 and down into the tank 10. This permits the drying of the clothing as well as the washing by the simple turning of this handle 47, no care being taken except to raise the nozzle 56 and open the drain-cock 14 which drains the bowl 16 and the pump 53. It has been found in practice that this not only thoroughly washes the clothing but dries it as well, ready to hang out. The operation is extremely simple, the machine takes up very little room, the vibration is all absorbed and there are very few parts that ever have to be repaired or replaced.

Another advantage is also due to the fact that the cloth is not engaged by moving mechanism in the way of cups or paddles and there are no irregularities in the inside of the bowl so that the clothing is washed without injury mechanically.

Although I have illustrated and described only a single form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims.

Therefore, I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:—

1. In a washing and drying machine, the combination with a tank and a bowl therein, said bowl having a hemispherical bottom and upwardly extending walls flaring outwardly at the top, and being provided with a series of perforations therein near the top, means for introducing water into the bowl near one side for creating a circulation of water in the bowl, and means for rotating the bowl in the tank for discharging the water by centrifugal force against the inside of the tank to dry the clothes.

2. In a washing and drying machine, the combination with a stationary tank and a rotary bowl therein having perforations near the top, of a motor, a pump connected with the motor, a central spindle extending downwardly from the bowl through the bottom of the tank and connected with the motor below, and means for applying the power of the motor either to the pump or to the spindle, but

for preventing its application to both at the same time.

3. In a washing and drying machine, the combination with a tank, and a rotatable washing bowl within the tank, said bowl
5 having perforations near the top for discharging water into the tank, of a motor, the motor being mounted to swing bodily, a spindle extending down from the bowl, a pump
10 having means for discharging water into the bowl, two pulleys on the motor shaft, a pulley on the pump shaft, a pulley on the spindle, and two belts, one connecting the motor shaft to the spindle and the other connecting the
15 motor shaft to the pump, whereby when the motor is swung about the first named shaft in one direction the belt to the pump will be tightened and when it is swung in the other direction the belt on the pulley on the spindle
20 will be tightened.

4. In a washing and drying machine, the combination with a tank and a bowl located therein and having perforations for discharging the water, of a motor mounted to swing
25 on an axis, a spindle for rotating the bowl, a belt drive from said motor to said spindle, and a lever and link connection with the motor for swinging it back and forth about its pivot shaft, whereby the belt can be tightened
30 by the motion of the motor, a handle on the shaft, whereby when the handle is turned to one extreme the belt will be taut and the spindle will be rotated and when the handle is in other positions, the belt will be loose and the
35 motor will not be connected to drive the bowl.

5. In a washing and drying machine, the combination with a stationary tank and a rotary bowl therein, of a motor mounted to swing on an eccentric axis, two pulleys on the
40 motor shaft, a spindle for rotating the bowl, a pump for delivering water into the bowl, a pump shaft, the spindle and pump shaft each having a pulley on the bottom, and two belts connecting them with the two pulleys on the
45 motor shaft, whereby when the motor is swung on its axis one of said pulleys will be tightened and the other loosened.

6. In a washing and drying machine, the combination with a stationary tank and a rotary bowl therein, of a motor mounted to swing on an axis at one side of the motor, two pulleys on the motor shaft, a spindle for rotating the bowl, a pump for delivering water into the bowl, a pump shaft, the spindle and
55 pump shaft each having a pulley thereon, two belts in different planes connecting them with the two pulleys on the motor shaft, and two plates under the two belts for receiving them when loose adjacent to their respective pulleys, whereby when the motor is swung on
60 said axis, one of said belts will be tightened and the other loosened.

In testimony whereof I have hereto affixed my signature.