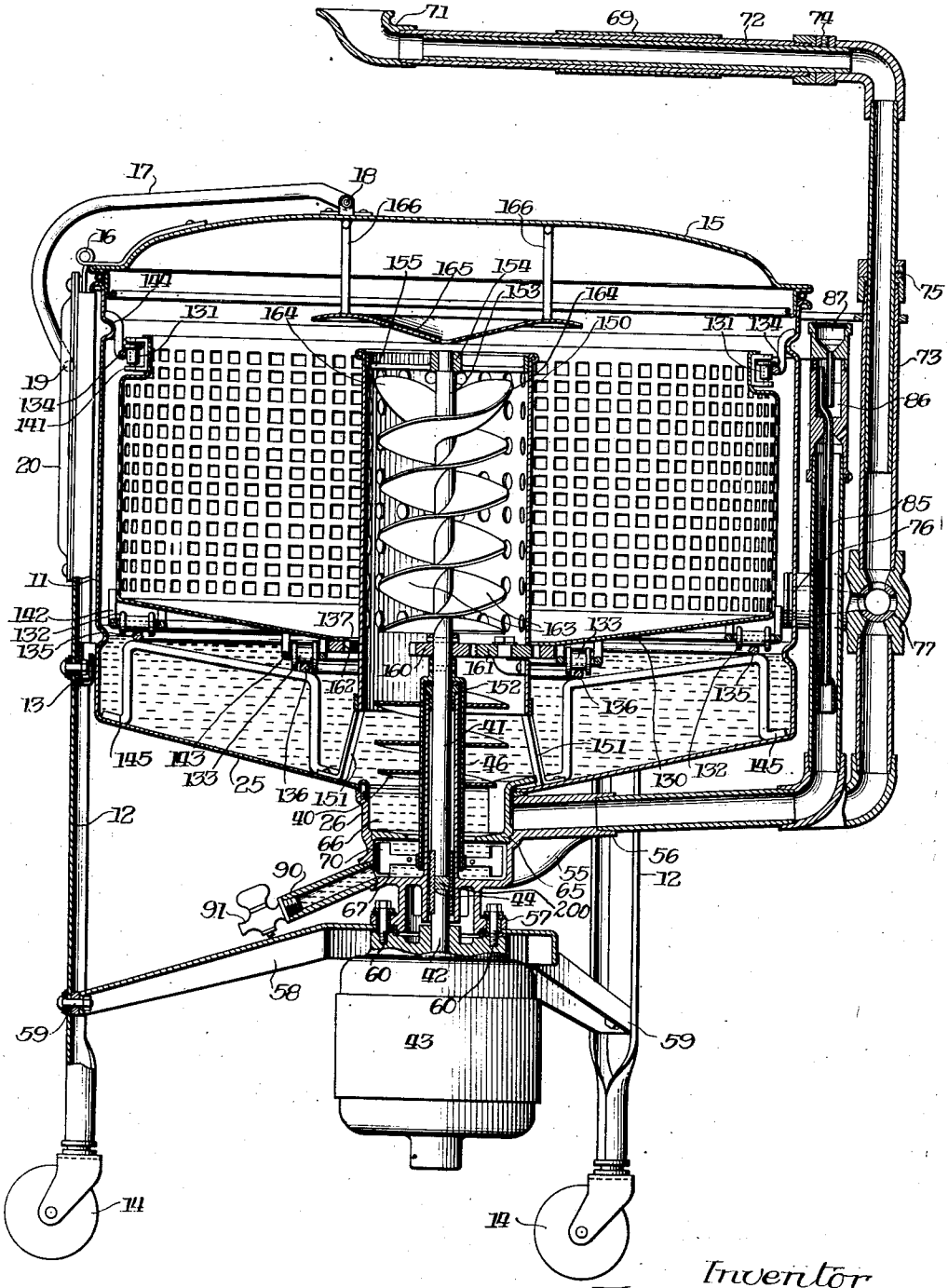
March 21, 1933. E. S. STODDARD 1,902,193

WASHING MACHINE

Filed May 5, 1930



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Patented Mar. 21, 1933 1,902,193

UNITED STATES PATENT OFFICE

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WASHING MACHINE

Application filed May 5, 1930. Serial No. 449,749.

This invention relates to clothes washing machines.

In clothes washing machines previously utilized, it has been customary to agitate the clothes while submerged in a body of cleansing or rinsing water. These agitating clothes washing processes have many of the disadvantages of the old washboard method inasmuch as they tend to cause the clothes to disintegrate and also weaken the fibre strength at many places, resulting in a decreased life period.

The object of this invention is to provide a clothes washing machine in which the clothes will be maintained relatively stationary within a containing vessel and in which the clothes will be maintained above the pool of cleansing and rinsing water in the bottom of the washing chamber of the machine.

Another object of this invention is to provide a clothes washing machine which will cleanse and rinse clothes by means of passing the cleansing fluid through the clothes.

A further object of this invention is to provide an improved means for adding cleansing and rinsing water to the washing chamber of a clothes washing machine and for removing waste water therefrom.

A still further object of this invention is to provide improved level regulating and indicating devices for clothes washing machines.

A still further object of this invention is to provide a clothes washing machine of simplified construction which is readily adaptable for household purposes and which is also adapted to cooperate with an ordinary domestic sink both for receiving and discharging liquids.

A still further object is to provide a new clothes washing process.

In the preferred embodiment of this invention, the clothes to be cleansed are positioned in a stationary or rotatable perforated basket in the interior of the clothes washing machine. A water circulating device in the interior of the machine is so positioned as to cause a continuous stream of water to pass through the clothes during the cleansing and rinsing operation.

The single figure of the drawing represents a washing machine constructed in accordance with my invention.

The tank of the machine 11 is supported by the symmetrically positioned legs 12 which are attached to the tank by means of the brackets 13. The bottom of the legs of the washing machine are provided with rollers 14 which readily enable the washing machine to be moved about from place to place. The tank 11 is provided with a lid 15 which may be hinged as indicated at 16. The lid of the machine may also be provided with a sliding cover support rod 17, one end of which 18 may be pivotally attached to the cover of the tank 15 while the other end 19 may be adapted to slide in the holder 20 attached to the rear leg 12 of the machine. The tank 11 is provided with a dished bottom 25 which is formed in such a manner that the liquid in the machine will drain to the bottom center thereof. Below the center of the tank is a well chamber 26 which is adapted to receive the incoming wash and rinse liquids and which is also adapted to receive the outgoing waste liquid from the chamber of the tank.

The water circulating device 40 is driven by the shaft 41 which is operatively connected to the shaft 42 of the motor 43 by the coupling 44. The water circulating device consists of two curved inclined planes or surfaces which are attached to the outside of the depending cylindrical apron 152. This depending cylindrical apron is adapted to cover the upwardly projecting tubular bearing member 46 which is cast in one piece with the wall casting.

As stated before, the well casting 26 has integrally attached to it the tubular bearing 46. In addition there are also cast with the well chamber 26, projecting tubular portions 55 and 56. Integral with the lowest portion of the well casting 26 is the shouldered flange 57 which is adapted to be bolted to the end bell of the motor 43 and forms a centered connection therewith. The motor is supported by the triple legged spider 58 which is attached to the symmetrically positioned legs 12 as indicated at 59. The bolts 60 are adapted to hold together the end bell

of the motor, the shouldered flange 57 and the triple legged spider 58.

Great care is exercised in insulating the motor 43 from the body of the washing machine. The end bell of the motor 43 and the bolt 60 are carefully insulated from the spider 58 and the flange 57 by means of a series of washers of insulating material as shown. The shaft 42 of the motor 43 is also insulated from the shaft 41 of the water circulating device by means of the collar 44, which is made of an insulating material, for example, phenol condensation products enclosed in a steel bearing shell. It is also preferable to close the air gap between the ends of shafts 41 and 42 with some insulating material 200 which will prevent the collection of any electrolytes in such open space, for example, a cylindrical block of rubber cemented in position.

The upwardly facing annular shaped well chamber inside of the casting 26 is divided into an upper chamber and a lower chamber 67 by means of the plate 65 which rests upon a shoulder in the side of the well casting. This plate may be fixed in position by means of set screws (not shown). The lower chamber 67 constitutes a housing for a centrifugal device 70, which device is attached to the lowest portion of the shell 45 of the water circulating device 40. This centrifugal device is adapted to discharge liquids into the tubular projection 55 and is adapted to receive liquids through the annular opening in the center of the plate 65.

In the embodiment shown in the drawing, liquids are added or removed from the washing chamber by a common conduit. The common admission and discharge conduit consists of a rotatable funnel shaped member 71 and a hollow swinging arm of adjustable height and length made up of the sliding tubular members 72 and 73, enabling adjustment in height, and tubular member 72 enabling adjustment in length. These tubular members may be turned inside each other rotatably so that the funnel 71 can be turned upwardly as shown in Figure 1 to admit liquid from a faucet of a domestic or household sink and can be turned downwardly so as to discharge liquids into the basin of a household sink. The inner and outer tubes of the tubular member 73 can also be rotatably moved in respect to each other so that the swinging arm may either be placed over the top of the machine when not in operative position as shown in the drawing or may be positioned away from the machine so as to cooperate with a household sink, when the machine is being operated so as to receive or discharge liquids. The amount of elongation of the tubular members 72 and 73 may be regulated and set by means of the coacting collars and nuts 74 and 75. The common conduit has two points of entry into the tank, one through the opening 76 and the other through the tubular projection 55. By manipulating the valve 77, the conduit can be caused to open into the tank at 76 or through the tubular projection 55 as desired. The discharge of water from the tank will always take place through the tubular member 55 due to the action of the centrifugal pump 70. However, the water may be admitted to the tank by the opening 76 when the machine is in operation or through the tubular opening 55 when the machine is not in operation. To the upper chamber 66 is attached a level indicating column which connects with the tubular projection 56. This level indicating column consists of an air tube 85 which communicates with a liquid reservoir 86 which reservoir in turn communicates with a gauge chamber 87. The water in the tube 56 will rise to the same height as the liquid in the washing chamber, and in so doing will force a volume of air up through the tube 85 into the reservoir chamber 86. The indicating liquid in the reservoir chamber 86 will then be forced into the gauge chamber 87, the gauge portion of which is conical in shape. The position of the indicating liquid in the conical interor of the gauge chamber 87 will indicate the level of the liquid inside the tank 11. In ordinary practice liquid is allowed to flow into the admission conduit while the machine is not in operation until the desired level has been reached as indicated by the gauge 87. If, after discharging the liquid by means of the centrifugal pump 70, it is desired to remove the residual liquid from the well chamber 26, such may be done by the pipe 90 with the pet cock 91.

The rotatable perforated basket 130 is provided with three sets of rollers 131, 132 and 133, which ride upon rails 134, 135 and 136, attached to or supported by the sides and bottom of the tank 11. The basket is perforated on the sides but not on the bottom, but is provided with a central annular opening 137 for clearance and drainage purposes. The rollers 131, 132 and 133 are attached to the sides and bottom of the basket by means of the yokes 141, 142 and 143. The upper rail 134 is suspended by the legs 144 from a bead in the upper part of the tank and the lower rails 135 and 136 are attached to the downwardly facing U-pieces 145, which rest upon the bottom of the tank and are attached thereto.

The central cylinder 150 is stationary and is perforated above the bottom of the basket 130. It is attached to the bottom of the tank by the legs 151. The depending apron shell 152 covers the upwardly projecting tubular bearing 46 but the upper portions of the curved inclined surfaces of the water propelling member 40 are omitted. The shaft 41 does not terminate adjacent to the top of

the apron shell 152, but continues up through the tank as the shaft 153, and is provided with a third bearing 154 which is held in position by the spider 155 which rests upon the top of the cylinder 150. The shaft 153 drives the gear 160 which is attached to it a short distance above the top of the shell. The gear 160 drives the pinion 161 which in turn drives the ring gear or annulus 162 which is attached to the bottom of the basket 130. To the upper part of the shaft 153 are attached the elevating spirals 163—163 which terminate in the curved projectors 164—164. The plate 165 is suspended from the lid 15 by means of the rods 166. The plate 165 acts to spread the elevated liquid outwardly into the basket 130.

The clothes washing machine is operated in the following manner: The lid 15 of the machine is opened and the clothes are placed in the perforated basket 30. The desired amount of soap is then placed in the machine, preferably into the central tubular portion 132. Then the lid of the machine is closed and the swinging arm is turned away from the tank of the machine and is positioned under the faucet of a household sink. The funnel 71 is turned upwardly so as to cooperate with the faucet of a household sink. Hot cleansing water is then allowed to run into the conduit. In the embodiment shown in the drawing, when the proper amount of liquid has been admitted to the tank, an indication thereof will be given by means of the gauge 87 and the operator may then close off the supply. When the proper amount of cleansing liquid has been admitted to the machine, the motor 43 is then switched on with the result that devices 40 and 163 will pick up water from the pool in the bottom of the tank and eject it horizontally through the perforations in the central cylinder basket 150, thereby causing the water to pass through clothes in the basket 130. The circulation of water is kept up for a desired length of time until the clothes are thoroughly cleansed. At such time the valve 77 is opened so as to permit discharge of liquid through the discharge conduits composed of tubular members 72 and 73. The centrifugal pump 70 will rapidly discharge all liquid through such discharge conduit when the discharge conduit is opened. By operation of the machine after the washing operation is completed and the wash water removed from the tank, the centrifugal motion of the rotating clothes basket acts to remove the wash water normally held by the clothes. To rinse the clothes after the waste liquid has been discharged, the valve 77 is actuated so as to close the discharge conduit and clean rinsing water is allowed to flow into the machine. The desired amount of water is allowed to enter in the manner previously described. While this rinsing water is flowing into the machine, the machine can either be in operation or can be shut down. After the rinsing operation has taken place, the machine is again discharged in the manner described above. When the operation is completed, the clothes may be removed from the perforated basket already substantially dehydrated. After being allowed to drain for a suitable period, they then may be dehydrated by some suitable additional means. It will be noted that during the operation of the machine, the clothes are maintained stationary within the rack and are not agitated. The cleansing is due to the action of a stream of water which is caused to circulate through the clothes which are substantially unsubmerged during the entire process.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitation should be understood therefrom, but the appended claim should be construed as broadly as permissible in view of the prior art.

What is claimed is:

In a washing machine, a tank having a centrally draining bottom, a well chamber communicating with the lower portion of said draining bottom, a motor positioned externally of said tank having a shaft extending upwardly through said well chamber and into the tank, a water elevating device operatively connected to said shaft above the well chamber, a water elevating and projecting device connected to said shaft about the upper portion thereof, a perforated casing surrounding said water elevating and projecting device and spaced from the bottom of the tank, a rotatable clothes rack positioned about said casing, and means connected through the casing to an intermediate portion of said shaft and to the rack for rotating the latter.

In testimony whereof I have hereunto subscribed my name to the foregoing specification and claim.

EDGAR S. STODDARD.