Nov. 20, 1962 W. WEISS ET AL 3,064,666

WASHING MACHINE, PARTICULARLY FOR SURGICAL GLOVES

Filed July 10, 1959 2 Sheets-Sheet 1

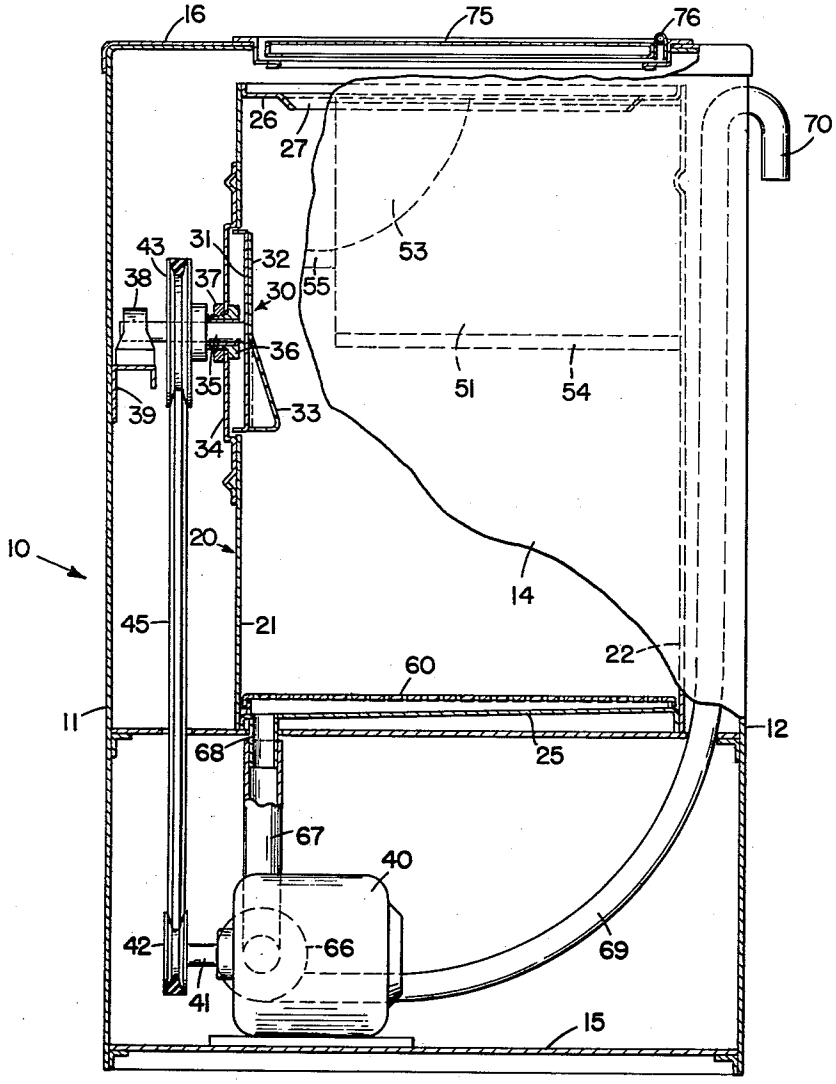


FIG. 1

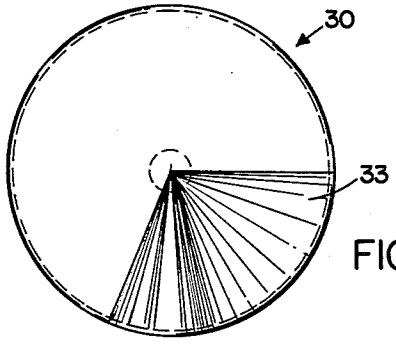


FIG. 2

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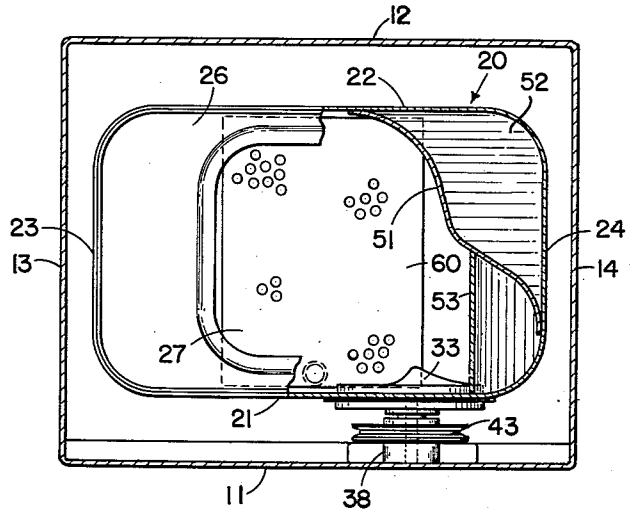


FIG. 3

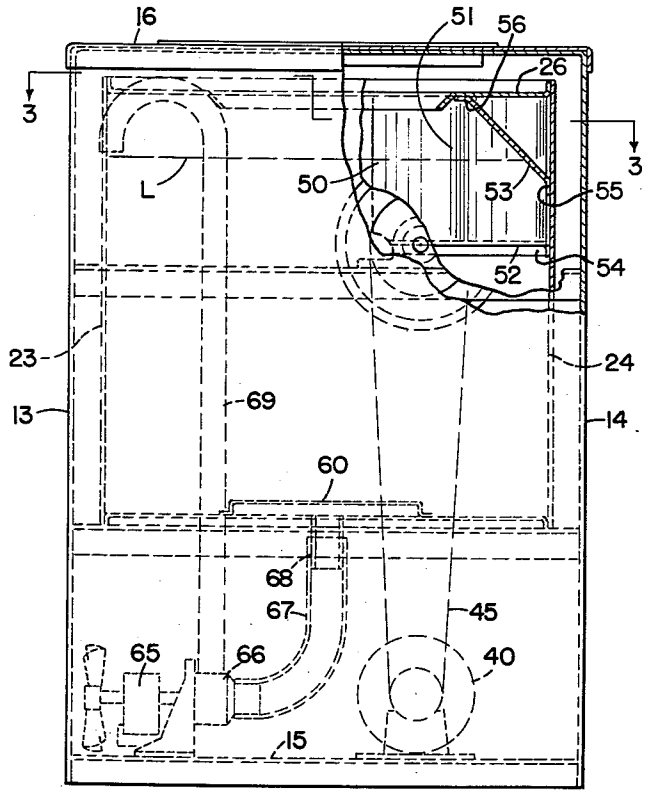


FIG. 4

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WASHING MACHINE, PARTICULARLY FOR SURGICAL GLOVES

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9 Claims. (Cl. 134—182)

The present invention relates to a washing machine, and more particularly to a machine for washing surgical gloves.

Attempts to wash surgical gloves in conventional domestic laundry machines have not proved successful. These machines are designed and engineered for washing porous materials, such as cotton, wool, silk, etc., which are easily penetrated by water and by the cleaning compound. These machines are not practical, however, for washing surgical gloves. Water cannot go through a surgical glove. The glove is not and cannot be porous. The only way in which water can go into a surgical glove is through the cuff of the glove. To wash the inside of the gloves without turning them, then, the water and cleaning compound have to flow through the cuffs of the gloves. With a conventional domestic washing machine, however, air is entrapped in the fingers of the glove; and the gloves remain on the surface; they are not really washed. In order to wash the gloves they should float beneath the surface and open in the water so that the water and the detergent, or other cleaning compound, may penetrate inside of the gloves. No conventional agitator or drum type washer will allow this.

Heretofore it has been necessary, therefore, to wash surgical gloves by hand, turning them inside out. Obviously time and money could be saved if a machine could be devised which would wash surgical gloves mechanically and replace the previous expensive, tedious hand operation.

One object of the present invention is to provide a practical machine for washing surgical gloves.

Another object of the invention is to provide a machine of the character described which is simple to operate, which will perform its task quickly and efficiently, and which will effect a gentle, thorough cleaning action without damage to the gloves.

Other objects of the invention will be apparent hereinafter from the specification and from the recital of the appended claims when taken in conjunction with the accompanying drawings.

In the drawings:

FIG. 1 is a side elevation, with parts broken away and shown in section, of a washing machine built according to one embodiment of this invention;

FIG. 2 is a front elevation on a somewhat enlarged scale, of the pulsator or impeller used in this machine;

FIG. 3 is a section on the line 3—3 of FIG. 4, looking in the direction of the arrows; and

FIG. 4 is a side elevation of the machine looking at right angles to the view of FIG. 1.

Referring now to the drawings by numerals of reference, 10 denotes generally the cabinet of the washing machine, which may comprise a welded steel chasis to which are welded, or otherwise fastened, a front panel 11, a back panel 12, side panels 13 and 14, a base plate or panel 15, and a top cover or flange 16.

Mounted within the cabinet, and spaced from the top, bottom and side walls thereof is the washing chamber or tank proper, which is denoted generally at 20. This tub or tank is enclosed by a front wall 21, a rear wall 22, side walls 23 and 24, a bottom wall 25, and a top wall 26. Top wall 26 has an opening 27 therethrough through which the gloves may be inserted into and removed from the washing chamber. The cabinet itself is rectangular in cross section; and the washing chamber is generally rectangular in cross section, having rounded corners as shown clearly in FIG. 3.

Mounted in the side wall 21 of the tank for rotation on a horizontal axis which is offset to one side of the center of that side wall is a pulsator or impeller 30. This impeller comprises a flanged backing disc 31, to which there is welded another, front disc 32 which is formed with a single more or less conical-shaped vane 33. The pulsator or impeller rotates in a circular opening in the side wall 21 of the chamber, which opening is closed behind the impeller by a cover plate 34 that may be welded or otherwise secured to the wall 21 of the chamber. The impeller is welded, or otherwise secured, to a horizontal shaft 35 that is rotatable in a bearing 36 which is secured in place by a nut 37. Shaft 35 is journalled in the bearing 36 and in a bearing member 38 that is riveted, welded, or otherwise secured to a bracket 39 that is welded or otherwise secured to the wall 11 of the cabinet. The shaft 35 is driven from a motor 40 (FIG. 1), which is mounted on the base plate 15. The armature shaft 41 of this motor carries a pulley 42, which drives through a belt 45 the pulley 43, that is secured to the shaft 35.

Mounted in the tank or chamber 20 at one of the short sides thereof are deflectors or baffles 50 and 53. The baffle 50 has an undulatory surface 51 extending generally diagonally across one corner of the tank and facing toward the pulsator or impeller 30. This baffle extends from the rear wall 22 of the tank from a point slightly spaced to the right of the center of that wall to a point on the wall 24 close to the front wall 21. The bottom wall 52 of this baffle extends substantially at right angles to the wall 51 of the baffle and to the tank wall 24. It is welded or otherwise fastened to the wall 24 by a tab 54. The baffle 53 has a plane inclined operative surface facing the bottom of the tank. It abuts along one side edge against the undulatory surface 51 of the baffle 50 and it abuts along its other side edge against the wall 21 of the tank. It extends from the top of the tank downwardly for only about half the height of baffle 50. It is affixed at its bottom to the wall 24 of the tank by a tab 55; and it is affixed at its top to the top wall 26 of the tank by a tab 56. The deflectors or baffles cooperate with the pulsator or impeller to trap the gloves under water so that water and detergent is driven through the cuffs into the fingers of the gloves to thoroughly wash and clean them in the inside without turning the gloves inside out.

The bottom wall 25 of the tank is inclined downwardly from the rear to the front of the tank. Mounted on top of this bottom wall is a perforated drain screen 60. Mounted on the base plate 15 of the cabinet is a motor 65 which drives a pump 66. Pump 66 is connected by a conduit 67 with a discharge pipe 68 through which the water drains from the bottom of the tank. The pump is also connected through a flexible hose 69 to a U-

shaped discharge nozzle 70 by which water can be discharged from the tank.

The top 26 of the cabinet has an opening 27 in it through which gloves can be put into or taken out of the tank. The opening 27 is closed by a door 75, which is hinged to the top of the cabinet at 76.

In operation, the washing water is put into the tank to a level such as denoted at L in FIG. 4; and when the motor 40 of the machine is started, the impeller 30 carries the gloves down under the baffles 50 and 53 and whirls them about in the water causing them to float and open in the water, thus allowing the cleaning compound and water to wash and rinse the inside as well as the outside of the gloves without turning them by hand. In the conventional washing machine the gloves, which have air trapped in the fingers, in about 20% of the cases, remain on the surface for the major, if not the full time, of the washing operation. Therefore, they are not properly cleaned. With the machine of the present invention the pulsator's action combined with the action of the baffles forces all the gloves under the surface of the water, thus giving them the benefit of full time cleaning and rinsing both inside and out.

The machine of the present invention has no reciprocating agitators to punish the rubber; nor has it any fast rotating drums to wear the rubber by friction. Instead, the pulsator provides a gentle but thorough cleaning action without damage to the gloves.

The machine is very fast in operation. For instance, for a machine of one hundred fifty glove capacity, the complete cleaning cycle may take only about twenty-eight minutes. This compares with eighty-eight minutes required for the hand washing of a batch of one hundred fifty gloves. The cabinet can, of course, be mounted on swivel casters to be easily movable.

The machine is of sturdy, reliable construction. It is simple to operate. All that is needed is a source of hot and cold water, a drain such as a nearby sink, and an electrical outlet.

The machine may be equipped, as are conventional washing machines, so that after each washing and rinsing cycle, the water will drain away automatically.

While the invention has been described in connection with one specific embodiment thereof, it will be understood that it is capable of further modification, and this application is intended to cover any variations, uses, or adaptations of the invention following, in general, the principles of the invention and including such departures from the present disclosure as come within known or customary practice in the art to which the invention pertains and as may be applied to the essential features hereinbefore set forth, and as fall within the scope of the invention or the limits of the appended claims.

Having thus described our invention, what we claim is:

1. A machine for washing surgical gloves and the like comprising a casing, a tank secured in said casing with its side walls spaced from the adjacent side walls of the casing, said tank being of generally rectangular shape in cross-section and being adapted to be filled with a liquid in which the articles being washed can move freely, an impeller mounted on one of the side walls of said tank for rotation about a horizontal axis offset from the center of said one side wall of the tank, said impeller having a single vane projecting from a side face of the impeller in the general direction of the axis of rotation of the impeller, said vane having its highest point at the periphery of the impeller and being of irregular, generally semi-conical shape and having the generatrices of its top surface converging toward an apex lying on the axis of said impeller, said impeller being disposed to extend into the tank and to be below the level of liquid in the tank when the machine is operated, a baffle disposed in said tank on a side of said tank adjacent but at right angles to the side in which said impeller is journaled, said baffle having a portion that is inclined and faces toward the bottom of said tank to deflect the articles being washed below the surface of the liquid, and means for rotating said impeller.

2. A machine for washing surgical gloves and the like comprising a tank which is generally rectangular in cross-section and which is adapted to be filled with a liquid in which the articles being washed can move freely, an impeller mounted on one of the side walls of said tank for rotation about a horizontal axis, a baffle extending diagonally across said tank in one corner thereof and disposed between the side wall of the tank opposite from said impeller and the wall adjacent that on which the impeller is mounted, said baffle extending from the top of said tank downwardly for part only of the height of the tank and having a vertical surface and a horizontal bottom surface said impeller having a single vane whose highest point is at the periphery of said impeller and which is of irregular, generally semi-conical shape and which has the generatrices of its outside surface converging toward an apex lying approximately on the axis of said impeller, and said impeller being disposed to be below the level of liquid in said tank and being so disposed relative to said baffle that said vane dips into said liquid, as said impeller revolves, further than the lower end of said baffle, and means for rotating said impeller.

3. A machine for washing surgical gloves and the like comprising a tank which is generally rectangular in shape in cross-section, an impeller mounted in said tank for rotation about a horizontal axis, a baffle extending diagonally across said tank in one corner thereof, and means for rotating said impeller, said baffle having an undulatory vertical surface.

4. A machine for washing surgical gloves and the like according to claim 3 in which said baffle has a bottom surface which is horizontal and which extends from said undulatory vertical surface to the adjacent side of said tank.

5. A machine for washing surgical gloves comprising a tank which is generally rectangular in shape in cross-section, an impeller rotatably mounted in one of the longer sides of said tank in a position offset from the longitudinal center of said tank toward one of the shorter sides of said tank, a baffle extending diagonally across said tank and connecting the said one shorter side of said tank with the other longer side of said tank, and means for rotating said impeller, said baffle having an undulatory side wall.

6. A machine for washing surgical gloves according to claim 5 wherein said undulatory side wall is vertical, and said baffle has a horizontal bottom wall which connects said side wall with said one shorter side of said tank and with said other longer side.

7. A machine for washing surgical gloves and the like comprising a tank which is generally rectangular in shape in cross section, an impeller rotatably mounted in one of the longer sides of said tank in a position offset from the longitudinal center of said tank toward one of the shorter sides of said tank, a first baffle extending diagonally across said tank at one of the corners thereof and connecting said one shorter side of said tank with the other longer side of said tank, said first baffle having a vertical side wall and a horizontal bottom wall, said bottom wall connecting said vertical side wall with said one shorter side of said tank and with said other longer side of said tank, a second baffle connected along one edge to said vertical side wall of said first baffle and along its opposite edge to said one longer side of said tank, said second baffle being secured at its top to the top of said tank and at its bottom to said one shorter wall of said tank and being inclined from top to bottom to face the bottom of said tank, and means for rotating said impeller.

8. A machine for washing surgical gloves and the like

according to claim 7, wherein said second baffle extends for less than the height of said first baffle.

9. A machine for washing surgical gloves according to claim 8 in which said vertical side wall of said first baffle is undulatory and has its curvature extending in a vertical direction.

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