

Aug. 18, 1942.

H. P. NELLIGAN ET AL

2,293,618

LAUNDRY TREATING APPARATUS

Filed Feb. 27, 1941

3 Sheets-Sheet 1

FIG. 1.

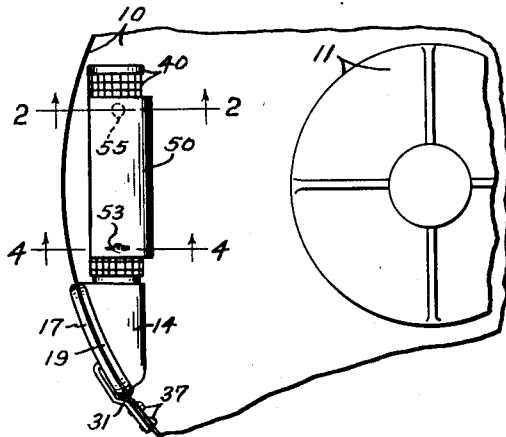


FIG. 2.

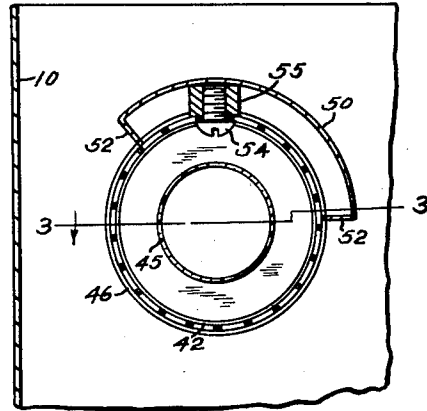


FIG. 3.

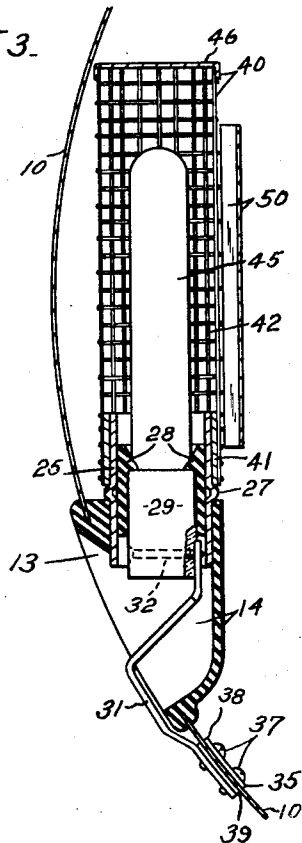


FIG. 4.

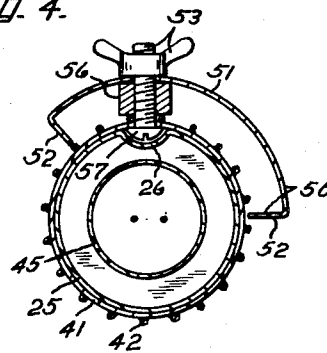
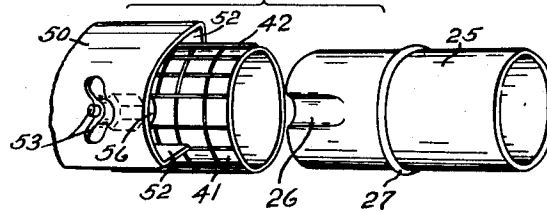


FIG. 5.



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FIG. 6.

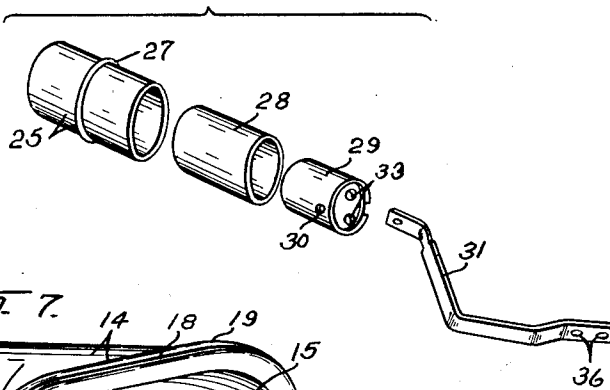


FIG. 7.

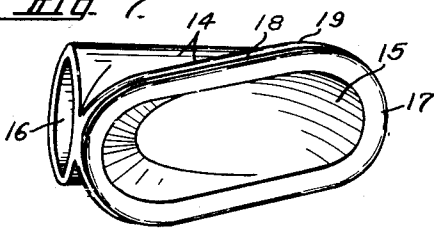
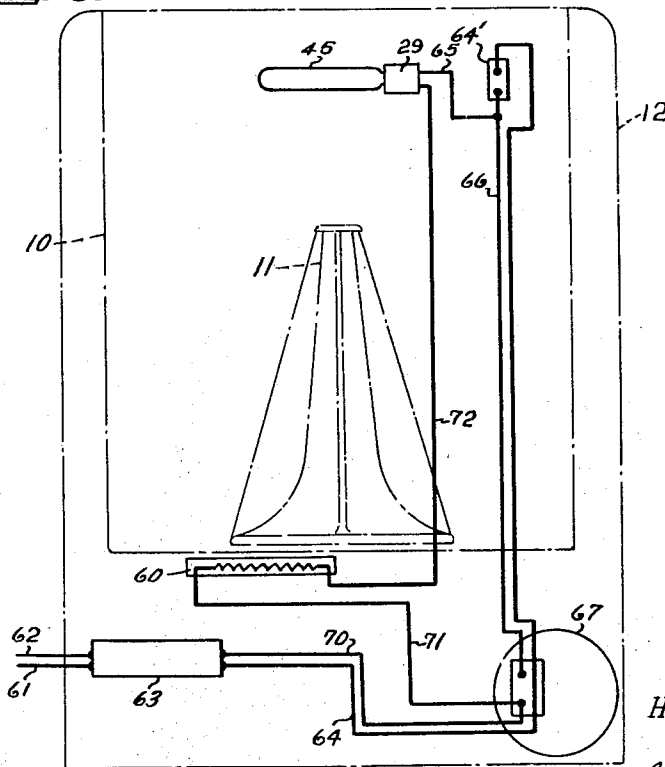


FIG. 8.



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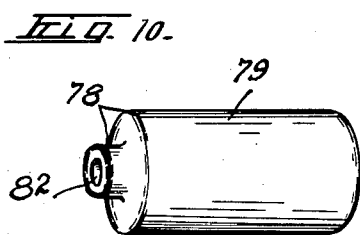
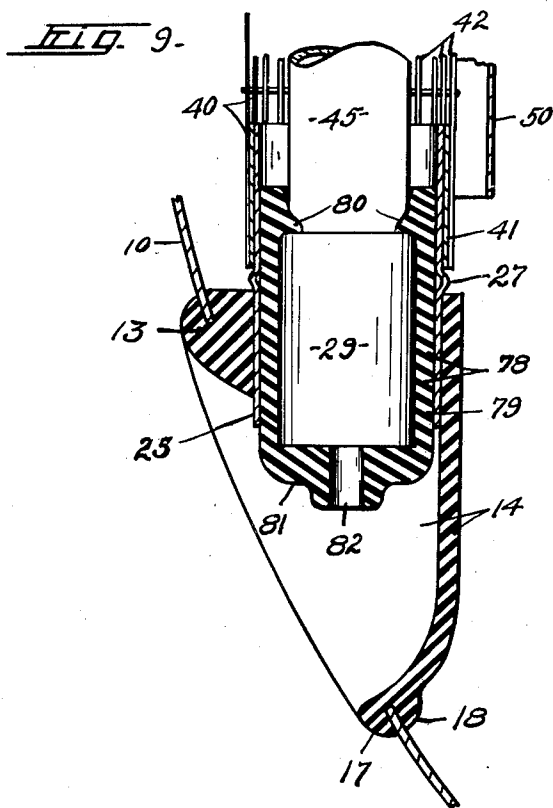
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,293,618

LAUNDRY TREATING APPARATUS

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chine Corporation, Syracuse, N. Y., a corpora-
tion of Delaware

Application February 27, 1941, Serial No. 380,950

3 Claims. (Cl. 68—13)

Our invention is concerned with an apparatus for sterilizing laundry in a washing machine.

One of the objects of our invention is to provide sterilizing means for treating the laundry in a washing machine comprising a source of ultra-violet rays and a source of heat, in combination with means for agitating the contents of the machine so as to bring all parts of the laundry into contact with the ultra-violet rays.

Another of the objects of our invention is to provide a sterilizing lamp in a washing machine in combination with a ballasting resistor which is adapted to heat the liquid contents of the machine.

Another object of our invention is to provide an insulating mounting for a sterilizing lamp in a washing machine so arranged as to avoid all possibility of conducting electric current to the body of the machine itself.

Still another object of our invention is to provide a mounting for a sterilizing lamp in a washing machine, which mounting is so constructed as to shield harmful rays from the eyes of the operator and concentrate said rays on the contents of the washing machine.

Another object of our invention is to provide a guard for a sterilizing lamp in a washing machine to prevent the accidental breakage of said lamp.

Other objects and advantages of our invention will become apparent from reading the following specification in conjunction with the drawings in which:

Figure 1 is a plan view, parts being broken away, showing the sterilizing lamp mounting.

Figure 2 is a section taken on the line 2—2 of Figure 1, parts being broken away.

Figure 3 is a section taken on the line 3—3 of Figure 2, showing the lamp in place within the mounting.

Figure 4 is a section taken on the line 4—4 of Figure 1.

Figure 5 is an exploded view showing how the wire guard is slipped over the socket member.

Figure 6 is an exploded view showing the parts of the lamp socket and supporting bracket.

Figure 7 is a perspective view showing the rubber mounting for supporting the socket in the washing machine casing.

Figure 8 is a schematic view showing the general location of the lamp and heating resistance in a conventional washing machine and including the wiring diagram of the lamp and heater.

Figure 9 is a sectional view, parts being broken

away, showing an alternate scheme for mounting the lamp socket.

Figure 10 is a perspective view of the insulating bushing used in Figure 9.

Referring now to the drawings, 10 is the tub of a conventional washing machine in which is mounted an oscillatable agitator 11. In the preferred form the washing machine has an outer casing 12 indicated by the outer broken lines in Figure 8. The tub 10 is provided with an elongated aperture 13 located adjacent the upper edge thereof. A rubber socket mounting 14 is secured in the aperture 13. The mount 14, best seen in Figure 7 is generally V-shaped in plan, one leg of the V having the elongated opening 15; the other leg of the V having a tubular shape as shown at 16. The opening 15 is surrounded by a flange 17 which is separated by a groove 18 from a second flange 19, so that the construction is similar to the familiar rubber grommet which is a standard article of merchandise. The member 14 is secured in the tub opening 13 by forcing the flange 17 through the opening 13 so that the edges of the aperture 13 engage in the groove 19; the member 14 being held in place by the cooperation of the flanges 17 and 18.

The lamp and guard mounting is constructed as follows: A cylindrical metallic sleeve 25 is mounted in the tubular opening 16 of the rubber mount 14. The sleeve 25 is provided with a circumferential ridge 27 for fixing its position with relation to the mount 14. The outer portion of the sleeve 25 is provided with a longitudinal depression 26 for a purpose presently to be described. The sleeve 25 is secured in the mount 14 with the groove 26 uppermost. A tubular insulating member 28 is inserted inside of the sleeve 25. A lamp socket 29 is mounted within the insulating member 28. The socket 29 is provided with an aperture 30 extending diametrically therethrough, adjacent the outer end thereof. A metal bracket 31 is secured to the socket 29 by means of the screw 32, which is inserted in the aperture 30. Terminal connections 33 are provided at the outer end of the socket 29 for attaching the necessary electric wires.

The bracket 31 is secured to the tub 10 by an insulating mount 35 which is constructed as follows: The end of the bracket 31 is provided with a pair of threaded apertures 36. The tub wall 10 is provided with a pair of apertures located to register with the apertures 36. A pair of hollow cylindrical insulating bushings are inserted in

the tub apertures to keep the screws 37 from contacting the tub wall. On the inside of the tub wall 10 is located an insulating member 38 to keep the head of the screw 37 out of contact with the inner wall of the tub. A similar insulating member 39 is positioned on the outside of the tub wall 10 between the bracket 31 and the wall 10 to prevent electrical contact between the bracket and the tub wall. The screws 37 are tightened into threaded apertures 36.

The lamp guard 40 comprises a tubular metal portion 41 adapted to slide over the outer end of the member 25. A cylindrical wire mesh guard 42 is secured to the tubular portion 41 and extends outwardly beyond the end of the lamp 45. The end of the guard is strengthened and closed by means of the end cap 46 which is fastened to the wire mesh portion 42 by any suitable means, preferably by soldering or welding.

A sight guard 50 is provided, which in the preferred form comprises a cylindrical segment 51 having the in-turned side portions 52 which rest against the wire mesh guard 42. The sight guard 50 is secured to the wire guard 42 by means of the thumb screw 53 located adjacent the socket end of the guard. A screw 54 and bushing 55 are located adjacent the free end of the guard to space the sight guard 50 from the wire guard 42. A bushing 56 is provided so that the screw 53 may be tightened without deforming the sight guard 52. The head 57 of the screw 53 projects inside of the portion 41 of the guard 40. In assembling, the head 57 is slid into the groove 26 of the member 25, thus insuring that the sight guard 50 is properly located over the lamp 45 so as to prevent ultra-violet rays from the lamp 45 reaching the eyes of the operator.

The lamp 45 is of a special type adapted to emit ultra-violet rays of germicidal nature. In this particular type of lamp, a ballast reactor or resistor is required for proper operation. I prefer to use a ballast resistor 60 in the form of a wire resistance unit which is fastened to the bottom of the washing receptacle as shown schematically in Figure 8. Thus the heat generated by the heat resistor 60 is utilized for heating the liquid contents of the tub 10.

The wiring, shown schematically in Figure 8, is as follows: Power leads 61 and 62 are connected to any suitable source of electric current and lead to the cord reel 63. Wire 64 connects to one side of the cord reel 63 and leads to the on-off switch 64' which is a conventional single pole, single throw switch. The other pole of the switch 64' is connected by means of lead 65 to lamp socket 29 and lead 66 to the washing machine motor 67. Lead 70 from the cord reel 63 is connected to the washing machine motor 67 and also to one end of the ballast resistor 60 by means of lead 71. The other end of the ballast resistor 60 is connected by means of lead 72 to the lamp socket 29. It is thus seen that the lamp 45 and ballast resistor 60 are in series with each other and in parallel with the washing machine motor 67.

When the switch 64' is closed, the current is fed to the washing machine motor 67 for operating the washing machine and at the same time the circuit is closed through the lamp 45 and the ballast resistor 60. In washing certain fabrics it is desirable that the wash water temperature be higher in some cases than in others. The capacity of the ballast resistor 60 is such that when the lamp and resistor are in operation, the heat given off by the resistor 60 to the washing

fluid in the tub is sufficient to maintain an initial temperature of 150° in the washing fluid. If the washing fluid is introduced to the tub at a lower temperature, say in the neighborhood of 125°, there will be a slight increase in the temperature of the washing fluid during the washing operation.

As the clothes are agitated in the washing machine tub, they are rolled over, forced to the surface and drawn down again. As they rise to the surface, they are exposed to the ultra-violet rays emanating from the lamp 45 and treated to a sterilizing effect. The fact that the temperature of the washing machine fluid is maintained at between 125° and 150° Fahrenheit, likewise assists in the sterilization of the clothes. It is necessary that the clothes be agitated and brought to the surface and turned about so that the ultra-violet rays may be fully effective in treating all parts of the material being washed. Thus, the stirring action of the agitator in rolling the clothes over and bringing them to the surface materially assists the action of the sterilizing lamp 45 and insures during the course of the washing operation that all parts of the material being washed will be exposed to the sterilizing effect of the lamp.

In Figures 9 and 10 we have shown a modification of the insulating mount for the lamp socket 29 to provide a flexible instead of a rigid mount for the lamp 45. In the preferred form this insulating member is constructed of rubber so that it acts not only as an electrical insulating member but a shock absorbing medium to insulate the lamp 45 from vibration and physical shock. In this modification, a tubular insulating member 78 is provided somewhat similar to the insulating member 28 shown in Figure 3. The insulating sleeve 78 comprises a cylindrical portion 79 having an inwardly extending flange 80 adjacent one end thereof. The opposite end of the member 78 is closed by the end 81 formed integrally therewith. The end or bottom is provided with a central aperture 82 to accommodate the wires leading to the socket 29. In assembling, the socket 29 is forced into the open end of the member 78 and the flange 80 secures it in place.

We claim:

1. In a washing machine having a tub for containing washing fluid and clothes to be washed, in combination, an electrically energized source of ultra-violet rays mounted in said tub and an electric resistance element mounted beneath said tub in series with said source of ultra-violet rays, said resistance element being arranged to act as a ballast for said source of ultra-violet rays and in addition supply heat to said washing fluid, whereby said clothes are purified by said rays and said heat.

2. In a washing machine having a tub for containing washing fluid and clothes to be washed, in combination, a gaseous discharge tube adapted to emit ultra-violet rays, means for mounting said tube in said tub adjacent the upper edge thereof, an electric circuit for energizing said tube, a resistor connected in said circuit, said resistor being constructed and arranged to transmit heat to said tub, whereby said ultra-violet rays and said heat cooperate to sterilize the contents of said tub.

3. In a washing machine having a tub for containing washing fluid and clothes to be washed, and means for agitating said fluid and clothes,

in combination, means for mounting in said tub a gaseous discharge tube having the characteristic of emitting ultra-violet rays, said means including an aperture located in the side of said tub, a substantially flexible insulating mounting secured in said aperture and projecting into said tub, a substantially cylindrical wire mesh guard

5 mounted in said insulating mounting, an insulating bushing in said guard, an electric socket mounted in said bushing and separate means for securing said socket to said tub.

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