

Aug. 16, 1966

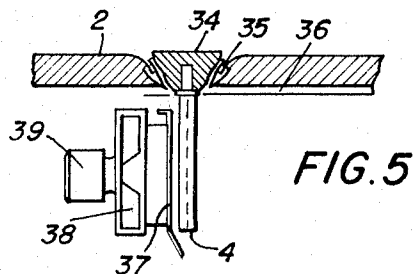
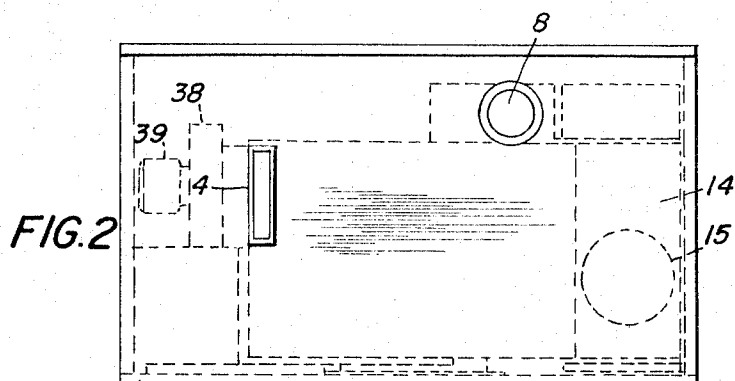
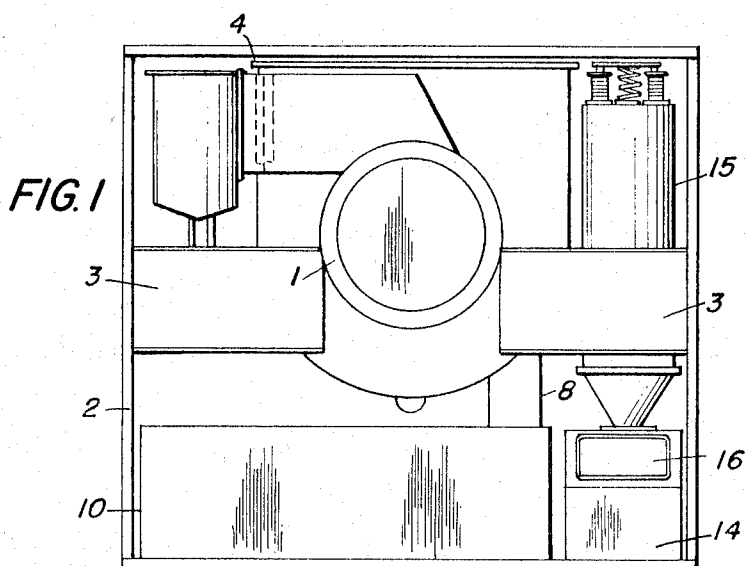
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3,266,273

GARMENTS DRY WASHING MACHINE

Filed April 8, 1964

2 Sheets-Sheet 1



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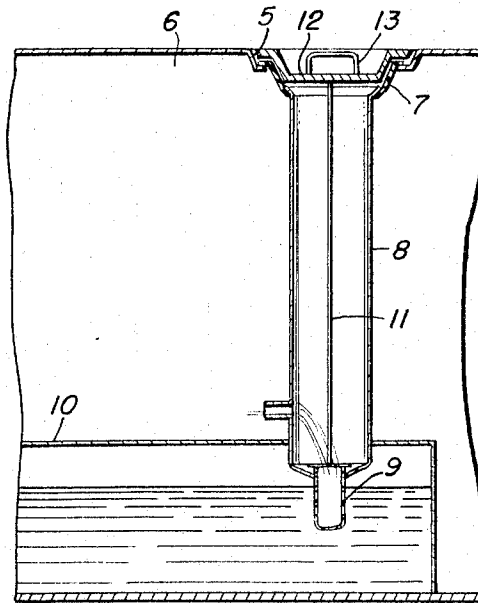


FIG. 3

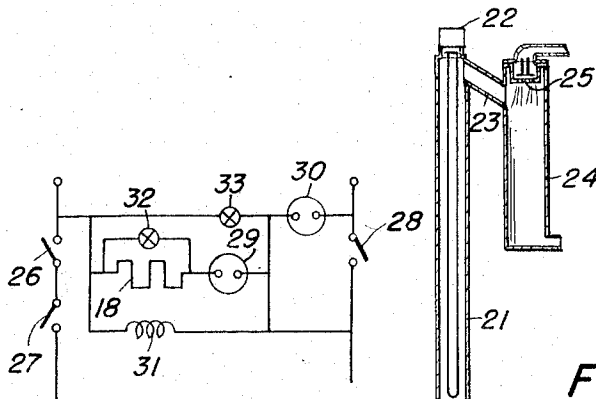
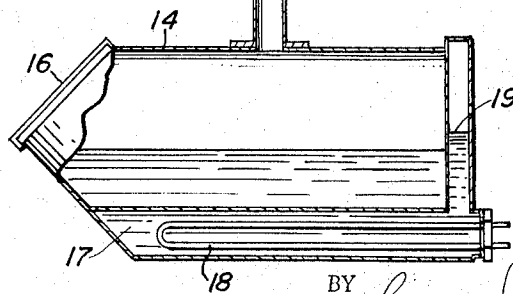


FIG. 6

FIG. 4



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GARMENTS DRY WASHING MACHINE
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7,631/63

2 Claims. (Cl. 68—12)

This invention relates to garments dry washing machine.

More particularly it is an object of the invention to provide a garments dry washing machine having the following features:

- (1) Easy access to the main parts of the machine.
- (2) Reduced size and weight and yet high output.
- (3) Reduced cost and yet rugged construction.

The machine according to the invention is characterized in that it has the door for cleaning the distiller arranged in the front and the drying air filter and the lint filter or prefilter for introducing filtering powder and removing hair, lint and solid materials which deposit in the lint filter, arranged so as to allow access to them from the top of the machine.

By such an arrangement all parts of the machine requiring indispensable manual operations are accessible from the front or the top of the machine.

Being thus devised, the machine can be easily installed adjacent a wall, either in the rear or at the sides, or along all three sides simultaneously, thus greatly reducing the plan overall size of the machine. The usual machines instead must be arranged at a substantial distance from the walls for operation requirements, on the back side or a lateral side, on the lint filter, the air filter or the distiller.

The described arrangement allows in addition an easy mounting and withdrawal of the air filter and the lint filter or prefilter from the top of the machine.

According to a feature of the invention the housing containing the washing drum is hung to the carrying casing of the machine simply by means of four sheet metal struts.

According to another feature of the invention the distiller has such a size as to include up to the lower edge of the closing door all the solvent and the powders which the filter superimposed to it discharges therein at the end of each washing operation together with the dirt retained by the powders, and has the closing and cleaning door in an inclined position. This, in addition to improving tightness against solvent and gas leakage, allows the removal of the door even when the distiller is full for eventual inspections and, at the end of the distillation, makes easier the cleaning of the machine from the front.

According to a further feature of the invention the distiller is equipped with a still-condenser unit, whose condenser is provided at the upper side with a water sprayer or atomizer controlled by a magnetic valve, and whose still carries a thermostat.

These and further features of the present invention will become more apparent from the following detailed description of an embodiment thereof, taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a diagrammatic view of the machine according to the invention, in front elevation, with the front wall removed for showing the interior;

FIG. 2 is a diagrammatic top plan view of the machine in FIG. 1;

FIG. 3 is a diagrammatic front elevational section, to a slightly increased scale with respect to that of FIGS. 1 and 2, of the lint filter and tank detail;

FIG. 4 is a diagrammatic side elevational section of the distiller and still-condenser unit detail;

FIG. 5 is a diagrammatic front elevational section of the air filter detail, and

FIG. 6 is a wiring diagram of the automatic control circuit of the distiller.

Referring first to FIGS. 1, 2 and 3, it will be seen that the housing containing the drum 1 of the machine is hung to the carrying casing 2 by means of suspension struts 3. An air filter 4 is arranged in the upper part of the machine.

As seen in FIG. 3, in a seat 5 in the top wall 6 of the machine casing there is hung with the aid of a collar 7 in plastic material and seals, not shown, a tubular lint filter or prefilter 8 which has such a length as to dip at its lower end, with its filtering part proper 9, in a tank 10. The filtering part 9 is connected by means of a tie-rod 11 to a cover 12 provided with a control handle 13 for withdrawing the filtering part.

Arranged along a side of the machine is a distiller 14 having a solvent filter 15 superimposed on it.

As seen in FIG. 4, the distiller has in the front an inclined closing door 16 and carries in the lower part a chamber 17 containing a heating electric resistance 18 dipped in an oil bath 19. At its upper side the distiller is provided with a still 20 in which dips the bulb 21 of a thermostat 22 applied at the top of the still. From said top extends also an inclined tube 23 to which a tubular condenser 24 is fastened provided at its upper side with a refrigerating water sprayer having a magnet valve 25.

The distiller is controlled automatically by an electric circuit shown in FIG. 6. In said circuit 26 designates a switch controlled by the door of the washing machine, 27 and 28 are two general switches controlled by the control handle, 18 is the electric heating resistance of the distiller, 29 is a thermostat for regulating the oil temperature, 22 is the thermostat of FIG. 4, 31 is the winding of the magnet valve 25 for controlling the sprayer and 32 and 33 are two warning lamps. The circuit described is only a part of the electric circuit of the machine and more particularly that presenting new features with respect to known circuits. The remaining part of the electric circuit has not been described because of a conventional character.

As seen in FIG. 5, the air filter 4 is supported by a cover 34 also performing the function of a handle for its withdrawal and introduction. Said cover rests on a suitable seat in the carrying casing 2, with the aid of a seal 35. The filter 4 is arranged in the interior of the housing 36 of the washing drum, at the location where said housing communicates by means of the opening 37 with the fan 38 driven by the electric motor 39.

The operation of the still-sprayer unit is as follows:

When the circuit is closed (switches 26, 27 and 28 closed) a current flows in the resistance 18 and heats the solvent which, after completion of the washing operation, discharges from the solvent filter 15 in the distiller 14. Because of the heat in the oil 19 the distilled solvent and the solvent vapours flow out through the still 20 and are condensed in the condenser 24. From the latter they flow in the usual manner to the tank 10 through a known decanter, not shown.

At the end of the washing cycle as determined by a program control the switches 27 and 28 open, but the circuit of the resistance 18 remains closed through the contacts of the thermostats 29 and 30 and the distillation goes on as long as solvent vapours are flowing in the still. When solvent vapours are no longer in the still the bulb 21 cools and the thermostat 22 opens the contacts and interrupts the current flow in the resistance 18 and winding 31, this causing the closing of the valve of the sprayer 25.

By virtue of the described operation of the distiller, the whole operation of the machine can be made fully auto-

matic if a self cleaning type of filter is used as a solvent filter 15. A filter which is particularly suitable to this purpose is that described in the co-pending application filed by the applicant on April 8, 1964, Ser. No. 538,340.

As it is clearly apparent from the foregoing description, in the machine according to the invention all parts requiring manual operation are disposed in the front or at the top of the machine, and are easily accessible. The air filter 4 can be introduced or withdrawn from the top by handle 34 and the prefilter or lint filter 9 may be introduced or withdrawn by the handle 13. The arrangement of the distiller with the closing door disposed above the normal solvent level allows the opening of the door even when the distiller is full for eventual inspections and, after completion of the distillation, makes easy the cleaning of the distiller from the front of the machine.

The above said arrangements of the air filter and prefilter or lint filter also assure a good tightness against leakage which is obtained by the simple resting of the air filter and the prefilter cover, without requiring seals and fastening members, by virtue of the arrangement of the air and solvent circuits which at the locations where they meet said filters have no inner pressures which can tend to push the liquid vapours outside.

Also in the distiller the arrangement of the door above the solvent level makes easy the tightness against solvent and gas leakage.

Therefore, summing up it will be seen that the machine according to the invention allows a flush mounting of the walls and therefore a minimum overall size, it allows an easy access to the parts of the machine which undergo inspections and manual operations, assures a good tightness against leakage, and if equipped with an automatic cleaning solvent filter, it is completely automatic in operation.

While but one embodiment of the invention has been described, it is obvious that many changes and modifica-

tions can be made without departing from the scope of the invention.

I claim:

1. A garments dry washing machine comprising a casing, a drum in the casing, an air filter having a cover forming a handle resting on a seat in the top wall of said casing, said air filter depending from said top wall, a lint filter having a cover provided with a handle and resting on a seat in said top wall of said casing, said lint filter extending throughout the height of said casing and dipping at its lower end in a tank at the bottom of said casing, and a distiller arranged along a side wall of said casing at the bottom thereof and having an inclined opening closed by a door in the front wall of said casing, said door being arranged above the normal solvent level in said distiller, a solvent filter being superimposed on said distiller.

2. A garments dry washing machine as set forth in claim 1 including a distiller equipped with a still-condenser unit, said still having a thermostat bulb dipping into it, said thermostat being electrically connected in parallel with a program controlled switch, said condenser being provided at its top with a sprayer controlled by a magnetic valve having its winding series connected to said program controlled switch.

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