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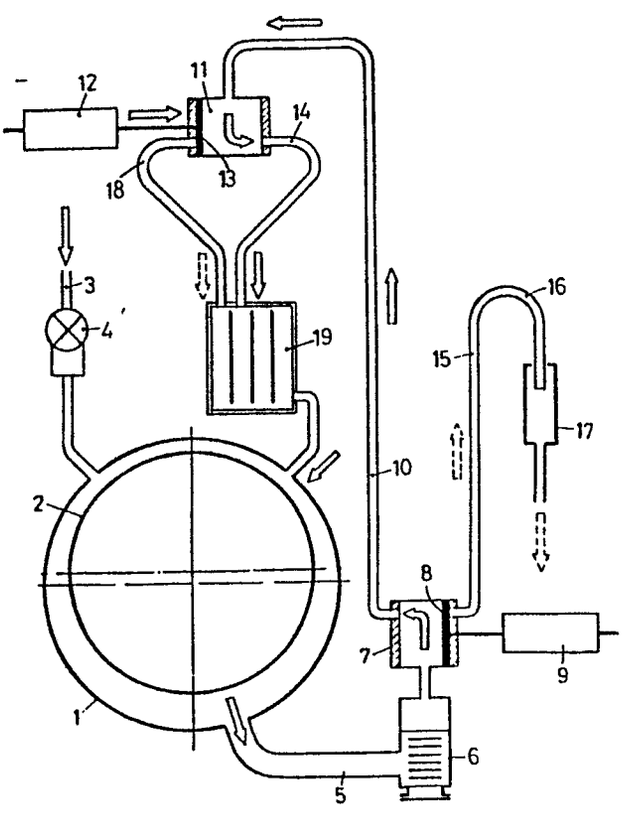
(54) Liquid flow circuit for a laundry washing machine.

(57) An improved liquid flow circuit for a laundry washing machine comprises a discharge conduit connected to the bottom of the tub and an electric discharge pump, and a first two-way switch valve connected in a closed circuit to a second two-way switch valve having its outlets connected to respective inlets of a detergent supply receptacle, the outlet of the latter communicating with the tub through a port different from that provided for the supply of clean water employed for rinsing.



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Liquid Flow Circuit for a Laundry Washing Machine

Description

The present invention relates to a liquid flow circuit for employ in a laundry washing machine with the object of ensuring complete utilization of the detergent supplied to the washing water. To this purpose the invention provides that once the operation of the machine has been initiated, the washing water with the detergent added thereto is recirculated, so that the detergent is exhaustively utilized.

As generally known, in laundry washing machines the introduction of the detergent is brought about by the first litres of water passing through the compartments of the detergent supply receptacle previously filled with the product. A certain amount of the resulting solution of water and detergent flows into the empty sections of the liquid flow circuit located below the levels whereat the agitation of the laundry takes place, that is, below the space between the bottom of the tub and the drum containing the laundry to be washed. As a result thereof, that proportion of the solution of detergent and water occupying these originally empty sections is not made use of in the washing operation.

It is an object of the present invention to ensure that the detergent contained in the water filling the aforementioned empty spaces is exhaustively utilized, by the employ of a recirculation system permitting the water and the detergent entrained thereby to be repetitively utilized.

The characteristics of the invention will become more clearly evident from the following description, given by way of example with reference to the accompanying drawing, the only figure of which shows a diagrammatical illustration of an improved liquid flow circuit for a laundry

washing machine, wherein the various parts are designated by reference numerals to be used throughtout the following description.

A tub 1 housing a drum 2 containing the laundry to be washed is supplied with water through a conduit 3 having a solenoid valve 4 inserted therein. The washing liquid is discharged through a lower conduit 5 connected to the bottom of tub 1, and an electric pump 6 equipped with a filter. The outlet of pump 6 is connected to a switch valve 7 the valve element 8 of which is actuated by a solenoid device 9, so that the assembly constitutes a solenoid switch valve.

A conduit 10 connects one outlet of switch valve 7 to a second switch valve 11 comprising a solenoid 12 for actuating a valve element 13. Another outlet of first switch valve 7 is connected to a conduit 15 formed as a discharge siphon 16 having a discharge outlet 17.

The outlets 14 and 18 of second switch valve 11 are connected to respective inlets of a detergent supply receptacle 19 provided with a plurality of compartments for containing the detergents to be used for the washing operation.

The operation of the described circuit may be summed up as follows: Once tub 1 has been filled and the washing operation initiated, elctric pump 6 is energized for directing the water into a compartment of first switch valve 7, from where the water flows through conduit 10 towards supply receptacle 19. Second switch valve 11 is operated to direct the water selectively into the pre-washing or main washing compartments of receptacle 19 as required by the respective washing program of the machine, so that the detergent contained in the respective compartment is entrained by the water flowing therethrough.

Electric pump 6 is then intermittently operated to ensure

that the solution of water and detergent is exhaustively utilized. When the washing liquid is to be discharged, first switch valve 7 is operated to direct the liquid towards conduit 15 for discharge therethrough.

The energization of solenoids 9 and 12 is controlled by the program control unit of the machine in accordance with the operating program of the machine.

Any particulars not affecting, altering or modifying the essentials of the described circuit shall be variable within the scope of the present invention.

Liquid Flow Circuit for a Laundry Washing Machine

Patent Claims:

1. A liquid flow circuit for a laundry washing machine, essentially characterized by comprising a discharge conduit (5) connected to the bottom of the tub (1) and an electric discharge pump (6), a first two-way switch valve (7) connected in a closed circuit to a second two-way switch valve (11) having its outlets (14, 18) connected to respective inlets of a detergent supply receptacle (19), the outlet of the latter communicating with said tub (1) through a port different from that provided for the supply of clean rinsing water.

2. A liquid flow circuit according to claim 1, characterized in that said first two-way switch valve (7) has its outlets connected respectively to the inlet of said second switch valve (11) and to a discharge conduit (15 - 17) for discharging the liquid to the exterior.

3. A liquid flow circuit according to claim 1 and/or 2, characterized in that the valve elements (8; 13) of said switch valves (7; 11) are electromechanically actuated by means of respective solenoids (9; 12) energized in synchronism with the electric motor operating said discharge pump (6).

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