Sept. 29, 1953 H. BAADE 2,653,465

CLOTHES-WASHING MACHINE HAVING A SQUEEZE BAG EXTRACTOR

Original Filed April 13, 1946 2 Sheets-Sheet 1

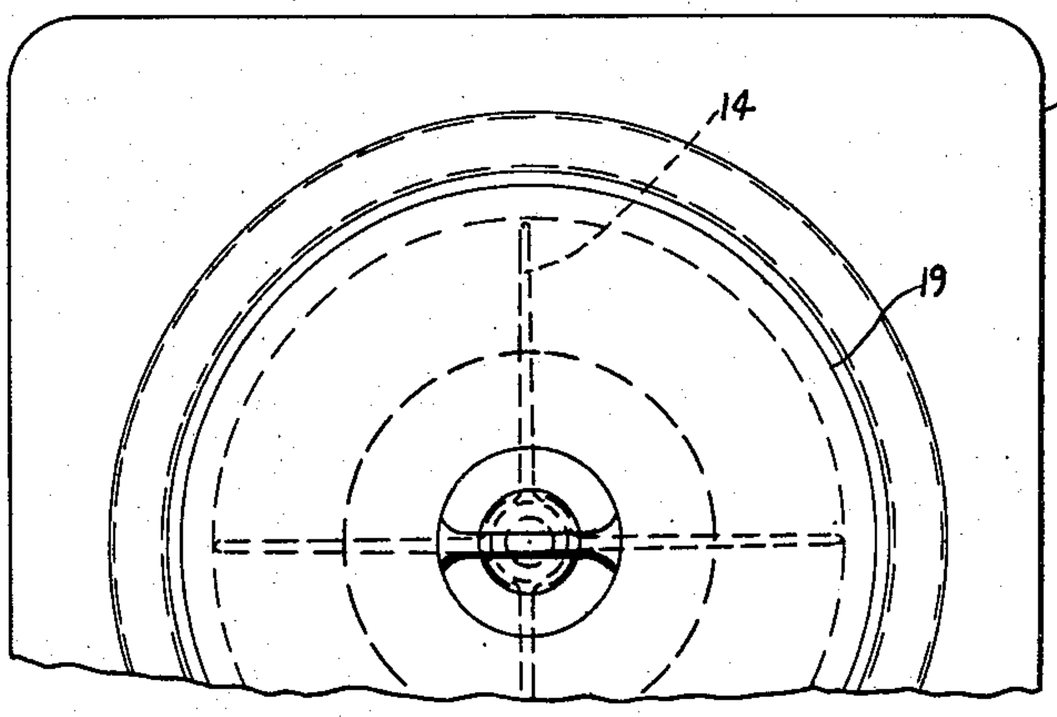

Fig. 2

Fig. 5

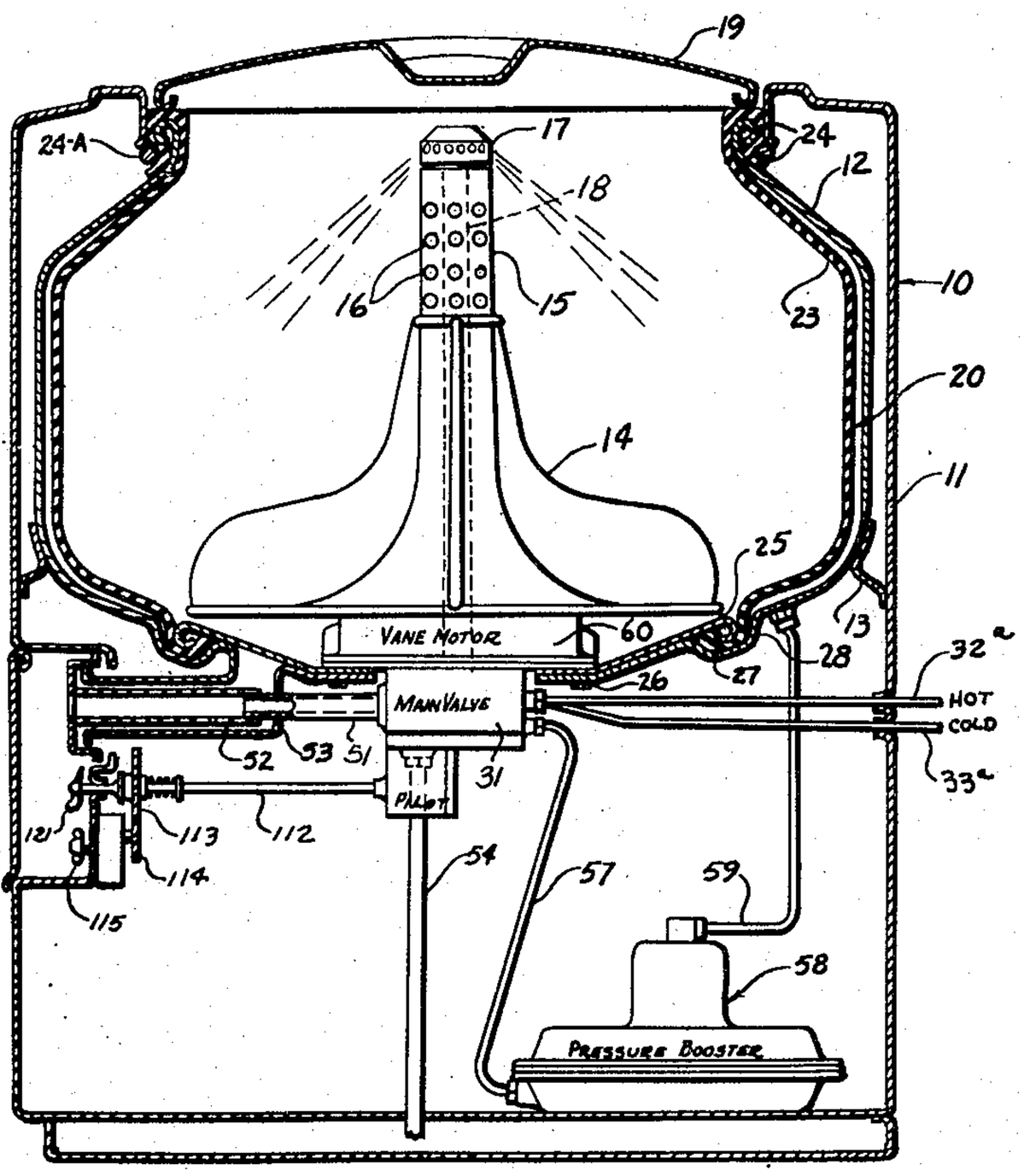

Fig. 1

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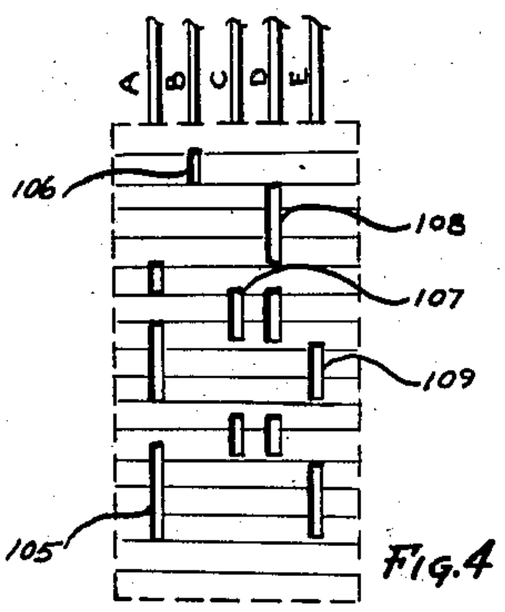

FIG. 4

FIG. 3

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2,653,465

CLOTHES-WASHING MACHINE HAVING A SQUEEZE BAG EXTRACTOR

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Original application April 13, 1946, Serial No. 661,963. Divided and this application May 26, 1949, Serial No. 95,399

10 Claims. (Cl. 68—21)

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This application is a division of my copending application, Serial No. 661,963, filed April 13, 1946, and now abandoned, for Automatic Washing Machine.

This invention relates to automatic clothes washing machines.

An object of the invention is to provide an inexpensive, safe automatic clothes washing machine.

The foregoing, and other objects of the invention which will become apparent as the description proceeds, are achieved by the provision of an automatic hydraulic washer including a tub, an agitator member journalled in the tub for oscillatory movement, a hydraulic motor connected to the agitator for oscillating same, a multi-section hydraulically operated control valve, a drain pipe, means connected to the control valve and adapted to function the sections thereof automatically at predetermined portions of an operative cycle, means connecting the control valve to the motor for operation thereof, means connecting the control valve to the tub for filling same, means connecting the control valve to the tub and to the drain pipe to drain the tub at predetermined points in a cycle, a fluid supply line connected to the control valve, a resilient sleeve secured within the tub at the upper and lower extremities thereof to form an enclosure therewith, and means connecting the control valve to the enclosure within the tub so that fluid can be inserted therein to expand the sleeve so as to force it against material in the tub and expel fluid therefrom.

Reference should now be had to the accompanying drawings, wherein:

Fig. 1 is a vertical section of a washing machine embodying the principles of my invention;

Fig. 2 is a fragmentary plan view of the machine of Fig. 1;

Fig. 3 is a diagrammatic view, partly in section, of the hydraulic circuit of the machine of Fig. 1;

Fig. 4 is the development of the timer pilot valve cylinder of the invention; and

Fig. 5 is the front view of the control panel of the invention with the cover therefor removed.

Referring now in detail to the accompanying drawings, there is shown an automatic hydraulic washer generally indicated by the numeral 10. The washer 10 includes a frame 11 that supports a tub 12 of any suitable contruction therein by means of brackets 13. The tub 12 has an agitator 14 positioned therein, which agitator includes a tubular center portion 15 which is suitably journalled, and vertically positioned in the tub and which has a plurality of drain holes 16 formed therein. The agitator 14 is suitably positioned for oscillatory movement in the tub 12 and it has a stationary spray head 17 mounted at its end by a tubular member 18 which is positioned in the bore of the portion 15 and connects to a fluid supply source disclosed hereinafter in more detail. A cover 19 is provided for the tub 12, in order to secure the cover in position, any suitable means (not shown) may be provided for clamping the cover 19 removably on its seat on the frame 11 so that the cover 19 will be retained in position even if appreciable pressure is set up in the tub and exerted thereon.

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Then, to form an expansible chamber 20 within the tub 12 for squeezing fluid from clothes, or other articles in the tub, a rubber sleeve 23 is secured to the upper edge of the tub by flanges 24 engaging with the tub edge and being folded back between the tub and the frame 11. A clamp ring 24a may be used also to eliminate any possibilty of leakage around the upper end of the sleeve 23. A frustrum-shaped member 25 is secured to the inside of the base of the tub 11 in a removable manner, as by bolts 26, to position a lower end flange 27 of the sleeve 23 in an annular recess 28 suitably formed in the tub 12.

The operation of the washer 10 is automatically controlled by a multi-section, hydraulically controlled valve 31. The valve 31 may have a hot fluid inlet 32, a cold fluid inlet 33, a plurality of valve chambers 34, 35, 36, 37 and 38, and a plurality of outlets 39, 41, 42 and 43 formed therein. Water or other fluid supply lines 32a and 33a from the usual household supply pipes connect to the inlets 32 and 33 for supply of hot and cold fluid thereto. If desired, a hot and cold water mixing valve of manual or automatic type may be incorporated with the supply lines 32a and 33a to give washing or rinse water of selected temperature. Often, however, the use of a special mixing valve is unnecessary as the washing water is employed at the temperature of the hot water supply in the household, particularly inasmuch as this temperature is often itself thermostatically controlled. A ball valve 44 is provided for each valve chamber and it is controlled by fingers 45 formed on disc-like members 40 which are suitably secured to a flexible diaphragm member 46 mounted in and extending the length of the valve 31. The fingers 45 are positioned in the valve 31 for limited axial movement and may have packing means (not shown) associated with them to prevent fluid

leakage thereby. However, leakage of fluid from the chambers 35, 36, and 37 is not serious since it merely serves to drain fluid from the tubular member 18 and the hydraulic motor. A plurality of control chambers 47 are formed in the valve 31 with one control chamber being associated with each of the valve chambers 34, 35, 36, 37 and 38. One extremity of each of the control chambers should be movable with relation to the remainder of the valve 31 and in this instance the diaphragm member 46 is provided for such purpose, which member has individually movable sections in each control chamber. Conduits 50 in the valve 31 connect the inlet 33 to each of the control chambers 47 so that fliud will flow thereto and fill such chambers normally so as to move the diaphragm sections and the members 46 to their uppermost positions and retain the ball valves 44 on their seats in the valve chambers. For a purpose to be explained hereinafter, flow-restricting orifice members 49 are positioned in the conduits 50.

The valve chamber 34 has an inlet conduit 51 connected thereto, which conduit connects to a tubular lint screen 52 removably telescoped into engagement with a drain 53 provided for the tub 12, while outlet 39 for such valve chamber connects to the main drain member 54. The valve chambers 35 and 36 connect to their common outlet 41 which connects through conduit 55 to the tubular member 18 within the tub so that either hot or cold fluid can be introduced into the tub through the nozzle 17, when desired, but in some cases it may be desired to use only hot, or only cold fluid in which case one valve inlet and one valve chamber should be eliminated. Outlet 42 of the valve chamber 37 connects by conduit 56 to a suitable hydraulic motor 60 for driving the agitator 14 while the remaining valve outlet 43 connects by conduit 57 to a fluid pressure booster 58. The pressure booster, in turn, is connected to the enclosure 20 formed by the rubber sleeve 23 in the tub 12 by a conduit 59.

It should be observed that the valve 31 has a substantially axially directed chamber 61 therein which connects a second outlet opening 62 of the valve chamber 38 to the valve chamber 34 which is continually open through the outlet 39 to the drain 34. The ball valve 44 in the valve chamber 38 is adapted to seat on the outlet 62 when moved to its open position for flow of fluid from the inlet 33 to the outlet 43 and ultimately to the expansible chamber 20. However, when the ball valve is returned to its normal closed position fluid flow may, and does occur, by gravity, from the enclosure in the tub back through the booster 58, conduit 57, outlet 43, outlet 62, and chamber 61 to the drain 54.

While the present invention may be practiced with any conventional, or if desired with no, pressure booster in the fluid system used to expel fluid from clothes in the tub 12, a feature of the invention resides in use of the pressure booster 58 which automatically raises the line pressure to apply an appreciably increased force in the expansible chamber 20. In detail, the booster 58 includes an annular chamber 63 which has a suitable pressure member therein for dividing the member into two compartments, which member may comprise a pressure plate 64 that is carried on a flexible diaphragm 65, the edges of which are secured between flanges 63^a formed on dished metal housings 63^b and 63^c used to make the chamber member 63. These flanges 63^a may be secured together in any desired manner, for example, by bolts 66. The upper housing 63^b of the booster 58 has a relatively small cross-sectional area cylinder, or protuberance 67 formed thereon extending outwardly therefrom and it telescopically receives a similarly-shaped, apertured piston, or protuberance 68 formed on a plate 69 carried by the diaphragm 65 in fluid-tight relation therewith. The member 63^b has air vents 63^d formed in its upper surface as the booster 58 is made to carry fluid only in its lower section, which fluid will flow through the telescoped cylinder 67 and piston 68 to the chamber 20. In order to permit flow to the cylinder 67 only when the pressure in the lower chamber section is greater than that in the cylinder 67, and consequently that in the chamber 20, a ball valve 70 is received on a valve seat 71 provided on the plate 64 in registry with the piston 68. The diaphragm 65 is apertured in the vicinity of the valve 70 so that fluid will flow through the valve into the cylinder 67, and a suitable seal ring 72 is provided on the outer end surface of the piston 68 to prevent fluid leaks from the cylinder and piston at the slidable connection therebetween. Fig. 3 clearly illustrates that the cylinder 67 and piston 68 are of relatively small area with relation to the diaphragm 65 so that when fluid is supplied to the pressure booster 58 it first pushes the ball valve 70 from its seat and flows through the cylinder 67, and through the conduit 59, which connects to the upper end of the cylinder 67, to the enclosure chamber 20 formed by the rubber sleeve 23. Such line pressure will then occasion fluid flow through the booster until the sleeve 23 is forced to the squeezing position and line pressure is built up behind the sleeve 23 in the tub 12.

During such flow of fluid to the expansible chamber 20 fluid in the tub drains from the tub 12 through the drain 53 and conduit 51 with some fluid flowing through the drain openings 16 down along or in the member 15 and back into the tub at the bottom thereof near the drain 53, as shown and explained in greater detail in my copending application, Serial No. 675,540, filed June 10, 1946, and entitled Automatic Washing Machine, now Patent No. 2,449,634, granted September 21, 1948.

As a greater compressive action on the clothes in the tub than that effected by line pressure is highly desirable in order to obtain more complete fluid elimination, the ball valve 70 automatically returns to its seat and prevents any further flow of fluid at line pressure through the valve 70 when line pressure exists in the chamber 20. Fluid continues to flow to the pressure booster 58 due to the unequal areas on opposite sides of the diaphragm 65 exposed to line pressure. Such further flow of fluid to the pressure booster lifts the diaphragm 65 and effects relative movement of the piston 68 into the cylinder 67 to increase the pressure exerted by the rubber sleeve 23 in expelling fluid from clothing in the tub 12. A conical return spring 73 may be positioned between the plate 69 and upper inner surface of the chamber 63 and a pin 74 is positioned in the bottom housing 63^c to unseat the valve 70 when the pressure supply is removed from the booster 58 and fluid has flowed from the bottom section of the chamber to drop the diaphragm to the lower part of the chamber.

The remaining outlet 42 in the valve 31 connects to the oscillatory hydraulic motor 60 for driving the agitator 14. The motor may comprise an annular housing 76 which has a shaft 77

journalled therein and connected to the agitator 14. A vane 78 is secured to the shaft 77 to form a radially directed movable partition member in the housing 76 while a pair of stationarily positioned partition members 79 are also provided in, and may be integral with, the housing. The partition members 79 form an obtuse angle in the housing 76 to define a work chamber 75 therein. An inlet member 81 is positioned in the housing between the more closely positioned sides of the partitions. The inlet 81 has a pair of opposed chambers 82 formed integrally, or otherwise associated, with it while ports 83 formed in the partitions provide permanently open connections between the chambers 82 and the work chamber 75. Then a valve shaft 84 carrying spaced tandem valves 85 is provided in the housing 76 for limited axial movement to control the flow of fluid to and from the work chamber 75 through the chambers 82. The valves 85 are constructed and arranged to be moved to and from seats 86 on the inlet 81 so as to direct fluid flow at one extremity of valve movement into one or the other of the chambers 82. The valves 85 also cooperate with and are moved with relation to seats 87 formed on the outer, or end walls of the chambers 82. The valves 85 thus operate to open one of the chambers 82 for fluid input to the work chamber 75 between one partition member 79 and the vane 78 through the port 83 in such partition, while the port 83 in the other partition is then connected through its associated chamber 82 to the interior of the housing 76 between the adjacent walls of the partitions. Fluid within such portion of the housing 76 flows therefrom through a drain 88 to the main drain line 54.

The valve means of the motor 60 are controlled by suitable apparatus which is shown to be lever arms 89 journalled in the housing 76 on shafts 91. One end of each lever arm 89 is pivotally secured to an extremity of the shaft 84 while the other end of each lever has a pin 92 bearing thereon. The pins 92 are slidably positioned in bosses 93 and 94 formed in the partitions 79 and on the housing 76, respectively. The pins 92 project into the work chamber 75 and the vane 78 strikes a pin as it approaches a partition member with the pin being moved by such vane until one of the lever arms 89 is moved so as to change the position of the valves 85 from one extremity to another and reverse the flow of fluid under pressure to the work chamber. It is to be noted that the unequal areas of valves 85 and seats 86 and 87 are important for the reasons that the unequal areas insure positive seating of the valves 85 in either direction of movement, permit movement of the valves 85 and valve shaft 84 by pins 92 due to almost counterbalanced pressure on valves 85, and yet insure valve closing movement with a snap type of action.

As previously indicated, the control chambers 47 of the valve 31 are normally full of fluid and this fluid retains the valves 44 in their closed positions. Automatic timer pilot valve control means are provided to vary the positions of the sections of the diaphragm 46 so as to effect the desired sequence of washing operations at the proper time intervals. These means may comprise a housing 101 having a plurality of inlets 102 which are individually indicated by the letters A, B, C, D and E, each of which is connected to an outlet 103 formed in a wall of each control chamber 47 by conduits 100. A rotor drum 104, which has a plurality of transversely directed slotted apertures 105, 106, 107, 108 and 109 formed

therein is journalled in the housing 101 and the apertures are adapted to register with the inlets 102 at predetermined points of rotation of the drum 104. A drain conduit 111 connects the interior of the drum to the drain 54 so that fluid will flow from one of the control chambers through a conduit 100 to the drum 104 and through a slotted aperture therein, when it registers with an inlet opening 102, to the drain 111. Since the orifice members 49 restrict flow of fluid to the control chambers 47, fluid therein drains therefrom more rapidly than it can be supplied thereto, which effects valve release action but likewise effects valve closing action when the open inlet 102 is closed by the rotor drum 104.

A suitable drive is provided for the rotor drum 104 and it may include a shaft 112 which journals a gear 113 thereon, which gear 113 is driven by a spur gear 114 that is driven by suitable means, such as a clock mechanism 114a which has a wind-up handle 115.

The shaft 112 has spaced flange members 116 and 117 fixedly associated therewith on opposite sides of the gear 113 and a spring 118, abutting the flange 117, urges the gear 113 against a suitable drive washer 119 to press it against the flange 116 and drive the shaft 112. A control handle 121 is provided at the outer end of the shaft 112 so that the clutch drive of the gear 113 can be overruled, at any desired time, and the apparatus be set to any desired point in its operational cycle.

Operation and timer control

In the development of the rotor drum in Fig. 4, the operation of the washer is shown. The inlet A of the housing, which controls the draining of the tub 12 through valve chamber 34, and conduit 51, functions to open the drain 53 at three points in the operative cycle, first after the washing action and then during and after each of two rinsing actions, while inlet B only functions once the cycle starts, through valve chamber 35, conduit 55, and spray head 17 to effect filling of the tub with hot fluid. Station C of the control is the rinse control and it functions through the valve chamber 36, conduit 55 and spray head 17 for two rinsing actions, once after the wash water is drained from the tub and then after the first rinse water is drained. The station D on the control is for the motor 60, which functions through the valve chamber 37, conduit 56 and valve and inlet means of the motor to oscillate the agitator 15 at three different times in the operational cycle, first after hot fluid is introduced and secondly with each insertion of rinse water. E, the drying control, functions after each rinse action by means of the valve chamber 38, pressure booster 58 and conduits 57 and 59.

Fig. 4 shows that there may be a slight overlapping of the drain opening with the rinse actions and, in general, it will be seen that the washing cycle can be set up on the timer control as desired for any given wash condition. Then the speed of drive for the rotor drum may be manually altered in any special manner to change the predetermined wash cycle.

A manually-adjustable shut-off valve 60a positioned in the conduit 56 is usually employed in that by adjusting the valve the speed of the hydraulic motor 60 can be adjusted. This is important in that fine clothes can be washed at a slower agitating speed than ordinary clothes. In fact, a wide range of agitating speeds are readily obtained.

If found advisable in certain installations, for example, farm use, an electric or other motor and pump can be incorporated with the apparatus in association with the supply lines 32a and 33a to provide a constant pressure fluid or water supply to the apparatus. This makes the apparatus independent of fluctuating or no water line pressure.

It will be noted that various features of the washer disclosed herein are suitable for use in other manners than that described since the pressure booster, motor, multi-section valve, and the valve timer, may be used separately in other hydraulic apparatus. However, their combined action produces a relatively inexpensive automatic washer which has a minimum of parts and is adapted for a long period of use without any service requirement. Hence a dependable all-hydraulic automatic washer is provided and the objects of the invention are achieved.

While in accordance with the patent statutes, one embodiment of the invention has been specifically illustrated and described, it should be clearly understood that the scope of the invention is not limited thereto, or thereby, but is defined in the appended claims.

What I claim is:

1. In a machine for washing clothes and the like and for expressing washing water therefrom, the combination of a tub for containing a body of washing water and the clothes to be washed, an agitator disposed within the tub for agitating the clothes in the body of washing water, said tub having a bottom wall and a side wall structure connected to the bottom wall and extending thereabove, said side wall structure being formed, at least in part, of flexible, deformable material which encompasses the agitator, said side wall structure defining an access opening at the upper end thereof for the ingress and egress of the fabrics, means extending through said bottom wall for actuating said agitator relative the tub, a cover for closing the access opening, means for creating a pressure differential between the inner and outer surfaces of said flexible side wall structure to force said flexible side wall structure towards said agitator and means for discharging the expressed water from the interior of the tub.

2. In a machine for washing fabrics and for subsequently compressing the fabrics for the expelling of water therefrom, which operations are carried out in a single enclosure, the combination of a tub including a base having a drain and a sleeve formed of deformable material defining a side wall of the tub and extending upwardly from the base, means securing the lower margin of the sleeve to the base, said sleeve being open at the top for providing access to the tub, a removable cover closing the open top of the tub, means supporting the upper margin of said sleeve, an agitator arranged within the tub and encompassed by the deformable sleeve, means including an oscillating mechanism fixed to the base and arranged below said agitator for actuating said agitator for the washing of the fabrics, and fluid translating means for subjecting the surfaces of said deformable sleeve interiorly and exteriorly of the tub to a fluid pressure differential with the pressure exteriorly of the sleeve predominating over the pressure interiorly of the sleeve, whereby the sleeve is forced generally inwardly toward the agitator for the compression of the fabrics and the expelling of water therefrom, the expelled water passing from the tub through said drain.

3. A clothes washing machine comprising a receptacle having an opening in its top for the admission of clothes to be washed in said receptacle, a closure for said opening, said receptacle including a bottom wall, a generally vertically-extending side wall and an upper wall, said bottom wall and upper wall being contiguous with said side wall and said upper wall defining said top opening, said upper wall overlying said bottom wall and spaced thereabove, said side wall and at least portions of said upper and bottom walls contiguous with said side wall being formed of flexible material, the inner surface thereof being in contact with clothes and washing fluid contained in the receptacle, an agitator mounted within the receptacle and encompassed by said side wall, means extending through said bottom wall for oscillating said agitator to agitate clothes and washing fluid contained in the receptacle, means for developing a differential in pressure between the inner and outer surfaces of said flexible material with the higher pressure prevailing on the outer surface of said flexible material to force said flexible material inwardly toward the agitator and effect a squeezing action on clothes contained in the receptacle to express washing fluid from the clothes, said receptacle having a drain opening to remove washing fluid from the receptacle.

4. A machine for washing fabrics and for subsequently compressing the fabrics for the expelling of water therefrom within a single enclosure, the combination of a receptacle having a top opening and including a base having a drain, an agitator within said receptacle, an annular wall of deformable material surrounding said agitator and drain, means securing the lower extremity of said deformable wall to said base, said deformable wall being open at the top for providing access to the space interiorly thereof, a removable cover for closing said top opening, means for supporting the upper margin of said deformable wall from said receptacle, means extending through said base and including an oscillating mechanism arranged below said agitator for actuating the same to wash fabrics in the space defined by said deformable wall, and fluid translating means for subjecting the exterior and interior surfaces of said deformable wall to a fluid pressure differential with the pressure exteriorly of said deformable wall predominating over the pressure interiorly thereof whereby said deformable wall is forced inwardly toward the agitator for the compression of the fabric and the expelling of water therefrom.

5. A clothes washing machine comprising a receptacle having an opening in its top for the admission of clothes to be washed, a closure for said opening, said receptacle including a bottom wall and a side wall, an annular flexible wall disposed interiorly of said side wall and having fluid-tight joints with the walls of said receptacle, said flexible wall being movable inwardly towards the center of the receptacle when the fluid pressure acting on the outer surface thereof is greater than fluid pressure acting on the inner surface thereof, an agitator mounted within the space defined by said flexible wall for oscillating movement, means extending through said bottom wall for oscillating said agitator to agitate clothes and washing fluid contained in the space interiorly of said flexible wall, means for developing a difference in the pressures acting on the exterior and interior surfaces of said flexible wall to move said flexible wall inwardly toward the

agitator and effect a squeezing action on the clothes contained in the space interiorly of said flexible wall and thereby express washing fluid from the clothes, and a drain conduit communicating with the space interiorly of said flexible wall to remove washing fluid from said space when said flexible wall is moved inwardly.

6. In a machine for washing fabrics and for expelling water therefrom by compression, the combination of a tub structure having a base, a fixed side wall extending upwardly from the base and provided with an access opening at the top side thereof, a sleeve formed of flexible material disposed within said side wall and defining an expansible chamber between the sleeve and side wall, said sleeve having an upper margin secured to the side wall peripherally of said access opening and a lower margin secured to said base, an agitator disposed within the tub and encompassed by said sleeve, means extending through the base for actuating the agitator, means for conveying fluid under pressure to said chamber for forcing said flexible sleeve inwardly of the tub to compress the intervening fabrics and expell water therefrom and means defining a drain opening in said base for the removal of expelled water from the tub.

7. In a machine for washing fabrics and for expelling water therefrom by compression, the combination of a tub structure including a base having a drain therein and a side wall connected to the base and extending upwardly therefrom, a flexible sleeve disposed within said side wall and defining an expansible chamber therewith, said sleeve having its upper periphery secured to the side wall and defining an access opening at the top of the tub, said sleeve having its lower periphery secured to said base, an agitator disposed within the tub and including a tubular center portion and a vane carried thereby, said tubular center portion being disposed about a generally vertical axis and open at its bottom adjacent said base, said tubular center portion extending upwardly from adjacent the base to an upper region of the tub and having a hole formed in an upper part thereof for the passage of water from the upper region of the tub to the interior of the tubular center portion and thence to said drain, means extending through the base for oscillating said agitator about said axis and means for admitting fluid under pressure to said expansible chamber for forcing the flexible sleeve inwardly toward the agitator and for compressing intervening fabrics whereby fluid is expelled from the fabrics and discharged through the drain.

8. In a washing machine, a tub including a base and side walls extending thereabove and defining an access opening at the top of the tub, an agitator disposed within the tub, means extending through said base for oscillating the agitator, an expansible sleeve contoured so as to be snugly received within said tub and cover the side walls thereof, said sleeve having a flange formed at its lower end, said sleeve having an upper marginal portion doubled back over the tub peripherally of said access opening, means clamping the marginal portion of the sleeve to said tub, an anchor plate secured to the base of said tub and engaging the flange of said sleeve to secure it to said base and means for admitting fluid under pressure to the space intermediate the sleeve and said side walls of the tub.

9. A washing machine including a stationary tub having a top opening, an agitator disposed within the tub and journaled for movement therein about a generally vertical axis, means projecting through the bottom of the tub for oscillating the agitator about said axis, a flexible sleeve surrounding the agitator coaxially thereof and connected in fluid-tight relation at its top margin to the tub adjacent the top opening of the tub, said sleeve being connected at its bottom margin in fluid-tight relation to the bottom of the tub around said axis, said sleeve normally being positioned adjacent the inner surface of the tub, said agitator extending upwardly from adjacent the bottom of the tub into an upper portion of the tub, said agitator being hollow and open at its bottom and having an opening for the flow of water from said upper portion of the tub through the hollow agitator to the bottom of the tub, and means for subjecting the inner and outer surfaces of said sleeve to a fluid pressure differential with the higher pressure on the outer surface of the sleeve, whereby the sleeve is forced inwardly toward the agitator.

10. In a machine for washing fabrics and for subsequently compressing the fabrics for the expelling of water therefrom, which operations are carried out in a single enclosure, the combination of a tub including a base having a drain and a sleeve formed of deformable material defining a side wall of the tub and extending upwardly from the base, means securing the lower margin of the sleeve to the base, said sleeve being open at the top for providing access to the tub, a removable cover closing the open top of the tub, means supporting the upper margin of said sleeve, an agitator arranged within the tub and encompassed by the deformable sleeve, said agitator having a hollow, tubular center portion extending vertically from adjacent the base to an upper region of the tub, said tubular center portion of the agitator being open at its bottom and having a hole formed in an upper part thereof for the passage of water from the tub to the interior of said tubular center portion and thence through the open bottom thereof to said drain, means including an oscillating mechanism fixed to the base and arranged below said agitator for actuating said agitator for the washing of the fabrics, and fluid translating means for subjecting the surfaces of said deformable sleeve interiorly and exteriorly of the tub to a fluid pressure differential with the pressure exteriorly of the sleeve predominating over the pressure interiorly of the sleeve, whereby the sleeve is forced generally inwardly toward the agitator for the compression of the fabrics and the expelling of water therefrom, the expelled water passing from the tub through said drain.

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