FLOAT CONTROL MEANS FOR WASHING MACHINES

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FLOAT CONTROL MEANS FOR WASHING MACHINES

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3 Claims. (Cl. 137—429)

1. This invention relates to float control means and more particularly to float control means for washing machines and the like.

The present application is a division of the parent application, Serial No. 66,230, filed December 20, 1948.

Although not so limited, the invention finds particularly good application to the automatic type of washing machine wherein the washing liquid is fed into a washing tub until an amount is supplied to reach a predetermined level, whereupon the cycle is continued automatically for washing and rinsing fabrics placed in the washing tub and then for extracting liquid therefrom.

For the proper washing of fabrics in a tub of a washing machine, it is important that the proper amount of liquid be fed into the tub initially and for economic purposes, among others, the supply of liquid should be shut off when a certain predetermined level is reached. For accurate and proper operation, the liquid supply should be automatically shut off. After the washing operation, it is important that a proper amount of rinsing liquid be supplied.

One object of the invention is to provide novel and practical float control means for a washing machine or the like whereby after supplied washing and rinsing liquids have reached a predetermined level in the washing tub, the supply will be automatically discontinued until a further supply is required.

Another object is to provide simple, durable, efficient and readily accessible liquid supply float control means adapted to meet the requirements for successful operation.

These and other objects are accomplished by the float control shown in the accompanying sheet of drawings wherein the single figure is a fragmentary vertical sectional view of a washing machine embodying the invention.

Referring to the drawings, there is shown a washing machine having a cabinet including four vertical side walls 10 connected in any suitable manner and a cover plate 12 connected to the side walls 10 through flanges 14. The cover plate 12 has a vertical spacing 16 adapted to be closed by a lid 18 which is preferably pivotally connected to the cover plate 12. Within the cabinet 10 is a stationary tub 20 having a liquid-tight seal connection 22 with the cover plate 12. Mounted within the outer stationary tub 20 is a rotatable clothes or fabric-receiving tub having a perforate portion 24 and a perforate portion 26 suitably held in spaced relationship by spacing elements 28 and screws 30. The upper end of perforate portion 26 terminates in an upwardly and inwardly extending portion 32 having an opening 34 in line with the cover opening 16 whereby when the lid 18 is raised clothes or fabrics may be placed in the inner rotatable tub and withdrawn therefrom.

Within the inner rotatable tub there is an agitator 36 suitably splined or connected to the upper end of a shaft 38 whereby the agitator may be given a to-and-fro movement. The agitator is formed with a central post 40 and a base or body portion 42 extending downwardly and outwardly from the center post 40. One or more blades 44 which extend outwardly from the base portion 42 may be provided, which, when the agitator is oscillated, affects a washing operation within the inner tub.

The vertically arranged central post or pedestal 46 extends upwardly from the base 42 and is formed with an inner vertical chamber or compartment 48 which communicates with the interior of the tub 24 — 26 through one or more openings 49. A float 50 is vertically slidably mounted within the float chamber 48 and is adapted to be moved in accordance with change in the liquid level within the inner tub 24 — 26 for operating certain control mechanisms located within the lid 18 and represented by the push button 52. The float 50 is provided with a lower closed end 54 and has its upper end preferably closed by a cap 56, the periphery of which extends beyond the vertical confines of the cylindrical float proper and overlaps the upper end of the center post 40 whereby the float 50 is provided with a grip which may be readily grasped by the operator for removing and cleaning the float 50 as well as the interior of the center post 40 when desired. This float 50 is adapted to engage and operate the control button 52 mounted in the lid 18 when the washing and rinsing liquid rises to a predetermined level within the inner rotatable tub 24 — 26 for automatically shutting off the supply of washing and rinsing liquid.

While the specific illustration of the invention contemplates the mounting of this float 50 within the recess provided in the center post for the agitator, nevertheless it comprehends the mounting of such a float within other supporting structure whether or not the same is in any way associated with the agitator or other washing means disposed within the inner tub 24 — 26. As mentioned, the float 50 is adapted, upon the water or rinsing liquid attaining a predetermined height in the inner tub 24 — 26, to move the control button 52 which extends into the lid for oper-
ating the liquid supply control mechanism mounted therein. In those instances where the float chamber 46 is provided in the agitator, it was found that a more satisfactory performance is obtained when a single passage, such as 48, is provided from the interior of the tub 24—26 into the float chamber. This effectively retards the transfer of fluid fluctuations from the inner tub into the float chamber and thereby stabilizes the float.

As mentioned above, the agitator 35 is given an oscillatory movement during the washing operation. When the washing operation is completed the agitator 35 is temporarily stopped and the inner tub 24—26 is given a rotary spinning movement through mechanism represented by the casting 58 for discharging the washing liquid from the inner tub 24—26 and from the float chamber 46 whereupon the float 50 passes out of engagement with the control button 52 and moves downwardly within the float chamber 46. Thereafter, and when the inner tub 24—26 is preferably stationary, rinsing liquid is supplied to the inner tub 24—26 until the liquid has reached a predetermined level therein, as a result of which the float 50 again is raised into engagement with the control button 52 preparatory to further movement of the agitator and thereafter a rotation of the inner tub 24—26 for discharging the rinsing liquid within the inner tub and for extracting liquid from the clothes washed and rinsed therein.

Preferably the center post 48 has a plurality of vertically-extending circumferentially-spaced inwardly-extending projections to act as guides for the vertical movement of the float 50.

By means of the arrangement herein disclosed, the objects of the invention are accomplished. There may be various modifications of the invention and it is my intention to cover all such modifications coming within the spirit and scope of the following claims.

I claim:

1. In a washing machine, the combination of a float chamber, a float movable in and guided by said float chamber and responsive to change in the liquid level therein, one end of said float being closed by a gripping element at the upper end thereof disposed exteriorly of said float chamber to facilitate the removal of the float from said float chamber.

2. In a washing machine, the combination of a center post having a float chamber, a float guided by said center post and movably mounted in said float chamber in response to change in liquid level, the upper end of said float being closed by a gripping element extending over the inner edge of said center post to facilitate the removal of the float from said float chamber.

3. In a washing machine, the combination of a washing receptacle, a center post having a float chamber disposed therein and having communication therewith through at least one opening, a float guided by said center post and movably mounted in said float chamber in response to change in liquid level in said receptacle, and a closure for the upper end of said float extending over the upper edge of said center post to provide gripping means to facilitate the removal of the float from said float chamber.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,427,306</td>
<td>Luthy</td>
<td>Aug. 29, 1922</td>
</tr>
<tr>
<td>1,433,316</td>
<td>McCutchen</td>
<td>Oct. 24, 1922</td>
</tr>
<tr>
<td>1,524,438</td>
<td>Simons</td>
<td>Jan. 27, 1925</td>
</tr>
<tr>
<td>1,648,756</td>
<td>Cherry</td>
<td>Nov. 18, 1927</td>
</tr>
<tr>
<td>2,079,008</td>
<td>Woolley</td>
<td>May 4, 1937</td>
</tr>
<tr>
<td>2,477,224</td>
<td>Wright</td>
<td>July 26, 1949</td>
</tr>
</tbody>
</table>