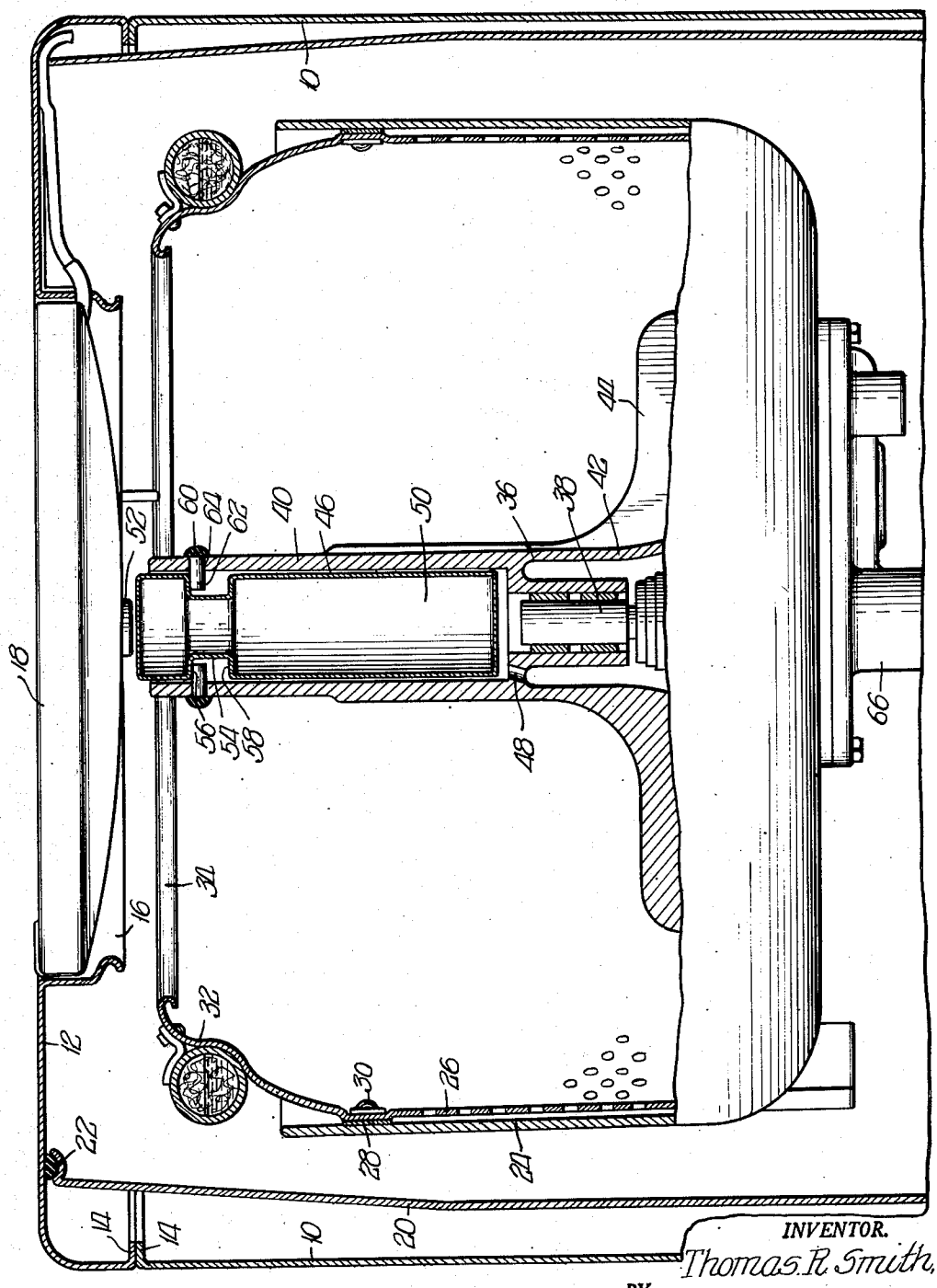
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FLOAT CONTROL MEANS FOR WASHING MACHINES

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FLOAT CONTROL MEANS FOR WASHING MACHINES

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3 Claims. (Cl. 137—387)

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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 washings 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 should 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 central opening 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 an imperforate portion 24 and a perforate portion 26 suitably held in spaced relationship by

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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 24—26 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, effects a washing operation within the inner tub.

The central post or pedestal 40 extends upwardly from the base 42 and is formed with an inner chamber or compartment 46 which communicates with the interior of the tub 26 through one or more openings 48 provided in the lower wall defining the float chamber 46. A float 50 is slidably mounted within the chamber float 46 and is adapted to be moved vertically in accordance with change in the liquid level within the inner tub 24—26 for operating certain control mechanisms within the lid 18 and represented by the push button 52.

The float 50 has its ends closed and is formed with an annular recess 54 providing oppositely disposed shoulders 56 and 58 for limiting the vertical axial reciprocatory movement of the float with respect to the center post 40. This limiting means comprises a flexible band of material 60, such as rubber or the like, which embraces the center post 40 and has a plurality of spaced projections 62 extending through openings 64 in the center post. These projections extend into the recess 54 and are adapted to engage the end walls or shoulders 56 and 58 thereof for limiting the upward and downward vertical movements of the float 50 with respect to the center post 40. This float 50 is adapted to engage and operate the control button 52 mounted in the lid 18 when the washing 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 a 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 washing 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 operating 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 36 is given an oscillatory movement during the washing operation. When the washing operation is completed the agitator 36 is temporarily stopped and the inner tub 24—26 and the float chamber 46 are given a rotary spinning movement through mechanism represented by the casing 66 for discharging the washing liquid from the inner tub 24—26 and 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 until it is stopped at its lower limit of movement by the interengagement of projections 62 and upper shoulder 56. 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 liquid within the inner tub and for extracting liquid from the clothes washed and rinsed therein.

Preferably the center post 40 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 center post having a float chamber therein, a float movable in said float chamber in accordance with water level conditions, said float having an inwardly extending recess intermediate its ends adapted to form a stop shoulder, said center post having at least one aperture extending therethrough, and a flexible member embracing said center post and having a projection extending through said aperture of said center post adapted to engage said stop shoulder to limit movement of said float.

2. In a washing machine, the combination of a center post having a float chamber therein, a float movable in said float chamber in accordance with water level conditions, said float having an inwardly extending annular recess intermediate its ends adapted to form oppositely disposed stop shoulders, said center post having at least one aperture extending therethrough, and a flexible member embracing said center post and having a projection extending through said aperture of said center post adapted in one position to engage one of said shoulders for supportingly mounting said float in said chamber and adapted in another position to engage the other of said shoulders to limit the outward movement of said float relative to said chamber.

3. In a washing machine, the combination of a center post having a float chamber therein, a float movable in said float chamber in response to changes in level of water around said post, said float having a radial depression intermediate its ends, said post having at least one aperture extending through it, and a pin-like projection occupying said aperture extending inwardly into said chamber and into the depression in said float to limit the movement of the latter axially of said chamber.

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