

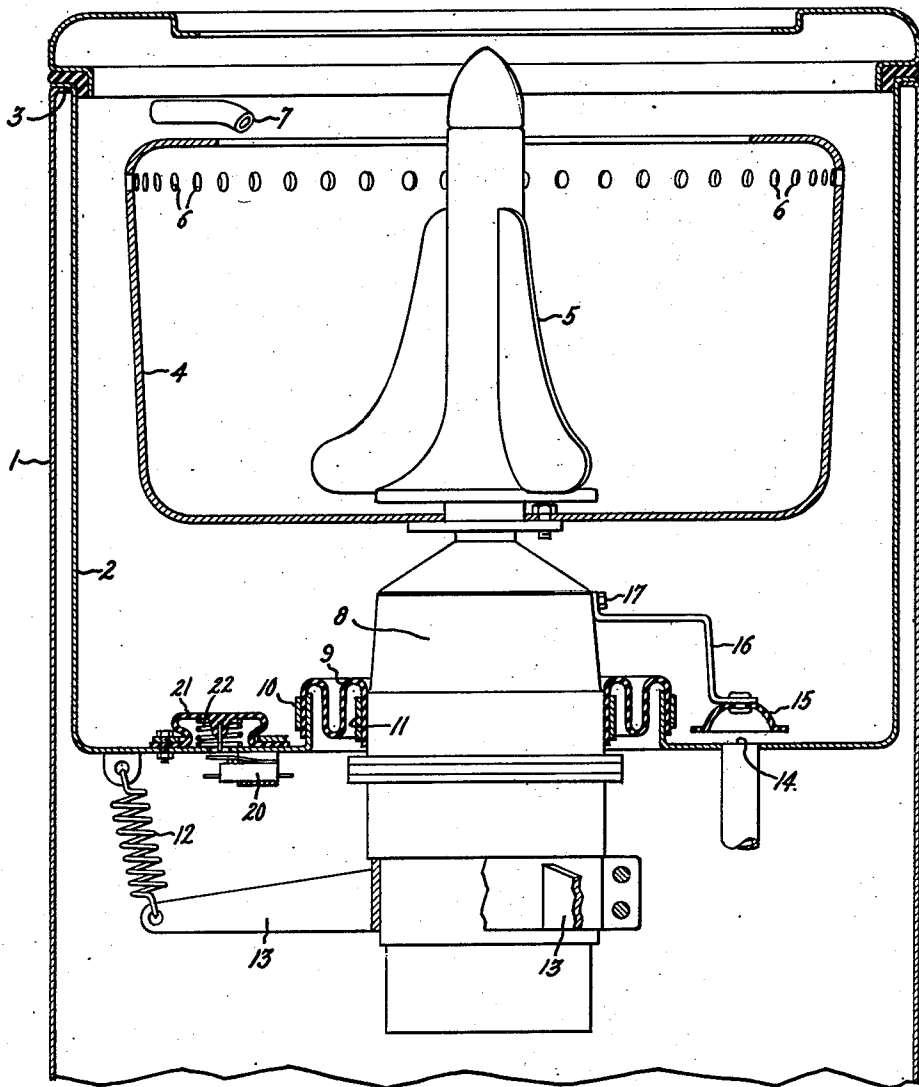
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WATER DRAIN FOR SPIN BASKET TYPE WASHING MACHINES

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## WATER DRAIN FOR SPIN BASKET TYPE WASHING MACHINES

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The present invention relates to clothes washing machines of the spin basket type wherein the clothes are washed and rinsed in the basket and the basket is rotated to extract the water from the clothes. The invention is especially useful in such washing machines wherein the several operations are performed automatically and wherein the washing or rinsing operation is initiated by the accumulation in the outer tub of a predetermined depth of water overflowing from the basket after the spin basket is filled to the desired level. However, the invention is not limited thereto necessarily.

The object of my invention is to provide an improved construction and arrangement for controlling the draining of the washing machine wherein the draining is effected by gravity thus avoiding the use of the usual drain pump and wherein the drain valve is operated in a simple manner by the weight of the water in the spin basket.

According to my invention, I provide a drain control valve which controls directly a drain opening in the clothes washer tub and connect such valve to be actuated by vertical movement of the spin basket, the spin basket being resiliently supported so that it moves vertically by a predetermined amount when it is filled with water.

In the drawing, the figure is a sectional view of a clothes washing machine embodying my invention.

Referring to the drawing, 1 indicates the outer casing, 2 the tub which is suitably supported in the outer casing as indicated at 3, and 4 the spin basket of a clothes washing machine. In the spin basket is an agitator 5 which is oscillated to perform the washing operation as is well understood. Around the upper edge of basket 4 are water discharge openings 6. The water filling spout for the basket is indicated at 7. Mechanism for effecting oscillation of agitator 5 and spinning of basket 4 is indicated at 8, it being contained in a suitable housing as shown. Such mechanisms are known. Its specific structure forms no part of the present invention and hence it has been shown only in outline. One such suitable mechanism is disclosed in the patent to Woodson, No. 2,526,444, patented October 17, 1950, assigned to the same assignee as is the present invention. Between the casing of mechanism 8 and tub 2 is a suitable flexible seal which may comprise a corrugated flexible diaphragm 9 having its ends clamped to a flange on tub 2 and to the mechanism casing as is indicated at 10 and 11. Basket 4 and agitator 5 are supported

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by mechanism 8, the basket, agitator and mechanism forming a unitary structure.

In carrying out my invention, I support mechanism 8 by yielding means which permits it to have a limited vertical movement. For this purpose, I employ preferably a series of circumferentially spaced springs 12, three for instance, which at one end are attached to the bottom of tub 2 and at the other to the end of radially projecting arms 13 fixed to the housing of mechanism 8. Tub 2 is provided with a drain opening 14 through which water may drain by gravity and for controlling opening 14 there is provided a flexible cup-shaped valve 15 carried by an arm 16 which in turn is attached to the mechanism housing as is indicated at 17.

When basket 4 is empty, the parts stand in the positions shown in the drawing, drain valve 15 being open. When water is supplied to the basket, the added weight causes the basket and mechanism to move downward against the action of springs 12 to close drain valve 15. Springs 12 are of a strength such that valve 15 will be closed somewhat prior to the time the basket is filled to drain openings 6, additional movement after the valve is closed being taken up by flexing or yielding of the valve. For example, the valve may close initially upon completion of approximately three-fourths of the total vertical movement of the spin basket. The valve will be held closed by the weight of the water in the spin basket during washing and rinsing operations. When the basket is rotated to extract the water from the clothes, discharge of water from the basket through opening 6 serves to decrease the weight of the basket permitting the basket and mechanism to be moved upward by springs 12 to open the drain valve.

My invention is well adapted for use in an automatic washing machine wherein the washing operations and the spinning operations are effected by the closing of an electric switch actuated by the pressure of an accumulation of water in the bottom of tub 2. Such a mechanism is illustrated, 20 being an electric switch in the washing machine motor circuit which is closed by downward movement of a flexible cup 21. Cup 21 is biased upward by a spring 22. In operation, after basket 4 is filled water overflows through openings 6 and as soon as the overflow is sufficient, the weight of the water on cup 21 causes it to move downward to close switch 20. This may automatically start the washing cycle effecting closing of the water supply valves and starting of the washing machine motor as

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is now known in connection with the operation of automatic clothes washing machines. As is clear, drain valve 15 will be automatically closed and opened by the filling and emptying of basket 4 as the automatic washing cycle is carried out. 5

By my invention, I am enabled to dispense with the usual drain pump and empty the tub by gravity through the use of a simple drain valve structure. And my invention fits readily into an automatic washing machine control system. A flexible cup-shaped valve is of advantage in that it is simple in structure, flexes readily after it is seated, and is not likely to get out of order or to become fouled with lint or other foreign matter in the water being drained past it.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a clothes washing machine, a tub having a drain opening, a spin basket and operating

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mechanism yieldingly supported in the tub for limited vertical movement with respect thereto under the weight of water in the basket, and a vertically yielding valve carried by said operating mechanism and movable therewith for closing said drain opening.

2. In a clothes washing machine, a tub having a drain opening, a flexible cup-shaped valve for covering and uncovering said opening, mechanism including a spin basket to which said valve is connected, and spring means yieldingly supporting said mechanism in the tub for vertical movement of the mechanism relatively to the tub under the influence of the weight of water in the basket for moving said valve to cause it to cover and uncover said drain opening. 15

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No references cited.