Aug. 16, 1960 L. H. TINGLEY, JR 2,949,025

CLOTHES TREATING LIQUID DISPENSER FOR AUTOMATIC WASHING MACHINES

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Fig. 1

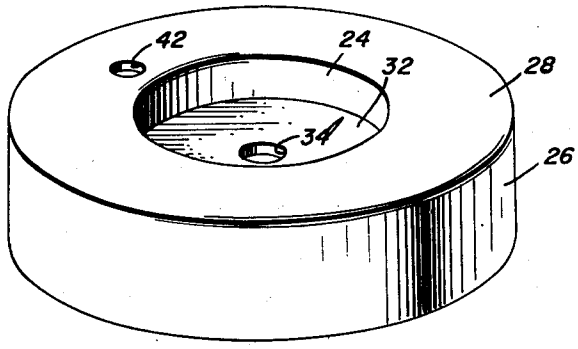


Fig. 2

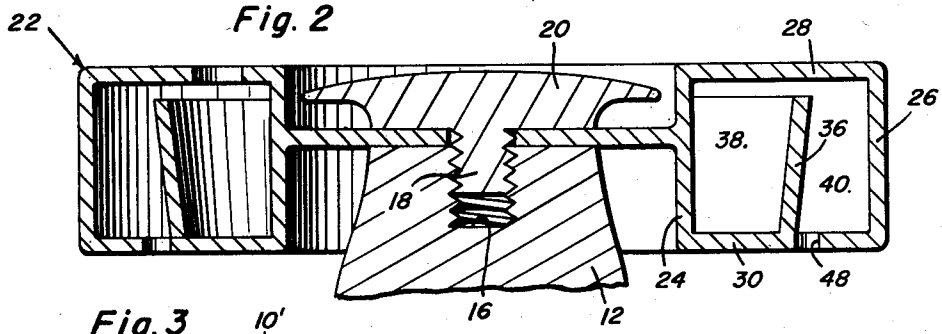
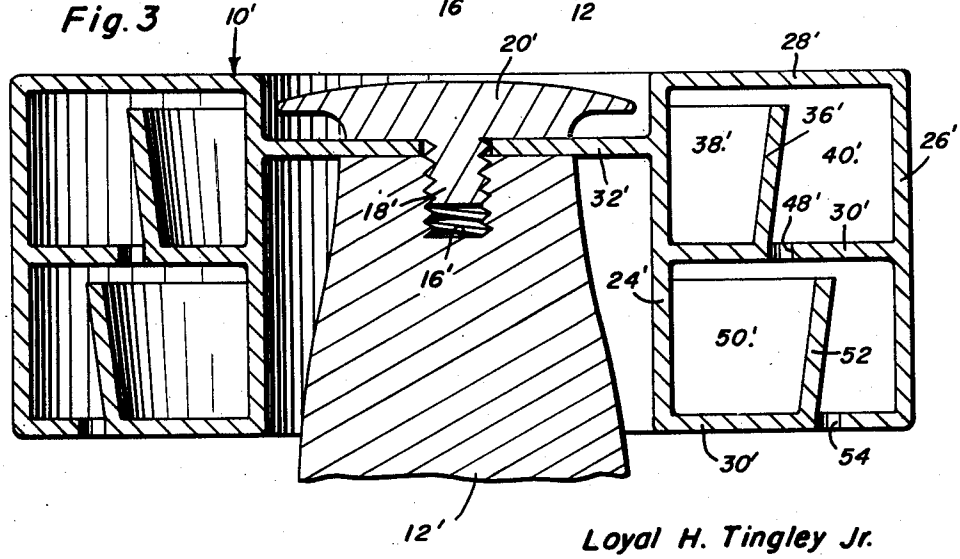


Fig. 3



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CLOTHES TREATING LIQUID DISPENSER FOR AUTOMATIC WASHING MACHINES

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2 Claims. (Cl. 68—207)

The present invention generally relates to an attachment in the form of a dispenser for automatic washing machines and is a continuation-in-part of my copending application Serial No. 559,011, filed January 13, 1956, and now Patent No. 2,868,006 of Jan. 13, 1959, for Clothes Treating Liquid Dispenser for Automatic Washing Machines.

In the operation of automatic washing machines, the usual sequential steps include a washing operation, a first extraction operation in which the wash water is removed from the clothes, a rinsing operation in which the clothes are rinsed in clean water and a final extraction operation in which the rinse water is removed from the clothes. In the use of the machine, the clothes along with the cleaning agent are positioned in the tub after which the tub automatically fills with water and the machine then washes the clothes for a predetermined interval, spins out the soapy wash water and stops the tub and refills the same with rinse water. The rinse water filled tub is then agitated for thoroughly rinsing the clothes and then the rinse water is extracted by the second extraction operation. Many variations of these sequences are incorporated in certain types of machines including spin rinses, overflow rinses, prerinses and two-stage extraction operations for extracting the wash water. Certain types of water in order to obtain the best results require the use of employing treating materials such as water or fabric softeners and it is necessary that these ingredients be added at the proper stage of operation. This necessitates personal attention to the operation of the machine thus eliminating many of the advantages of the automatic washing machine. Thus, it is the primary object of the present invention to provide a dispenser for such materials for automatically introducing the treating agent into the tub or clothes basket at the proper time such as the beginning of the rinsing operation.

Another object of the present invention is to provide a dispenser attachment which is extremely simple in construction and operation, that has no moving parts and depends upon high speed rotation of the agitator during the first extraction operation to pass the liquid into the clothes basket at the start of the rinsing operation or into a second compartment for use in conjunction with a machine having a two-stage first extraction operation for subsequent passage into the clothes basket at the start of the rinsing operation.

In carrying out the objects of the invention, the washing machine is of a conventional construction and includes the usual rotatable clothes basket with an agitator disposed therein together with drive means for driving both the agitator and the clothes basket. The agitator is driven alone for washing and rinsing the clothes and the clothes basket is rotated at a high speed along with the agitator to extract liquid from the clothes by centrifugal extraction. The dispenser of the present invention may be filled before the machine is placed in operation and will automatically introduce the treating agent

into the clothes basket when the rinsing operation is reached. Basically, the dispenser includes a central or inner receptacle section and an outer compartment communicating or opening toward the receptacle section. The receptacle section is provided with an opening for introducing the treating agent prior to operation of the machine and during the agitation of the washing operation, it remains in the receptacle section. During the subsequent centrifugal extraction operation, the treating agent is thrown out of the receptacle section as a result of the centrifugal action created by the high speed rotation of the agitator. The treating agent discharged from the receptacle section is received and retained by the outer compartment and held therein as long as the agitator continues to rotate. As rotation ceases at the end of the extracting operation, the treating agent then flows from the outer compartment of the dispenser into the clothes basket to treat the rinse water during the rinsing operation. If more than a single stage extraction is employed, the dispenser includes one or several additional receptacle sections and outer compartments through which the treating agent may progress sequentially in order to be introduced ultimately into the clothes basket when the rinsing operation is reached.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of the dispensing attachment of the present invention;

Figure 2 is a detailed transverse sectional view illustrating the device attached to the impeller or agitator when a single extraction operation is used; and

Figure 3 is a sectional view similar to Figure 2 illustrating the construction when a two-stage first extraction operation is used.

Referring now specifically to the drawings, there is disclosed the dispensing attachment of the present invention for attachment to a moving or rotating part of a washing machine such as the impeller or agitator **12** of an automatic washing machine driven by the vertical shaft **16** which in this case is provided with an internally threaded socket **16** at the upper end thereof for receiving the externally threaded stud **18** on a cap **20** which normally retains the impeller or agitator **12** on the shaft **14** and permits removal thereof for cleaning. The device may be attached to the agitator or impeller by any suitable means and may be made integral therewith if desired.

The dispenser attachment **10** includes a cylindrical container generally designated by the numeral **22** which includes an inner wall **24** and an outer wall **26** disposed in spaced concentric relation and are connected by a top wall **28** and a bottom wall **30**, thereby forming a closed container **22** of hollow construction. A central plate **32** of circular configuration is provided within the annular wall **24** and forms a closure therefor. The plate **32** is disposed below the top wall **28** and includes a central aperture **34** for permitting passage of the externally threaded stud **18** thereby permitting mounting of the dispenser on the upper end of the agitator or impeller.

Disposed between the inner and outer wall **24** and **26** is an upwardly inclined baffle wall **36** which approaches a vertical position but which is inclined outwardly for facilitating the flow of liquid material from the inner surface of the baffle to the area exteriorly thereof and providing a self-cleaning baffle whereby no liquid material will be retained on the inner surface thereof. The baffle **30** terminates below the upper wall to provide a

passageway between an inner compartment or receptacle section 38 and an outer compartment 40 which as the U-shaped outline defined by the outer wall 26 and the outer portion of the top and bottom walls 28 and 30 with the U-shaped outer compartment facing the receptacle section or inner compartment 38 and in communication therewith over the top edge of the baffle 36 which actually forms an outer edge for the receptacle section.

The inner compartment or receptacle section 38 is provided with an opening 42 for permitting the insertion of the liquid treating material prior to operation of the washing machine. The opening is disposed over the compartment 38 or inwardly of the baffle 36 for assuring that the material will be initially positioned in the receptacle section 38.

The bottom wall of the outer compartment is provided with a plurality of openings 48 disposed adjacent the outer surface of the baffle 36 whereby the outer compartment 40 will catch liquid from the receptacle section during high speed rotation and due to the location of the discharge apertures 48, no treating agent will be discharged through the apertures 48 until such time as rotation of the device ceases whereby the force of gravity will cause the treating material to be discharged into the clothes basket.

In the device illustrated in Figure 3, an inner compartment or receptacle section 50 is provided for receiving material from the discharge openings 48 with the receptacle section 50 having an upwardly and outwardly inclined outer edge 52 similar to the baffle 36 for discharging liquid over the upper edge thereof during high speed rotation. The bottom wall is provided with apertures 54 adjacent the edge 52 for normally holding liquid in the outer compartment when the device is rotating at high speed and permitting discharge thereof when the dispenser stops. All other structure is the same and employs the same reference numerals which are primed for distinctiveness. This construction represents a duplication of the inner receptacle section and outer compartment construction and is disposed in concentric and axial relation for use on an automatic washing machine having a two-stage first extracting operation or having a pre-rinse with an extraction operation together with a washing and extracting operation forming in its entirety a first extracting operation.

The operation of the form of the invention illustrated in Figure 2 will be discussed with the understanding that the duplicate arrangement of Figure 3 operates in substantially the same manner. The dispenser 10 is attached to the impeller 12 in a manner described previously and may be retained thereon for extended periods of time and only removed when the impeller is removed for cleaning or the like. The closure plug (not shown) is removed and a desired quantity of fluid is poured into the inner compartment 38 at the same time as the clothes are positioned in the tub and the detergent or soap disposed therein after which the automatic washing machine is put into operation. The tub is initially filled with water and the impeller 12 begins its oscillation movement after the water in the tub has reached a predetermined level. The oscillation of the impeller 12 continues for a predetermined length of time and during this oscillation, the fluid will have a slight back and forth movement in the inner compartment 38 but due to the absence of any prolonged centrifugal force, the liquid will be retained in the inner compartment by the barrier formed by the baffle 36. After the washing operation has been completed, the tub and impeller 12 spin as a unit for spinning out the wash water by centrifugal action. During this spinning operation, the fluid is acted upon by centrifugal force and is forced upwardly over the upper edge of the baffle 36 substantially as illustrated in Figure 3. During the spinning movement of the impeller 12 and the tub, the fluid will be retained against the inner surface of the outer wall 26 by centrifugal force which will retain the fluid away from discharge openings 48 in the bottom 30. Due to the increase in radius of the fluid as it moves from the inner compartment 38 to the outer compartment 40, the outer compartment 40 may have less cross sectional area. During the complete spinning operation, the fluid will be retained against the inner surface of the outer wall 26 and after the spinning operation, the drain line from the tub is automatically closed and the tub and impeller come to a stop. The tub then is refilled with rinse water and while the rinse water is being discharged into the tub, the liquid will flow through the discharge openings 48 by the force of gravity into the rinse water for thoroughly intermingling with the clothes during the agitation of the impeller 12 during the rinsing operation.

It will be understood that various types of liquid clothes treating materials or chemicals may be employed such as a recent commercially available material for making the clothes soft and fluffy when laundered. However, it will be clearly understood that any materials of a liquid nature may be employed such as blueing or starch wherein it is desired to discharge the liquid material into the rinse water.

The entire deviec may be constructed of any suitable material such as plastic or metal although plastic lends itself to relatively inexpensive manufacturing cost. Any type of closure cap or closure member may be provided which is securely retained in position during the spinning operation.

In some types of automatic washing machines, two rinsing operations are provided and if this is the case, it would be only necessary to provide a duplicate arrangement of compartments concentrically of the first and second compartments 38 and 40 and axially spaced therefrom which would be identical in construction except that the inlet for the concentric inner compartment of the duplicate arrangement would receive the liquid from the discharge openings 48 of the first arrangement. While the device has been specifically illustrated as being attached to the impeller or agitator, the device may be attached to any of the rotating and oscillating elements employed in automatic machines such as the shaker type tub. Also, the device may be cast as an integral part of the impeller, agitator or other movable element of the machine.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is a follows:

1. In a washing machine adapted to proceed through a sequence of operations including a washing operation, a first centrifugal extraction operation including two extraction stages interrupted by a pause, a rinsing operation and a second centrifugal extraction operation, a rotatable clothes basket, an agitator disposed within said clothes basket, drive means for oscillating said agitator for washing clothes and for rotating said basket to extract liquid centrifugally from said clothes, said agitator rotating with said basket during the rotation thereof, and a rinse agent dispenser mounted on said agitator for discharging a rinse agent into said basket after said first extraction operation to treat the liquid in said basket during said rinsing operation, said dispenser including a first receptacle section for accommodating said rinse agent during the oscillation of said agitator during said washing operation, a first compartment generally U-shaped in cross section disposed outward of said first receptacle section and opening toward said first receptacle section for receiving and holding said rinse agent during the first stage of said first centrifugal extraction operation, a second receptacle section located below said first receptacle section and inwardly of said

first compartment, means communicating the first compartment and the second receptacle section for discharge of said rinsing agent from said first compartment into the second receptacle section during said pause between the first and second extraction stages of said first extraction operation, a second compartment generally U-shaped in cross section disposed outwardly of said second receptacle section for receiving and holding said rinsing agent upon the rotation of said agitator during said second stage of said first centrifugal extraction operation, and outlet means for discharging said rinsing agent from said second compartment into said basket upon the completion of said second stage.

2. For use in a washing machine having a rotatable clothes basket and an agitator disposed within said clothes basket, a liquid treating agent dispenser adapted for mounting on said agitator and comprising an inner receptacle section adapted to contain liquid and having an upwardly inclined outer edge, a first compartment generally U-shaped in cross section disposed outward of said receptacle section and opening toward said section for catching liquid centrifugally discharged from said section over said edge during rotation of said agitator, a second receptacle section disposed beneath said first receptacle section, means communicating the first compartment and the second receptacle section for discharge of said liquid from said first compartment into the second receptacle section when said agitator stops rotating, and a second compartment generally U-shaped in cross section disposed outwardly of said second receptacle section and opening toward said second receptacle section for catching liquid centrifugally discharged from said second receptacle section during a subsequent rotation of said agitator, and outlet means opening from said second compartment inwardly of its outer wall for discharging said liquid collected in said second compartment out of said dispenser upon the next cessation of agitator rotation.

No references cited.