Nov. 17, 1959 L. H. TINGLEY, JR 2,912,842

CLOTHES TREATING MATERIAL DISPENSER FOR AUTOMATIC WASHERS OF THE TUMBLER TYPE

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Fig. 1

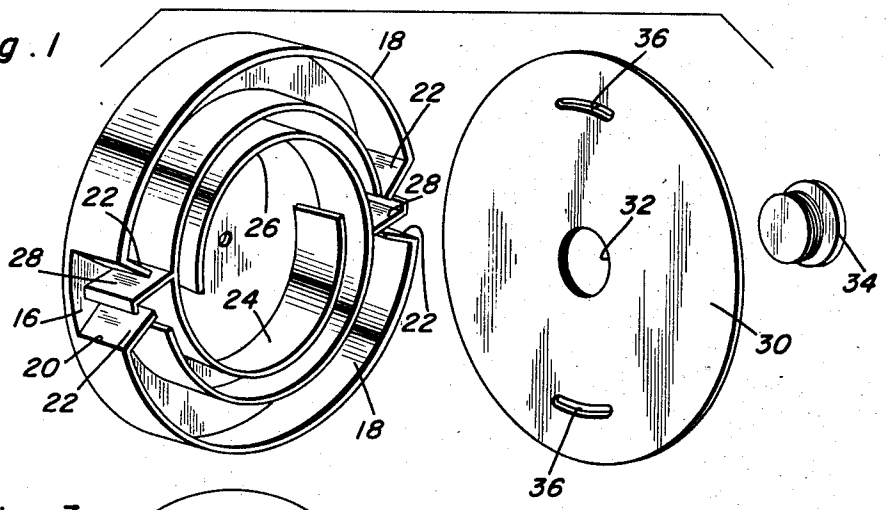


Fig. 3

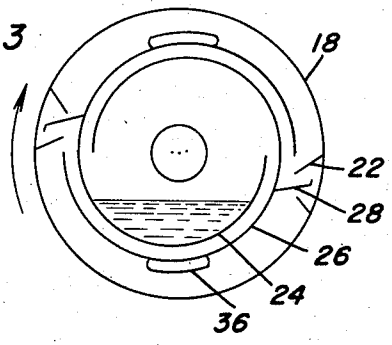


Fig. 4

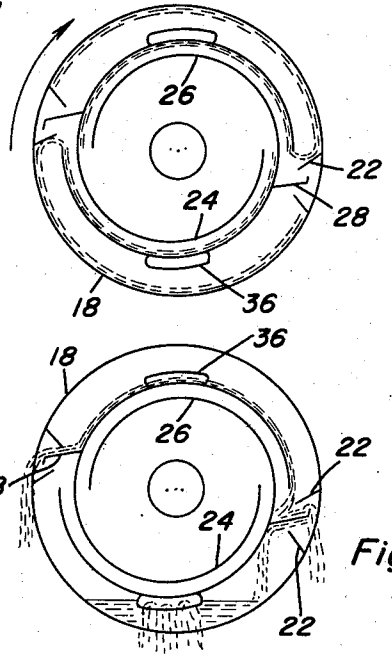
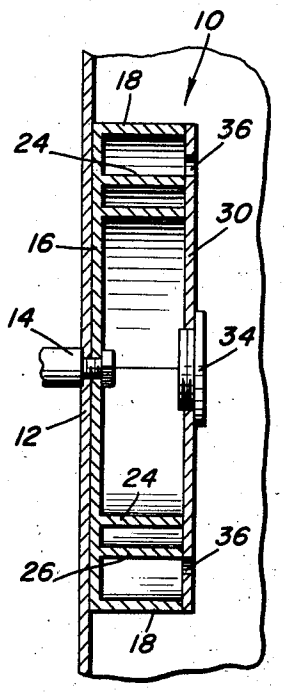


Fig. 5

Fig. 2



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CLOTHES TREATING MATERIAL DISPENSER FOR AUTOMATIC WASHERS OF THE TUMBLER TYPE

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Application December 11, 1956, Serial No. 627,658

5 Claims. (Cl. 68—24)

This invention generally relates to a dispensing device and more particularly a device for automatically dispensing clothes treating or water treating material into an automatic washing machine at the proper time during the clothes washing operation, whereby the washing machine is rendered completely automatic, since the necessity for manually placing such treating materials into the washing machine is eliminated.

The primary object of the present invention is to provide an improvement and modification of that invention disclosed in my co-pending application, Serial No. 559,011, filed January 13, 1956, for Clothes Treating Liquid Dispenser for Automatic Washing Machines.

In the operation of automatic washing machines, and especially those of the tumbler type, the articles of clothing are disposed in the tumbler basket or tub and the soap, detergent or the cleaning medium is disposed in a particular entrance opening or supply chamber so that the soap or detergent will be thoroughly intermingled with the incoming water as the machine is filled with water. After the machine is filled, the washing operation automatically takes place by rotating of the tub about substantially a horizontal axis for a predetermined time interval, after which the tub is rotated at a very high rate of speed for discharging the dirty wash water. The tub is then stopped and is refilled with rinse water, after which the tub is again rotated at a slow rate of speed for thoroughly rinsing the clothes, with subsequent high rate of spinning for spinning out the water and damp drying the clothes. In this type of washer, as well as in the type in which the basket or tub is rotatable on a vertical axis, it is desirable to insert clothes treating or water treating materials into the rinse water for treatment of the clothes or the water. An example of clothes treating material would be a bleach, bluing or the like, while the water treating material could be any one of several commercially available water softeners. Inasmuch as present washing machines have no facility for inserting this treating material at the desired stage or cycle of operation, the machine is not actually fully automatic, since it becomes necessary for the housewife or other person operating the device to listen for the various stages or observe the operation of the machine and then stop the machine and insert the desired treating material at the proper time. The necessity for attending the machine eliminates some of the advantages of the automatic washing machine and requires a certain amount of effort, and it is the primary object of the present invention to provide an attachment for tumbler type automatic washing machines which will automatically dispense the quantity of treating material into the rinse water at the proper time, thus rendering the operation of the washing machine completely automatic.

Another object of the present invention is to provide an attachment for that type of automatic washing machine having a clothes washing tub or basket rotatable about substantially a horizontal axis, whereby the rotation of the tub may be in the same direction during all stages or cycles of its operation.

A further object of the present invention is to provide an attachment in accordance with the preceding objects which may also be integrally formed with a portion of the rotating tub and which is extremely simple in construction, provided with no moving parts, extremely easy to attach, foolproof in operation and otherwise well adapted for its particular purposes.

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 forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is an exploded perspective view of the attachment of the present invention;

Figure 2 is a vertical sectional view showing the details of construction of the device and schematically illustrating the device attached to the tumbler basket;

Figure 3 is a front schematic view illustrating the device in a static position during the washing operation when the washing tub is turning relatively slowly;

Figure 4 is a schematic front view illustrating the disposition of the material when the wash water is being spun out by rotating the tub at a high rate of speed; and

Figure 5 is a schematic front view of the device during the slow rotation of the rinse cycle and illustrating the material being discharged from the attachment.

Referring now specifically to the drawings, the numeral **10** generally designates the attachment of the present invention for attachment to the tub **12** of a tumbler type washing machine rotatable about a horizontal axis defined generally by a spindle **14**.

The attachment **10** includes a circular base plate **16** having an outwardly projecting cylindrical wall **18** integral therewith, with the cylindrical wall having diametrically opposed openings **20**, with each edge of each opening **20** having an inwardly extending wall portion **20**.

Disposed within the wall **18** and generally centrally on the plate **16** is a pair of strips **24** and **26**, each of which spirals radially outwardly and encompasses approximately 360 degrees. The inner ends of the strips **24** and **26** are disposed in diametrically opposed relation or 180 degrees apart and are approximately one and one-half inches from the center of the plate **16** and spiral outwardly at a uniform rate until at their outer ends they are two inches from the center of the plate **16**. It is noted that for approximately 180 degrees, starting from the inner end, strip **24** is the inner strip, and for approximately the last 180 degrees it is the outer strip. This is also true of the strip **26**.

The inwardly extending walls **22** stop at a point further from the center than the outer ends of strips **24** and **26**, since these ends are approximately $2\frac{3}{16}$ inches from the center, whereas the outer ends of strips **24** and **26** are only two inches outward from the center. The members **22** radially overlap the ends of the strips **24** and **26**, that is, a line drawn from the center through the outer end of either of the strips **24** and **26** will fall within the inner surface of the inwardly extending wall **22**.

Two more outwardly extending strips **28** act as baffles and are attached at one end to each of strips **24** and **26** and extend outwardly towards the two openings **20** between the walls **22**. Baffles **28** are diametrically opposed and a front plate **30** is provided in opposition to plate **16**, thus enclosing the entire area of the attachment. The plate **30** may be provided with an opening **32** having a suitable closure plug **34** therein and also a pair of arcuate slots **36** which are diametrically disposed at 90 degrees from baffles **28** and outward radially from but adjacent

to the strips 24 and 26, with the slots being disposed closely adjacent the outer surface thereof, as illustrated in the various figures.

In operation, the device is filled to approximately one-third full, as illustrated in Figure 3, and after the washer has been filled and begins rotation in a clockwise direction at low speed, the strips 24 and 26 will essentially form two cups, and during this slow rotation the fluid is poured from one cup to the other and remains in one or the other of the cups during the entire cycle. In other words, looking at Figure 3, the material will be poured from one strip to the other strip. As the machine starts the high rotation speed of the spin cycle, the centrifugal force will force the fluid to the periphery of strips 24 and 26 as illustrated in Figure 4, and since the strips are spiral, the centrifugal force will force the liquid to the outer ends of the strips and completely out of the cups formed by strips 24 and 26. As the liquid is discharged from the ends of the strips 24 and 26, it is caught by the inner inclined surface of the walls 22, which represent the in-turned ends of the cylindrical wall or strip members 18, thus restraining the fluid and holding the same against the periphery of the cylindrical strip members 18 during the balance of the high speed spin cycle. The spin then stops after the spin cycle is completed and the rinse water flows in and the machine again rotates slowly in a clockwise direction. The fluid contained against the inner wall of the cylindrical wall 18 during the high speed rotation will be discharged by gravity downwardly and out through openings 20 or out through the arcuate slots 36 as illustrated in Figure 5. As slow rotation begins again, all of the fluid will be discharged through the openings 20, thus completely emptying the device. Regardless of the position of the attachment when it stops, some of the treating fluid will be discharged while the machine is stopped, while the remainder will be discharged during the initial slow rotational movement of the tub during the rinse cycle. In Figure 5, it may be seen that the baffles 28 have a particular function in the operation of the device, in that they prevent fluid from flowing from the upper part of the device back into the interior of the spiral members 24 and 26. Rotating the device in Figure 5 will bring the fluid against the outwardly inclined surface of the baffles 28 and urge the same radially outwardly and prevent the fluid from backflowing into the area between the strips 24 and 26. The slots 36 are to prevent the level of fluid in the lower part of the device from rising high enough to flow back into the area interiorly of the spiral strips 24 and 26. Any fluid left in the dispenser after the initial "run off" when the spinning cycle stops will be poured out of the device during the slow clockwise rotation of the rinse cycle.

The manner of supporting the device on the rotating tub of the washing machine has been schematically illustrated, as has the manner of providing a filling opening and closure therefor. It will be understood that any suitable attaching means may be provided which render the device readily accessible for filling and also for cleaning when desired. Thus, by initially placing the clothes treating, flowable material in the dispensing attachment, the washing machine may be rendered completely automatic, since the treating material will be automatically discharged into the rinse water at the proper interval for effectively treating the clothes or the water.

The dimensions set forth in the description of the device are for the purposes of illustration and it is pointed out the dimensions may vary as determined by the desired capacity.

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 as follows:

1. For use in a washing machine having a clothes basket mounted for unidirectional rotation about a horizontal axis, a liquid treating agent dispenser adapted for mounting on the basket for rotation about the same axis, said dispenser comprising a pair of spaced plates, a pair of spiral strips extending between the plates with the strips arranged in nested spaced relation with the inner and outer ends of the spirals being disposed on opposite sides of the axis of rotation, said strips extending substantially completely around the axis of rotation whereby material will be discharged from the inner end of one strip into the other strip during slow speed rotation in the direction of the spiral and discharged from the outer ends of the strips during high speed rotation, a cylindrical wall disposed between the plates outwardly of the strips for receiving the material from the outer ends of the strips during high speed rotation, said wall having diametrically opposed discharge openings, means extending inwardly of the edges of the openings for retaining the material against the inner surface of the wall during high speed rotation, and inclined means on the outer surface of the strips and extending towards the openings for deflecting the material through the openings during subsequent low speed rotation.

2. A clothes washing machine adapted to proceed through a sequence of operations including a washing operation, a centrifugal extraction operation, and a rinsing operation, and including a clothes container member for receiving clothes to be washed which rotates unidirectionally about a generally horizontal axis at slow speed during the washing operation, at a high speed during the extraction operation, and at a slow speed during the rinsing operation, and a dispenser mounted for rotation with said container member about the same axis for discharging a rinsing agent into said container member after the extraction operation to treat the liquid in said container member during the rinsing operation, said dispenser comprising a pair of spaced plates, a cylindrical wall retaining said plates in spaced relation and generally defining a hollow receptacle, one of said plates including means mounting the receptacle on the clothes container member, the other of said plates having means admitting rinse agent into the receptacle, said cylindrical wall having a pair of diametrically opposed openings therein with the edges of the openings defined by the wall having inwardly extending wall portions with the wall portions at each opening being disposed in inwardly converging relation, a pair of spiral strips interconnecting said plates with the strips being spaced from the cylindrical wall and from each other throughout their length, said spiral strips having their inner ends spaced equally from the center of the plates and in diametrically opposed relation with each strip extending in a spiral for approximately 360° with the outer ends of the strips being radially spaced from the inner ends, the inner and outer ends of one strip being disposed on opposite sides of an intermediate portion of the other strip, the outer ends of said strips being in radial alignment with the inclined inner surface of the converging wall portions whereby any liquid rinse agent passing radially over the outer ends of the strips will be retained by the wall portions and directed onto the inner surface of the cylindrical wall, an outwardly extending baffle on the outer surface of the intermediate area of each of the strips with the baffles extending outwardly between the converging wall portions and in spaced relation to the ends of the strips for directing liquid rinse agent through the openings by gravity when the receptacle is stopped or turning slowly.

3. The combination of claim 2 wherein said plate having means admitting rinse agent is also provided with a pair of diametrically opposed arcuate slots disposed in 90° relation to the openings in the cylindrical wall and

being spaced radially inwardly from the cylindrical wall and radially outwardly of the spiral strips for discharging the liquid rinsing agent retained against the inner surface of the cylindrical wall when one of the slots is disposed at the lowermost point and the liquid rinsing agent will flow by gravity to the bottom of the cylindrical wall and laterally outwardly through an arcuate slot.

4. A liquid rinsing agent dispenser for use in a clothes washing machine of the tumbler type adapted to proceed through a sequence of operations including a washing operation, a centrifugal extraction operation, and a rinsing operation, and having a unidirectional rotary tub rotatable on a horizontal axis which rotates at slow speed during the washing operation, rotates at high speed during the extraction operation and rotates at slow speed during the rinsing operation, said dispenser having means for mounting the same upon the tub for rotation therewith on the same axis and comprising a pair of spaced plates, a cylindrical wall retaining said plates in spaced relation and generally defining a hollow receptacle, one of said plates having means admitting rinse agent into the receptacle, said cylindrical wall having a pair of diametrically opposed openings therein with the edges of the openings defined by the wall having inwardly extending wall portions with the wall portions at each opening being disposed in inwardly converging relation, a pair of spiral strips interconnecting said plates with the strips being spaced from the cylindrical wall and from each other throughout their length, said spiral strips having their inner ends spaced equally from the center of the plates and in diametrically opposed relation with each strip extending in a spiral for approximately 360° with the outer

ends of the strips being radially spaced from the inner ends, the inner and outer ends of one strip being disposed on opposite sides of an intermediate portion of the other strip, the outer ends of said strips being in radial alignment with the inclined inner surface of the converging wall portions whereby any liquid rinse agent passing radially over the outer ends of the strips will be retained by the wall portions and directed onto the inner surface of the cylindrical wall, an outwardly extending baffle on the outer surface of the intermediate portion of each of the strips with the baffles extending outwardly between the converging wall portions and in spaced relation to the ends of the strips for directing liquid rinse agent through the openings by gravity when the receptacle is stopped or turning slowly.

5. The structure as defined in claim 4 wherein said plate having means admitting rinse agent is also provided with a pair of diametrically opposed arcuate slots disposed in 90° relation to the openings in the cylindrical wall and being spaced radially inwardly from the cylindrical wall and radially outwardly of the spiral strips for discharging the liquid rinsing agent retained against the inner surface of the cylindrical wall when one of the slots is disposed at the lowermost point and the liquid rinsing agent will flow by gravity to the bottom of the cylindrical wall and laterally outwardly through an arcuate slot.

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