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H. C. HIRSCHY

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WASHING MACHINE

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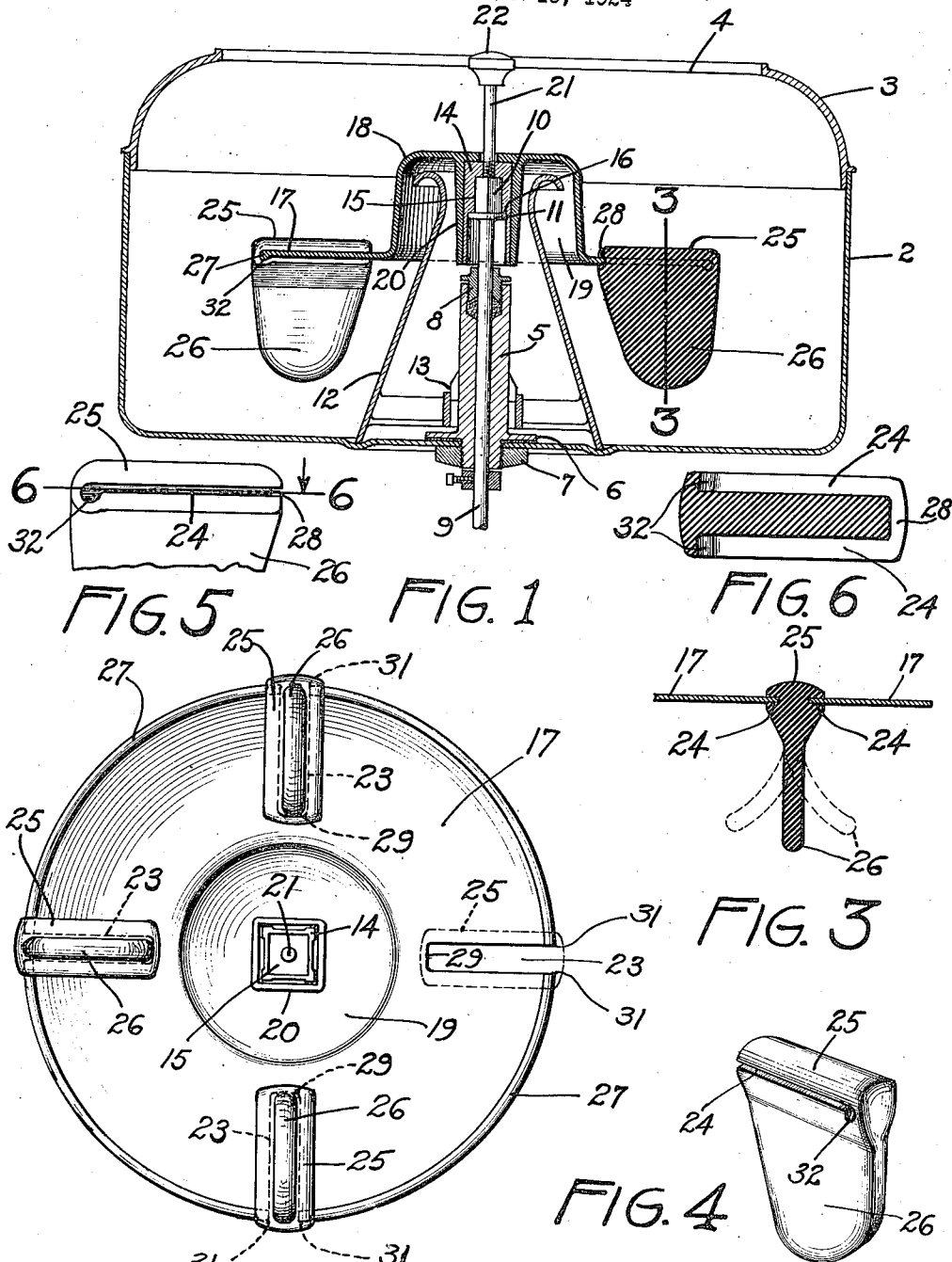


FIG. 5

FIG. 1

FIG. 6

FIG. 3

FIG. 2

FIG. 4

INVENTOR
HERMAN C. HIRSCHY
By Paul, Paul & Moore
ATTORNEYS

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HERMAN C. HIRSCHY, OF DULUTH, MINNESOTA, ASSIGNOR TO THE HIRSCHY COMPANY, OF DULUTH, MINNESOTA, A CORPORATION OF MINNESOTA.

WASHING MACHINE.

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My invention relates to clothes washing machines and particularly to the agitating means therefor, and the object of the invention is to provide an agitator which will reduce wear on the clothes, lessen strain on the machine and eliminate danger of overload.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification

Figure 1 is a sectional view of a tub and agitator embodying my invention;

Figure 2 is a bottom view of the agitator;

Figure 3 is a sectional view on line 3—3 of Figure 1;

Figure 4 is a perspective view of one of the agitating paddles;

Figure 5 is an enlarged detail view of the upper end of one of the paddles showing the means provided for securing it to the oscillating device, and

Figure 6 is a sectional view on the line 6—6 of Figure 5.

In the drawing, 2 represents a washing machine tub, preferably of sheet metal, though any other suitable material may be used. The tub is preferably of the form shown in Figure 1, with an upper portion 3 having inwardly projecting upper edges overhanging the interior of the tub and forming an opening 4, which when the tub is in use is closed by a suitable cover, not shown.

Within the tub is an upright standard 5 secured to the bottom by suitable means, such as a flange 6 and lock nut 7. The upper end of this standard has a suitable stuffing box 8 and a drive shaft 9 projects up through the standard in the stuffing box and has an upper end 10, rectangular in cross section, and at the base of which preferably is a circular flange 11. It will be understood that the driving shaft may be brought down through the top of the tub if preferred. I merely illustrate one application herein, as both methods of driving are common in power washing machines.

Enclosing the drive shaft I provide a cone 12 that is seated at its lower end on the bottom of the tub and has a suitable locking connection at 13 with the upright standard.

The cone forms the subject matter of United States Patents Nos. 1,336,781 and 1,349,338, and I make no claim broadly therefor to the same herein.

A block 14 has a socket 15 to receive the upper end of the drive shaft, a shoulder 16 being formed in the walls of said socket to rest upon the flange 11 and support the block for oscillation with the drive shaft, it being understood that this shaft has a rocking reciprocal movement to impart the desired stroke to the agitator. 17 represents a disc, preferably of metal, and 18 is a dome thereon overhanging the central opening 19 in the disc 17. A box 20 is centrally mounted on the dome and depends therefrom with parallel side walls adapted to fit snugly against the correspondingly shaped walls of the block 14, said box being free, however, to slide vertically on said block and allow the disc or agitator to adjust itself vertically to the volume of clothes beneath it in the tub. When there are only a few clothes in the tub, the disc or agitator may drop down to the position shown in Figure 1, the lowermost point of its vertical movement. When, however, there is a considerable body of clothes in the tub, then the agitator will be raised, the box 20 sliding on the block 14 to the limit of its upward movement.

The block 14 has a rod 21 secured therein and projecting up through the box 20 and provided at its upper end with a lifting knob 22 by means of which the agitator may be conveniently handled to place in its working position in the tub or removed therefrom. The box 20 is free to slide vertically on this rod during the rise and fall of the agitator to accommodate itself to the volume of clothes. As indicated, however, the walls of the box at all times will be in contact with the walls of the block and consequently a rocking movement will be imparted to the agitator at any point in its vertical movement. The entire device may, however, be easily and quickly detached from the driving shaft by grasping the knob 22 and pulling upwardly thereon.

A plurality of radial slots 23, preferably 4 in number and equally spaced, are provided in the peripheral edge of the disc 17 as shown in Figure 3. The opposed parallel edges of these slots are adapted to enter slots or grooves 24 provided on each side of the heads 25 of a plurality of agitators or

blades 26 as particularly shown in Figure 3, thereby to secure the agitators to the disc. As shown in Figures 5 and 6, each agitator is also provided at one end with a transverse slot or groove 28 which connect the slots 24 as shown. Thus, when the agitators are positioned upon the disc as shown in Figures 1 and 2 the inner edge 29 of the slots 23 will be concealed so as to prevent the clothes 10 from coming in contact therewith. The outer ends of the slots 24 of each agitator are preferably closed, or stop short of the end thereof, so as to cover and conceal the outer corners 31 of each slot 23 as shown 15 in Figure 2. A depression 32 is also terminally provided in each slot 24 to receive the head 27 of the disc when the paddle is mounted therein as shown on the left hand side of Figure 1. Thus, it will readily be 20 seen that when the agitators are mounted on the disc it will be impossible for them to accidentally become disengaged from the disc, and the edges of the slots 23 will also be entirely concealed so that it will be impos- 25 sible for the clothes to come in contact therewith.

The lower portion of these agitating blades is adapted to yield under contact with the clothes and prevents undue strain upon 30 the garments in the oscillation of the agitator and also prevents jarring of the machine, the operating mechanism and danger of tearing or damaging the garments through pressure of the agitator thereon. 35 The blades will bend as shown in Figure 3 and relieve the clothes of undue strain or pressure and if the machine is overloaded with too many clothes the resistance of the clothes will bend the blades and cause the 40 agitator to rise in the tub and ride upon the clothes, and finally pass out of driving connection with the shaft 9 and become stationary, resuming its operation when the surplus or overload has been removed.

45 The degree of flexibility or resiliency of the yielding blades can be determined and the agitator made to perform its proper functions with a usual load of clothes rising and falling with the garments and main- 50 taining a proper degree of agitation but if too many clothes are placed in the tub so that the load is too great for the agitator, it will rise and relieve itself and become temporarily inoperative. This will be due 55 to the bending of the blades by the clothes and the raising of the disc and its disengagement at a certain point from the driving mechanism.

60 It will be impossible, therefore, for a careless or inexperienced person to overload the machine with clothes and operate it to the extent of damaging the machine or garments. The blades being resilient will not wear the clothes as a rigid blade might and 65 will present broad contacting surfaces to the

clothes, and insure the desired agitation to thoroughly cleanse the garments, and the bending of the blades at the end of the stroke will relieve all strain on the garments and the motor.

I have shown the agitator in the top of the tub with depending blades or paddles, but it may be inverted if preferred with the blades projecting upwardly into contact 70 with the clothes and exerting a yielding pressure thereon, the function of the blades in this inverted position being the same as shown in the drawings. 75

My invention can be adapted for washing any desired quantity of clothes dependent 80 upon the size of the tub and the strength of the power plant.

I claim as my invention:

1. A washing machine agitator comprising a disc having a plurality of radial slots, 85 and blades having grooves to receive the edges of said slots at the sides and inner ends thereof, the side grooves of said blades extending only partially across the same and forming shoulders or stops against which 90 said disc at the outer edges of said slots is seated and concealed.

2. A washing machine agitator comprising a disc having a plurality of radial slots and a peripheral bead and blades having 95 grooves to receive the edges of said slots, and said blades having recesses therein to receive said bead when the blades are pressed in to their seats in said slots and held by said bead against accidental dis- 100 placement.

3. A washing machine agitator comprising a reciprocating member having a plurality of radial guides, blades having 105 grooves to receive said guides at the edges thereof, the grooves of said blades extending only partially across the same and forming shoulders or stops against which said member at the outer edges of said guides is 110 seated.

4. A washing machine agitator comprising a reciprocating member having a plurality of radial guides formed thereon and blades of resilient material having grooves 115 to receive said guides, said grooves extending only partially across said blades and forming shoulders or stops against which said member is seated.

5. A washing machine agitator comprising a member having a plurality of radial 120 guides and a peripheral bead, and blades having grooves to receive said guides, said blades having recesses therein to receive said bead when the blades are pressed into their seats in said guides and held by said bead 125 against accidental displacement.

In witness whereof, I have hereunto set my hand this 10th day of September, 1924.

HERMAN C. HIRSCHY.