May 28, 1940. C. H. LOGUE 2,202,499

WASHING MACHINE AGITATOR DRIVE MECHANISM

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FIG. 1

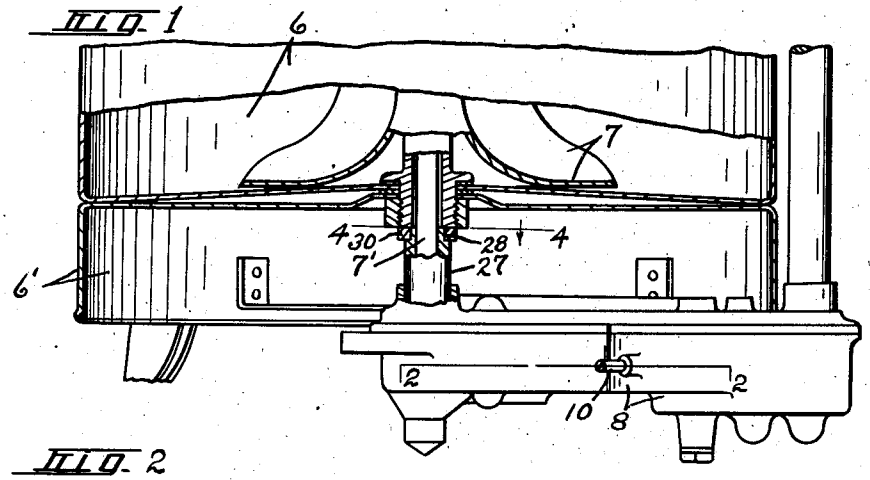


FIG. 2

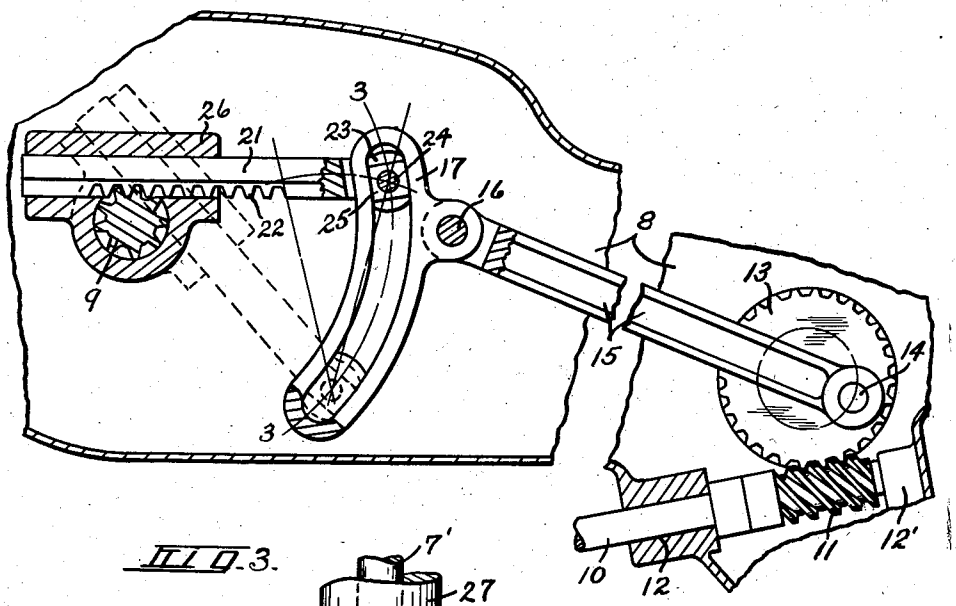
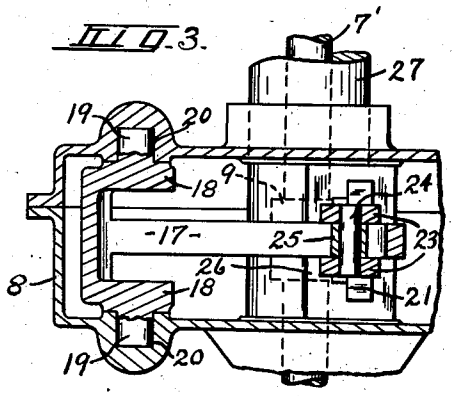


FIG. 3.



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FIG. 4.

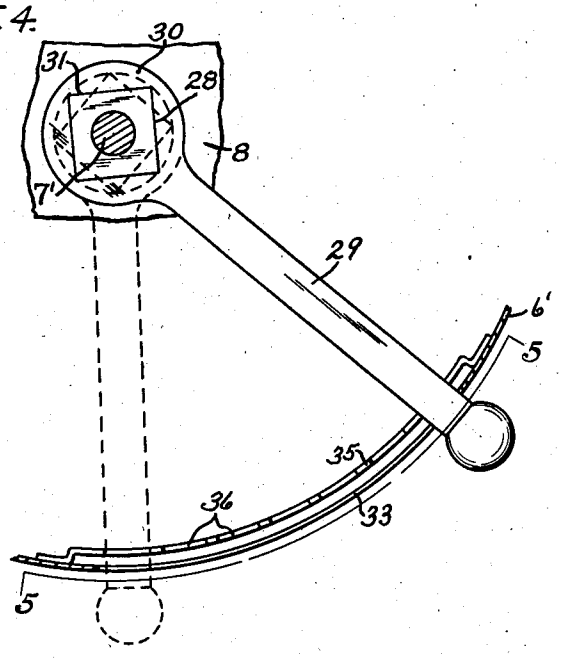
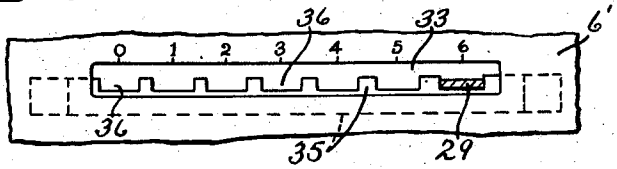


FIG. 5.



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WASHING MACHINE AGITATOR DRIVE MECHANISM

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Application January 19, 1939, Serial No. 251,771

2 Claims. (Cl. 74—78)

In washing clothes in a machine of the upstanding oscillating agitator type, it is often desirable to vary the amount of agitation to suit the fabrics being washed. There are certain very delicate fabrics and garments which should be handled much more gently than, for example, working men's clothing.

One object of my invention is to provide a simple agitator drive mechanism by which the amplitude of oscillation of the agitator may be changed within prescribed limits to suit the fabric being washed.

Another object of my invention is to provide a simple agitator drive mechanism by which the amplitude of oscillation of the agitator may be reduced to zero, thus eliminating an agitator drive clutch.

Other objects and advantages of my invention will be apparent from the following description when taken in conjunction with the accompanying drawings, in which:

Figure 1 is a partial side elevation of a washing machine of the upstanding oscillatable agitator type, parts being broken away, to disclose the partial center line section.

Figure 2 is a plan view, taken on the line 2—2 of Figure 1, of the agitator drive mechanism, parts being broken away.

Figure 3 is a vertical sectional view taken on the line 3—3, Figure 2.

Figure 4 is a plan view of the control handle and associated parts.

Figure 5 is an elevation of the washing machine skirt taken on the line 5—5, Figure 4, parts being broken away.

Referring to the accompanying drawings, 6 is the tub of an ordinary washing machine, 6' is a skirt for concealing the drive mechanism, and 7 is an upstanding oscillatable agitator supported on drive shaft 7' in a manner well known to the art. Drive shaft 7' extends into the gear case 8 where it is suitably journaled in a bearing (not shown). The gear case 8 is secured to the frame of the washing machine in any suitable manner such as bolts or rivets.

A pinion 9 is secured adjacent the lower end of shaft 7' or may be formed integrally therewith. The variable drive mechanism comprises a shaft 10 which carries the worm 11, said shaft 10 being suitably journaled in the gear case 8, as shown at 12 and 12'. Shaft 10 is adapted to be rotated by an electric motor (not shown) or other suitable source of power.

A worm gear 13 is meshed with worm 11 and is mounted on a stub shaft (not shown) which in turn is supported in the gear case 8. A pin 14 is mounted eccentrically on worm gear 13. A connecting rod 15 has one end rotatably mounted on pin 14 and the other end connected to a slotted bar 17 adjacent one end thereof by means of a wrist pin 16. The slotted bar 17 herein shown in the preferred form, is arcuate in shape in plan although the bar may be a simple straight bar. One end of bar 17 is formed into an E section taken on the line 3—3, as shown in Figure 3, 18—18.

Stub shafts 19—19 may be formed from the parts 18—18 or mounted in holes drilled therein. Stub shafts 19—19 are journaled in suitable bearings 20—20 in the gear case 8. Slotted bar 17 is thus free to oscillate horizontally about the shafts 19—19.

A rack bar 21 carries rack teeth 22, one end of said rack bar being formed into a fork 23 which is drilled to receive a bearing pin 24. A slide block 25 is slidably fitted in the slot of slotted bar 17, said slide block 25 being substantially the same depth as the thickness of slotted bar 17 and drilled to accommodate bearing pin 24. Rack bar 21 is slidably mounted in a guide piece 26 which is constructed and arranged so as to permit rotation about shaft 7 as a center and holds the rack teeth 22 of rack bar 21 in mesh with the pinion 9. The upper portion of piece 26 is formed into an annular sleeve 27 of sufficient length to project through and above gear case 8. The upper portion of the sleeve 27 is formed into a square shoulder 28.

The control handle 29 has the inner end formed into a circular boss 30 which has a square hole 31 adapted to receive the square shoulder 28. The control handle 29 is made sufficiently long to project through a slot 33 in the skirt 6'. A piece 35 of substantially greater length than the slot 33 is mounted on the inside of the skirt 6' adjacent the lower edge of slot 33. The piece 35 carries a plurality of notches 36 in its upper side, said notches being adapted to catch and hold the control handle 29 in any one of a plurality of operating positions. The control handle 29 is formed preferably of relatively thin flat stock to permit springing the handle out of a retaining notch when moving from one control position to another.

Operation

Movement of the control handle rotates the guide piece 26 about the shaft 7' as a center, thus changing the angularity of the rack bar 21 with respect to the centers 19 of the slotted bar

17 and moving the slide block 25 to a selected position in the slot of the slotted bar. For example, when the control handle 29 is in the position designated as 6 in Figure 5, the slide block 25 will be at the extreme outer position in the slotted bar 17. Moving the control handle to the zero position shown in Figure 5 which is the dotted position in Figures 2 and 4, will rotate the guide piece 26 so as to bring the rack bar 21 and the slide block 25 in line with the centers 19 of slotted bar 17.

When shaft 10 is rotated, worm 11 drives worm gear 13. Rotation of the worm gear 13 moves the crank pin 14 so as to reciprocate the connecting rod 15. This reciprocating movement of the connecting rod 15 rocks the slotted bar 17 about the centers 19 with constant amplitude of oscillation. When the slide block 25 is in the outer position shown in full lines in Figure 2, the rack bar 21 will be given a maximum reciprocatory movement which is transmitted through the pinion 9 to give an oscillation of maximum amplitude to the agitator 7. If the control handle 29 is shifted so as to change the angularity of the guide piece 26 with respect to the centers 19 of the slotted bar 17, the slide block 25 will be moved nearer the centers 19, with the result that although the amplitude of oscillation of the slotted bar 17 remains unchanged the amplitude of the reciprocatory motion of rack bar 21 will be decreased.

When the control handle is moved to the zero position, the guide piece 26 is rotated so as to bring the slide block 25 directly between the centers 19—19, with the result that no motion is transmitted to the rack bar 21 and, consequently, no oscillation is transmitted to the agitator 7.

Thus it will be seen that by shifting the position of the control handle 29, changing the angularity of the guide piece 26 with reference to the centers 19 of the slotted bar 17, changes the position of the slide block 25 along the slotted bar 17, permitting a variation in the amplitude of oscillation of the agitator from zero amplitude to a maximum which is governed by the proportions of the mechanism. Also, since the mechanism is so constructed as to permit an adjustment which reduces the oscillation of the agitator to zero with the motor running, an agitator drive clutch can be eliminated.

Although I have shown and described a specific embodiment of my invention, I wish it to be understood that I do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art. I therefore desire to be limited only by the state of the prior art and the scope of the appended claims.

I claim:

1. In a variable drive mechanism for use in a washing machine having an oscillatable element for agitating the clothes to be washed, a pinion gear fastened to said oscillatable element for driving the same, a reciprocating drive bar, rack teeth carried by said drive bar and adapted to mesh with said pinion, an oscillating lever pivoted adjacent one end thereof, means for oscillating said lever over a path of substantially constant amplitude, said drive bar being pivotally and slidably connected to said lever so that the amplitude of stroke of said drive bar is varied as said pivotal connection is moved on said lever, in combination, a guide member rotatably mounted with its center of rotation coincident with the center of rotation of said pinion, said guide member being slotted to slidably receive said drive bar to constrain the motion of said drive bar in a substantially straight line along the axis of said drive bar and to maintain said rack teeth in mesh with said pinion, and a control lever fixedly secured to said guide member for manually rotating said guide member whereby the pivotal connection between said drive bar and said oscillating lever is moved and motion transmitted to said oscillatable element is varied.

2. A device as described in claim 1 having in addition means for releasably retaining said control lever in a selected position.

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