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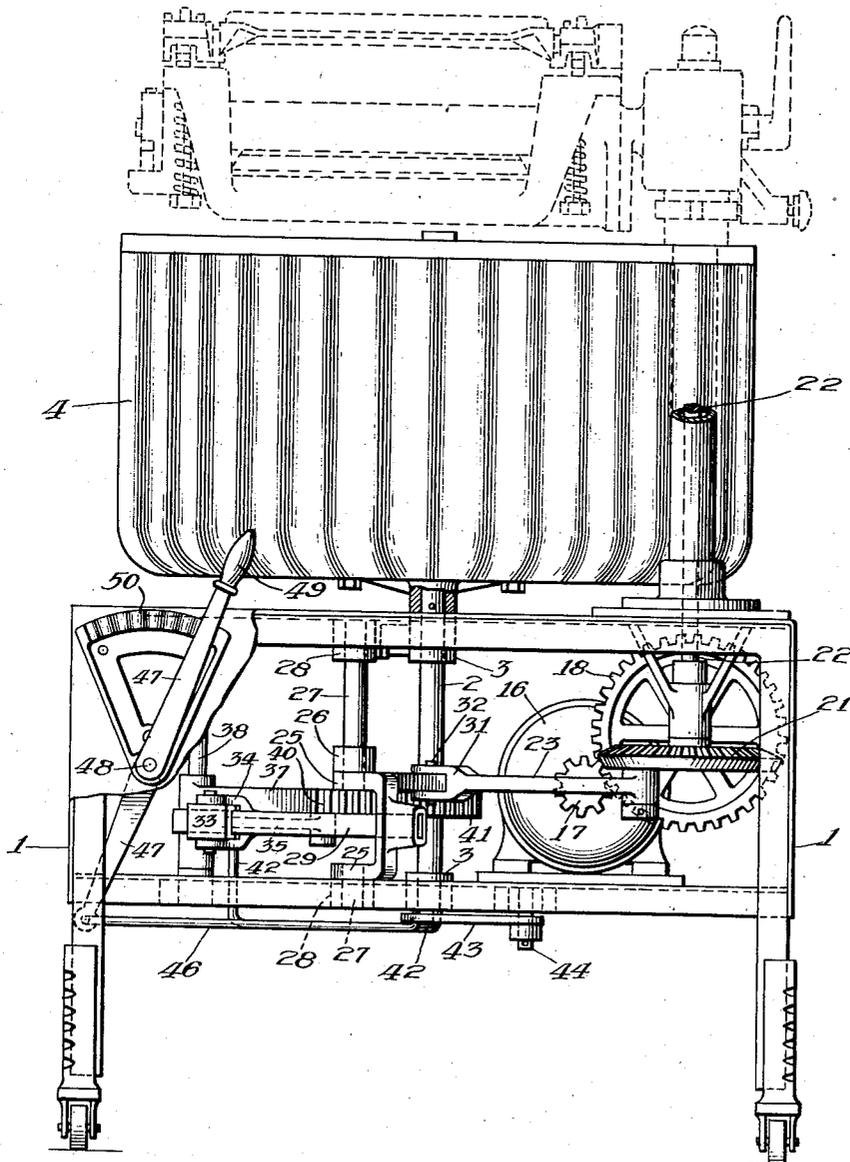
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2,016,348

WASHING APPARATUS

Original Filed June 26, 1925 2 Sheets-Sheet 1

Fig. 1.



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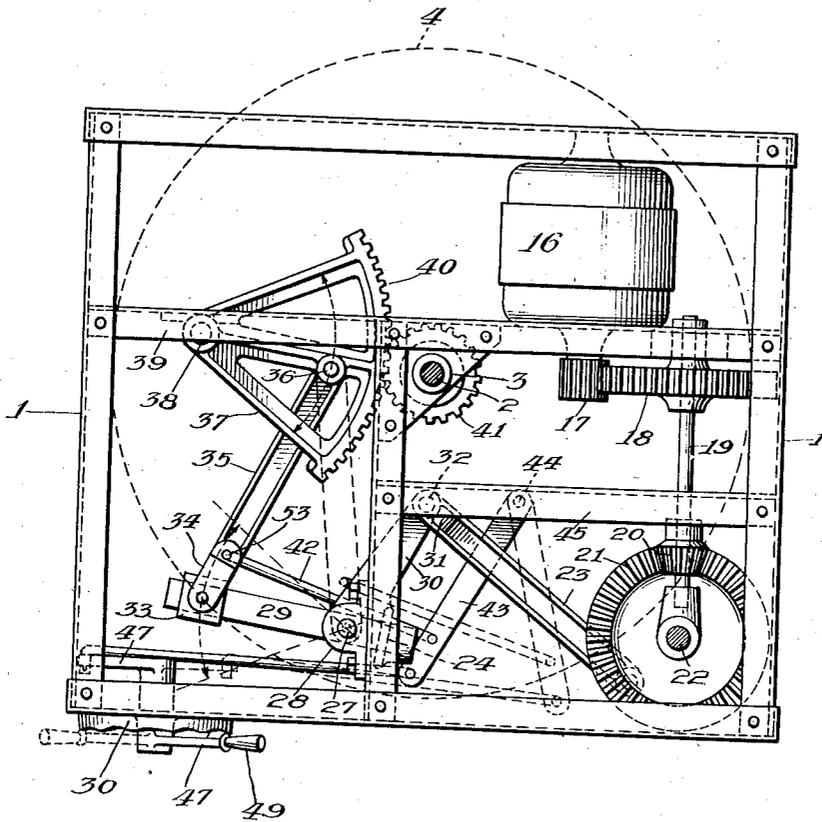
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Fig. 2.



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## UNITED STATES PATENT OFFICE

2,016,348

## WASHING APPARATUS

Howard F. Snyder, deceased, late of Newton, Iowa, by Lettie Snyder, executrix, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa, a corporation of Delaware

Original application June 26, 1925, Serial No. 39,871. Divided and this application April 30, 1931, Serial No. 534,120

3 Claims. (Cl. 259—101)

The present invention relates to washing machines of the alternately rotatable liquid impelling type, and more in particular to the mechanism for securing this alternate rotation of the liquid impelling means, such as shown in a co-pending application, Serial No. 39,871, filed June 26, 1925, the present application being a division of said application Serial No. 39,871.

One of the objects of the present invention is to provide an alternately rotatable tub having liquid impelling members which are constructed and arranged to cause the washing liquid to flow in gyratory paths, moving in a general direction from the central axis of rotation outwardly and upwardly and then downwardly toward the central axis of rotation in continuous, tortuous paths, reversing in general directional movements to correspond with the alternate rotations of the tub.

Another object of the present invention is to provide a novel mechanism for securing an alternate rotation of the liquid impelling means.

The invention comprehends the idea of providing a novel mechanism for securing a variable alternate rotation of the liquid impelling means, this mechanism including suitable means whereby the speed of alternate rotation of this impelling means may be easily and readily varied by an attendant, as desired.

Still another object of the present invention resides in the mechanism for securing a variable alternate rotation of the liquid impelling means about a vertical axis, and especially in the improved details of construction of the automatic mechanism for securing variation in the oscillation of the vertically disposed shaft which drives the liquid impelling member.

A further object of the invention is to provide a novel mechanism for alternately rotating the liquid impelling means in a washing machine in opposite directions, this mechanism having control means or transmission mechanism whereby the liquid impelling means may be arrested even though the mechanism for causing alternate rotation of the same continues to operate.

Other objects, advantages, capabilities and features are comprehended by the invention as will later appear, and as are inherently possessed thereby.

Referring to the drawings:

Fig. 1 is a side view in perspective of the improved washing machine; and

Fig. 2 is a top view of the driving mechanism with the tub removed.

Referring now more in detail to the drawings,

an embodiment of the present novel driving mechanism selected to illustrate the invention is shown as being mounted on a washing machine support 1 and as being adapted to alternately rotate or oscillate the shaft 2 having its lower end mounted in suitable bearings 3 of the support 1, and supporting a liquid impelling member 4 at its upper end. This mechanism is constructed and arranged so that a variable oscillation may be imparted to this shaft 2 whereby a gentle or violent oscillation may be imparted to the liquid impelling member and whereby, if desired, the liquid impelling member will be brought to rest while the prime mover therefor continues to operate.

And while in the present invention the liquid impelling member is disclosed as a tub 4, it is to be understood that any other liquid impelling means may be operatively associated with the end of the shaft 2 for causing the flow of a washing liquid in the manner above indicated.

The present novel driving mechanism, illustrative of the invention, comprises a prime mover 16, in the present instance, an electric motor suitably mounted on the support 1. This motor is provided with a gear 17 meshing with a larger gear 18 on a shaft 19 having bearings in the support 1. This shaft is provided on its end with a bevel gear 20 gearing with a horizontally disposed bevel gear 21 mounted on a vertically disposed shaft 22 journaled in the frame 1. Shaft 22 is adapted to drive the usual wringer mechanism which forms no part of the present invention. The horizontal bevel gear 21 is provided with a crank arm 23 which is adapted to be oscillated in a horizontal plane. And the outer end of this crank arm 23 connects to an oscillatable member which will now be described.

This oscillatable member has a portion in the form of a yoke 24 having the furcations 25 spaced apart. These furcations are formed with outward extending bearings 26 adapted to receive shafts 27 journaled in bearings 28 carried by the frame of the support 1. The rear portion of the yoke 24 is provided with a rod 29 which projects forwardly and between the furcations 25. This rod 29 is of considerable length. One of the furcations 25 of this yoke shaped member is provided with an integral arm 30 which connects with a yoke 31 formed on the outer end of the link 23 and is pivoted thereto by means of a pivot pin 32 so that when the link 23 is oscillated this connection will cause the oscillation of the yoke 24 about its pivotal axis and this movement in turn will cause the oscillation of the rod 29 which

is integrally formed with the yoke 24. The maximum positions of oscillation of this rod 29 are illustrated in dotted lines in Figure 2 of the drawings.

5 This rod 29 is provided with a member connected thereto but adapted to be shifted longitudinally of the rod from a point coincident with the axis of rotation of the yoke 24 to the outer end of the rod 29. In the present instance this  
10 member consists of a recessed or hollow block 33 which surrounds and is slidable along the rod 29 from one end to the other. This block 33 is provided with a yoke 34 in the form of spaced links to the outer end of which is pivoted a link 35  
15 pivotally connecting as at 36 to a geared sector 37 pivotally mounted as at 38 on a cross bar 39 of the support. The teeth 40 of the sector in turn mesh with a pinion 41 rigid with the shaft 2.

Means is provided for shifting block 33 longitudinally of rod 29. This means comprises a rod  
20 42 pivotally connected as at 53 to link 35 or yoke 34. The outer end of this rod 42 connects to a lever 43 pivotally mounted as at 44 to a cross bar 45 of the support. The outer end of this link 43  
25 is pivotally connected to a rod 46 which in turn connects with a lever 47 pivoted as at 48 to the side of the machine. The upper end of this lever is provided with a handle 49 and a clutch member which is adapted to engage in a notch segment 50  
30 in the side of the machine so that when the lever is shifted it will remain in adjusted position.

In operation, when the lever is pulled to the dotted line position shown in Figure 2 the link  
35 43 will be moved to its dotted line position and the rod 42 likewise to its dotted line position which will swing link 35 to the right to cause the block 33 to be moved to a point between the furcations 25 and coincident with the axis of the yoke 24 which is in line with the center of rotation of the shaft 27. And since this is the center of oscillation of the yoke 24, no movement of oscillation will be communicated to the block 33 even while the rod 29 is being oscillated by means of the arm 30 and link 23 driven from the prime  
40 mover. In this position no movement will be communicated to the sector 40 and to the shaft 2 so that the tub will remain at rest even while the prime mover is still in motion.

If now the lever 47 is thrown to the full line  
50 position the block 33 will be moved in the opposite direction to a point adjacent the end of the rod 29 and the maximum oscillation will be imparted to the sector 40 and to the washing ma-

chine tub which will be violently rotated first in one direction and then in the other. It must be manifest that any degree of movement can be secured between maximum oscillation and no movement by adjusting the position of the lever  
5 47. It will also be evident that this variable throw or oscillation of the tub is secured without the intervention of a clutch or the like and that the tub can be thrown into operation very gently and the maximum oscillation secured without any  
10 jerking or without the use of cushioning springs.

Having thus described the invention,

What is claimed:

1. In combination, a liquid impelling tub mounted for oscillation about a vertical axis, a  
15 shaft for oscillating said tub, a gear on said shaft, a sector-gear oscillatable about a vertical axis, a member having bifurcations forming an axis of oscillation, a prime mover, means connecting said member and prime mover to oscillate said mem-  
20 ber about said axis, said member having a portion extending intermediate said furcations, a block shiftably mounted on said member and shiftable to a point between said furcations and coincident with said axis of oscillation, means for shifting  
25 said block, and a link connecting said block to said sector-gear.

2. In a washing machine, a liquid impelling member, a shaft for driving said member, a gear  
30 on said shaft, a gear sector engaging said gear and adapted to be oscillated whereby to alternately rotate said gear, shaft and member, means for oscillating said sector comprising a prime mover, a train of gears, a crank arm, a yoke hav-  
35 ing bifurcations, one of said furcations being connected to said arm, a rod in said yoke and slidably connected to said gear sector, and means connected with said other furcation to move said slidable connection whereby to vary the speed of the shaft from maximum to zero.  
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3. In a washing machine provided with a tub having a drive shaft, means for varying the speed of the shaft from maximum to zero comprising a gear, a gear segment, means for oscillating said segment including a yoke, means for oscillating  
45 said yoke, a rod in said yoke and slidably connected to said gear segment, and means connected with said yoke for moving said sliding connection.

LETTIE SNYDER, 50

*Executrix of the estate of Howard F. Snyder,  
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