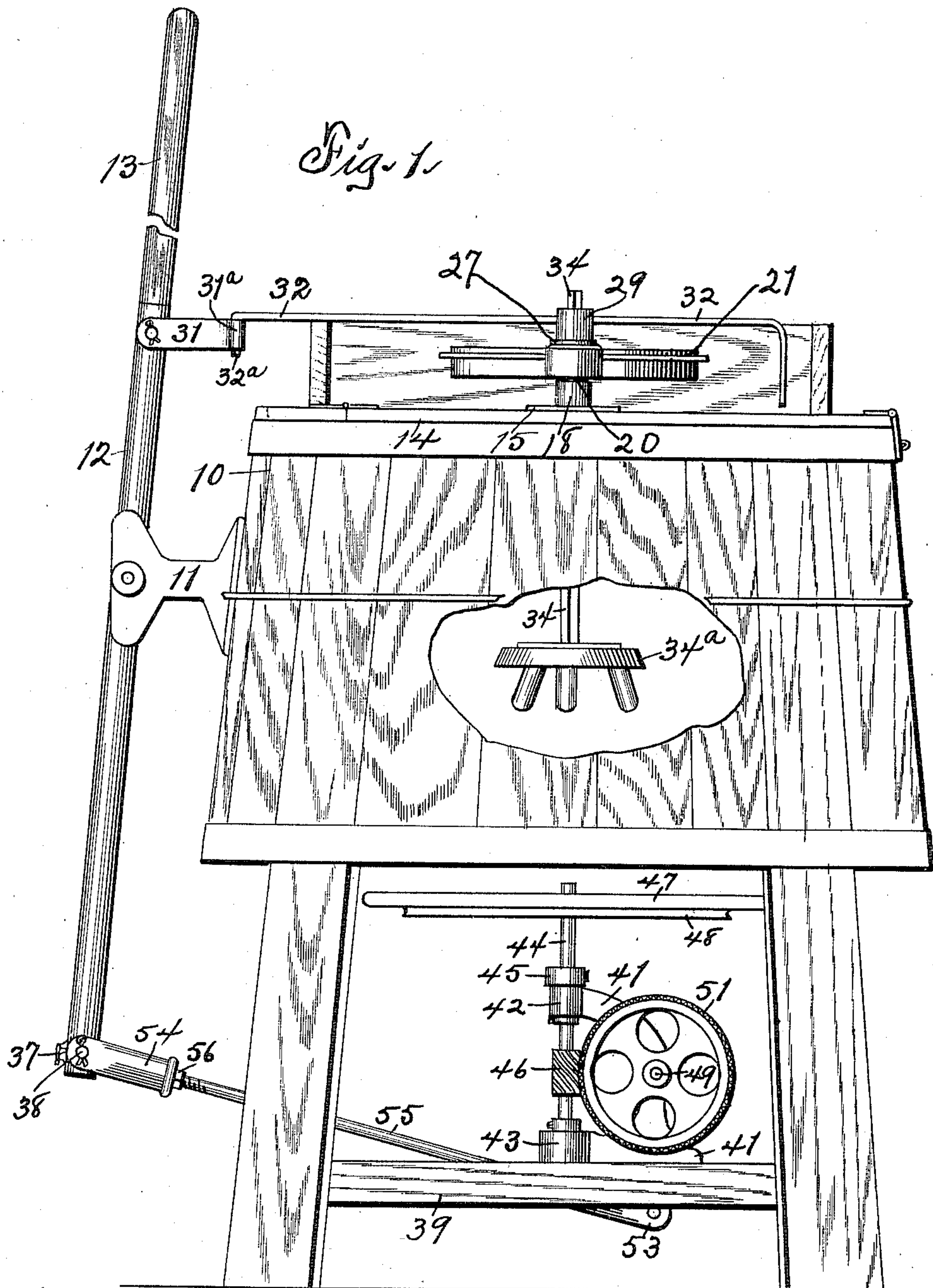


O. H. WATKINS.
GEARING FOR WASHING MACHINES.
APPLICATION FILED DEC. 27, 1909.

998,728.

Patented July 25, 1911.

2 SHEETS-SHEET 1.



Attest
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UNITED STATES PATENT OFFICE.

ORLA H. WATKINS, OF AMES, IOWA.

GEARING FOR WASHING-MACHINES.

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Specification of Letters Patent. Patented July 25, 1911.

Application filed December 27, 1909. Serial No. 535,035.

To all whom it may concern:

Be it known that I, ORLA H. WATKINS, a citizen of the United States of America, and resident of Ames, Story county, Iowa, have invented a new and useful Gearing for Washing-Machines, of which the following is a specification.

The object of this invention is to provide improved means for operating washing machines and the like.

A further object of this invention is to provide improved means for adjusting the stroke of the agitator of a washing machine.

A further object of this invention is to provide improved means for connecting the agitator of a washing machine to the operating mechanism.

A further object of this invention is to provide an improved gearing for operatively connecting a balance-wheel with an agitator.

A further object of this invention is to provide improved means for permitting rise and fall of an agitator relative to operating mechanism in a washing machine.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claims and illustrated by the accompanying drawing, in which—

Figure 1 is a side elevation illustrating my improvement as applied to a washing machine. Fig. 2 is a plan, on an enlarged scale, of the operating parts on the top of the tub. Fig. 3 is a sectional view on the indicated line 3—3 of Fig. 2. Fig. 4 is an elevation at the rear of the operating parts beneath the tub. Fig. 5 is a front view of the lower-end portion of the operating lever and connected parts.

In the construction of the apparatus as shown, the numeral 10 designates a support, such as a tub. A bracket 11 is fixed to and projects horizontally outwardly from the side of the tub 10 between the top and bottom of said tub, and a lever 12, preferably made of metal tubing, is fulcrumed intermediate of its ends on said bracket and extends upwardly and downwardly therefrom. The normal position of the lever 12 is approximately vertical or upright. A handle 13, preferably made of wood, is mounted in and projects upwardly from the upper end portion of the lever 12 and may be of any desired and convenient length.

The tub 10 is provided with a cover 14

and a plate 15 is mounted across the center of the cover and is formed with a hub or journal bearing 16 extending downwardly through a hole 15^a in the center of the cover. The plate 15 also is formed with a hub or journal bearing 17 projecting upwardly from one end thereof parallel with the hub 16. A crank-arm 18 is formed with a hub 18^a in the journal bearing 16 and said crank-arm extends parallel with the upper face of the plate 15 opposite from the hub 17. A collar 18^b is fixed to the hub 18^a below the journal bearing 16.

A stud 19 is mounted in and extends upwardly from the outer end of the crank-arm 18 and an anti-friction roller 20 is mounted for rotation on the upper end portion of said stud. A counter sink is formed in the upper end of the roller 20 and a head is formed on the stud 19 and enters said counter sink and retains the roller on the stud.

A lever 21 is pivoted loosely at one end on a stud 22 seated in the hub 17, and is held on said stud by a pin or key 23. The lever 21 is formed with a downwardly opening slot 24 adapted to receive and engage the roller 20. A slot 25 is formed in and longitudinally of the lever 21 and a rectangular block 26 is mounted and fitted snugly in said slot. The block 26 is formed with a circular head 27 of such diameter that portions thereof overlie the top of the lever 21 on each side of the slot 25. A stud or journal 28 is formed on and extends upward from the central portion of the head 27 and is semi-spherical at its upper end.

A coupling block 29 is provided and is formed with a seat or journal bearing 30 near one end and opening downwardly therefrom and adapted to receive and journal on the stud 28, the rounded end of said stud guiding the stud to its seat at all times.

A bracket 31 is pivoted to and extends toward the tub 10 from the upper end portion of the lever 12 and a pitman 32 is pivoted at one end to said bracket and extends across the tub. The connection between the pitman 32 and bracket 31 is formed of a laterally bent arm 32^a journaled in a bearing 31^a of the bracket, and the axis of such connection is vertical. The body portion of the pitman 32 extends through the coupling block 29 at a little distance from the stud 28 and the block may be adjusted longitudinally of the pitman and may be fixed thereto by a set screw 33.

The outer end portion of the pitman 32 is bent downwardly to form a handle whereby the pitman may be lifted and moved laterally. There is sufficient freedom in the pivotal connection of the bracket 31 to the lever 12 to permit of lifting the pitman 32 and raising the block 29 away from the stud 28, after which the pitman may be swung laterally, on its pivotal connection with the bracket, to one side of the tub, so that the cover 14 of the tub may be raised to open position.

Suitable hinging and latching means may be provided to connect the cover 14 to the tub 10.

An agitator shaft 34 is mounted for vertical reciprocation in the hub 18^a. The shaft 34 is angular in cross-section and fits loosely in the hub 18^a and extends through and above said hub and through a semi-annular opening 35 in the lever 21. The opening 35 in the lever 21 permits said lever to oscillate laterally without contacting with the agitator shaft, and also permits said shaft to rise and fall freely through the lever. A pin 36 through the shaft 34 above the crank-arm 18 limits downward movement of the shaft in its bearing.

A pedal 37 is pivoted on a pin 38 projecting laterally from the lower end of the lever 12.

An agitator 34^a, of common form, is mounted rigidly on the lower end of the shaft 34 and is contained within the tub 10. Cross-bars 39, 40 are mounted horizontally beneath and spaced from the bottom of the tub 10 and a machine head or bearing stand 41 is mounted on one of said bars and rises therefrom. Journal bearings 42, 43 are arranged in vertical alinement on the stand 41 and a shaft 44, is mounted for rotation therein and stopped against downward movement by a collar 45 engaging the bearing 42. A worm 46 is mounted rigidly on the shaft 44 between the bearings 42, 43 and a balance-wheel 47 is mounted rigidly on the upper end portion of the shaft immediately beneath the tub 10. A belt-wheel 48 is formed on the lower portion of the balance wheel 47 and power may be applied thereto from a prime mover (not shown) to operate the mechanism if desired. A shaft 49 is mounted for rotation in a bearing 50 fixed to the central portion of the stand 41 and a worm gear 51 is fixed to one end portion of said shaft and meshes with the worm 48 on the shaft 44. A crank 52 is fixed to the end portion of the shaft 49 opposite to the gear 51 and is pivoted to a pitman block 53. A pitman block 54 is pivoted for vertical oscillation on the lower end portion of the lever 12 by means of the pin 38 and a pitman 55 connects said block to the block 53. The pitman 55 is screwed at each end into a block 53 or 54 and is locked

thereto by nuts 56, thus providing means for adjusting the length of the connection between the lever 12 and the crank 52 by screwing or unscrewing the pitman relative to the blocks. The stroke of the mechanism can be adjusted by moving the block 26 along the slot 25, and this can best be done by blows of a hammer on the head 27 of said block. Whenever such adjustment is made, if desired, the coupling block 29 may be adjusted along the pitman 32 and the pitman 55 may be adjusted to correspond.

Any movement of oscillation of the lever 12, such as by manual actuation of the handle 13, is conveyed or communicated through the bracket 31, pitman 32, coupling block 29, stud 28, block 26, lever 21, roller 20, stud 19, and crank-arm 18, to the oscillation of the shaft 34 on a vertical axis. Such movement of the lever also is communicated through the block 54, pitman 55, block 53, crank 52, shaft 49, gear 51, worm 46, and shaft 44, to rotation of the balance-wheel 47, and the momentum of the balance-wheel is utilized at times to assist in sustaining the rotation of the shaft 34 when the motive power is relaxed or when an overload occurs momentarily.

I claim as my invention—

1. Gearing for washing machines, comprising a suitable support, a lever fulcrumed on said support, a dolly shaft, a crank on said shaft, a lever variably acting on said crank, a block mounted on said lever and adjustable longitudinally thereof, a coupling block pivoted to the first block, a pitman adjustably connecting the coupling block and the first lever, a balance wheel, a worm gear connected with said balance wheel and pitman, and pitman and crank connections between the first lever and gear.

2. Gearing for washing machines, comprising a suitable support, a lever fulcrumed thereon, a dolly shaft, a crank on said shaft, a lever variably acting on said crank, a block adjustably mounted on the latter lever, a pitman pivoted to the first lever and pivotally engaging said block, a balance wheel, a gear connected with said balance wheel, and pitman and crank connections between the first lever and gear.

3. Gearing for washing machines, comprising a suitable support, a hand lever fulcrumed thereon, a dolly shaft, a crank on said shaft, a roller on said crank, a connecting lever pivoted at one end and formed with a slot engaging said roller, a block adjustably mounted on the connecting lever, a pitman pivoted to the hand lever and pivotally engaging said block, a balance wheel, a gear acting on said wheel, and pitman and crank connections between said hand lever and gear.

4. Gearing for washing machines, com-

prising a suitable support, a hand lever fulcrumed thereon, a dolly shaft, a crank on said shaft, a connecting lever acting on said crank, a block adjustably mounted on said connecting lever, a pitman pivoted on a vertical axis to said hand lever and adjustably engaging said block, a balance wheel, and pitman, crank and gear connections between said hand lever and balance-wheel.

5. Gearing for washing machines, comprising a suitable support, a hand lever fulcrumed thereon, a dolly shaft, variable lever driving connections between said hand lever and dolly shaft and surrounding said dolly shaft, a balance-wheel, a shaft therefor, a worm on said shaft, a worm gear meshing with the worm, a shaft for the worm gear, a crank on the latter shaft, and a pitman connecting the hand lever and crank.

6. Gearing for washing machines, comprising a suitable support, a lever fulcrumed thereon, a plate on the support formed with a hub, a crank-arm mounted for oscillation in said hub, a dolly shaft mounted for reciprocation in and rotary oscillation with said crank-arm, a connecting lever pivoted on said plate, loosely embracing said dolly shaft and acting on said crank, said dolly shaft adapted to move vertically through the connecting lever, and a pitman adjustably connecting said levers.

7. Gearing for washing machines, comprising a suitable support, a lever fulcrumed thereon, a plate on the support, a crank-arm mounted for oscillation on said plate, a dolly shaft mounted for reciprocation through and oscillation with said crank-arm, a connecting lever pivoted on the plate and formed with a transverse opening and a longitudinal slot, the dolly shaft adapted to extend through said transverse opening, a roller on the crank-arm engaging in said slot of the connecting lever, a block adjustably mounted on the connecting lever, and a pitman adjustably connecting the levers.

8. Gearing for washing machines, comprising a suitable support, a hand lever fulcrumed thereon, a pedal on the lower end of said lever, a shaft mounted for oscillation on a vertical axis, variable pitman and connecting lever connections between said hand lever and shaft, a shaft mounted for rotation on a vertical axis, a worm gear adapted to drive the latter shaft, and pitman and crank connections between said hand lever and worm gear.

Signed by me at Ames, Iowa, this twenty-first day of December, 1908.

ORLA H. WATKINS.

Witnesses:

F. T. McLAIN,
O. P. RICH.