

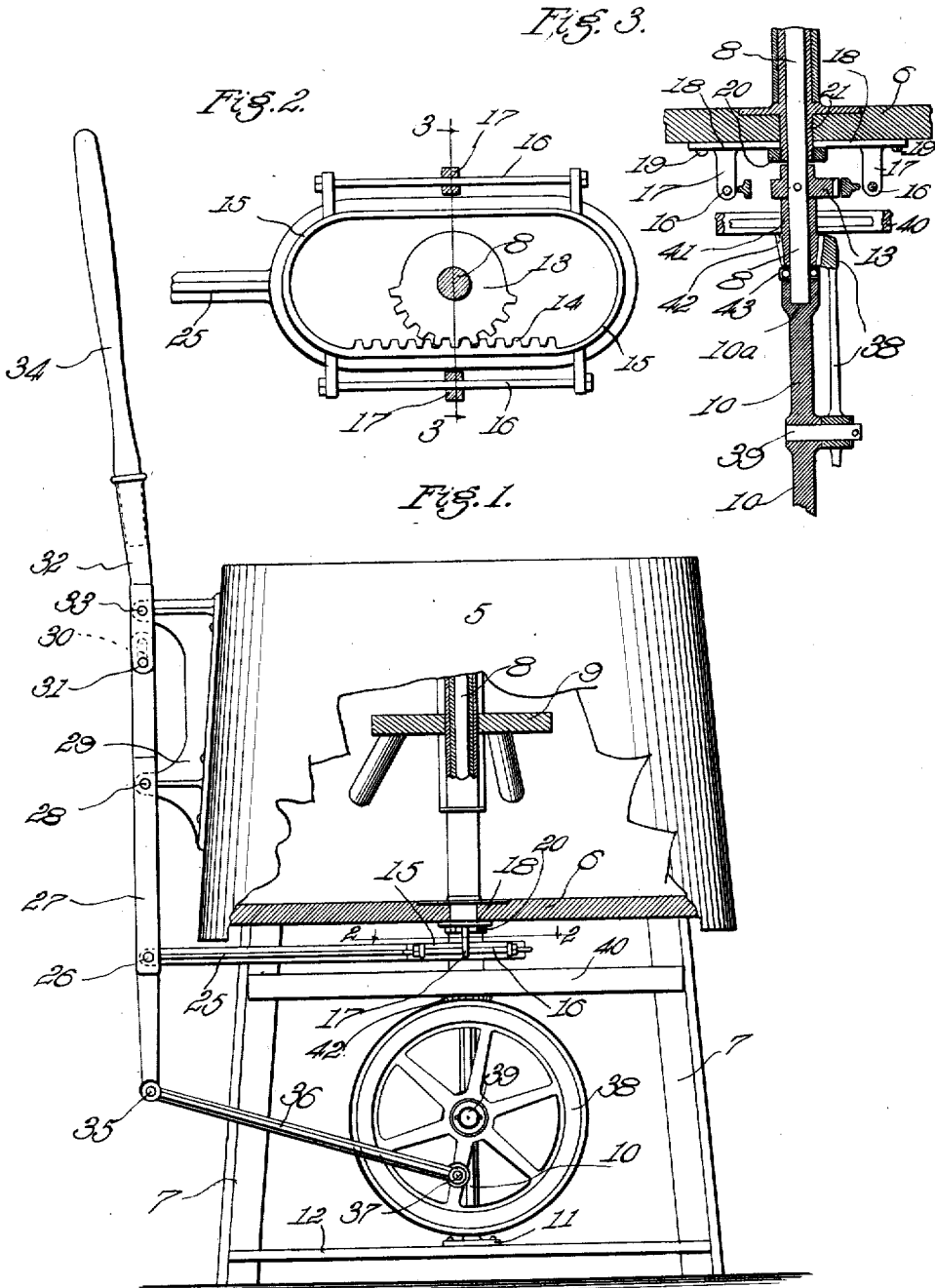
J. M. MERRITT.

GEARING.

APPLICATION FILED JULY 31, 1911.

1,023,266.

Patented Apr. 16, 1912.



Witnesses
Elwood H. Calkins
B. L. Woodie

Inventor
James M. Merritt
by *James T. Calkins*
his Attorney.

UNITED STATES PATENT OFFICE.

JAMES M. MERRITT, OF LOS ANGELES, CALIFORNIA.

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1,023,266.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES M. MERRITT, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented new and useful Improvements in Gearing, of which the following is a specification.

This invention relates particularly to a washing machine and attachments and apparatus therefor for hand operation; and the prime object of the invention is to provide an easily operated, light running device which will actuate the machine in the most improved manner.

Broadly considered, the invention consists of the combination, in a machine of the particular character to be described, of a reciprocating mechanical motion and a rotary motion. The reciprocating motion is transferred to the vertical shaft of the washing machine and causes the oscillation of that shaft through approximately a half revolution; while the rotating motion comprises a fly-wheel which, by its momentum, keeps the whole machine moving uniformly and smoothly. The major portion of the apparatus is mounted beneath the tub of a washing machine, the handle and connecting levers only projecting outside and above the machine. I have devised this particular hand operated motion and mechanism for use with my under motor washing machine. This machine is so constructed that the shaft projects out through the bottom rather than out through the top as in most washing machines; and the arrangement and adaptation of the hand operated mechanism is particularly suited to a machine of this class, although it will be understood that it may be applied to any similar machine.

I will more completely describe my invention in the following specification and have illustrated it in the accompanying drawings, in which:

Figure 1 is a partial sectional view showing my improved device in elevation. Fig. 2 is an enlarged cross section taken on line 2—2 of Fig. 1. Fig. 3 is a longitudinal section taken on line 3—3 of Fig. 2.

In the drawings 5 designates a tub of any description having the usual circular side walls and a bottom wall 6. Portions of my device are secured to this bottom 6 of the

tub. The tub is provided with suitable supports, such as legs 7, and is otherwise similar to the ordinary tub now in use for washing machines. But my machine is peculiar in that the operating shaft 8 extends downwardly through bottom 6 of the tub, as is most clearly shown in Fig. 3. This shaft 8 projects upwardly to a point near the cover of the tub and has certain sleeves surrounding it on which the washing dolly 9 is mounted. This construction need not be entered into at this point as I have thoroughly described it in another application for Letters Patent and as its details of construction do not enter into the present invention.

Shaft 8 projects below bottom 6 of the tub and its lower end rests in a step bearing 10^a on the upper end of a standard 10 which is secured at 11 to a platform 12 supported between legs 7. At a point immediately below the lower surface of bottom 6 a half gear 13 is rigidly secured on shaft 8 and its teeth are adapted to mesh with a rack 14 mounted in and forming a part of an oblong frame 15. Frame 15 is provided with two longitudinal slide rods 16 which are adapted to move longitudinally in bearings 17. Bearings 17 are preferably made integrally with a plate 18 which is secured to the under side of the tub by means of screws 19 and by means of a nut 20 which is threaded to the lower end of a sleeve 21 which projects through the bottom of the tub.

It will be seen that a proper reciprocation of frame 15 will cause the oscillation of gear 13 and shaft 8 through approximately a half revolution. This reciprocation is effected through the medium of an arm 25 formed integrally with frame 15 and projecting from the frame to a point outside the tub. Arm 25 is pivotally connected at 26 to a lever 27 which is pivoted at 28 to a bracket 29 mounted on tub 5. The upper end of lever 27 is provided with a slot 30 which engages with a pin 31 mounted on the lower end of hand lever 32. Hand lever 32 is pivoted at 33 to bracket 29 and is provided with means on its upper end for the insertion and connection of a handle 34 whereby it may be oscillated between the positions indicated by the dotted lines. Oscillation of handle lever 32 as indicated will cause the

oscillation of lever 27 between the positions indicated by the dotted lines; and this oscillation is sufficient to cause the reciprocation of frame 15 and the oscillation of shaft 8 through approximately a half revolution.

Lever 27 extends below pivot 26 and is provided with a pivot 35 on its lower end to which connecting rod 36 is secured. Connecting rod 36 connects at its other end to a crank pin 37 on gear 38. Gear 38 is mounted on stud 39 rigidly secured in standard 10; and the arrangement is such that, when lever 27 is oscillated as indicated, the movement of connecting rod 36 will be sufficient to rotate gear 38. Loosely mounted on shaft 8 above standard 10 is a fly-wheel 40. This fly-wheel has a sleeve hub bearing 41 which runs loosely on shaft 8 and is also provided with a bevel gear 42 which is adapted to be meshed with gear 38. The fly-wheel and gear rest on a ball bearing 43 which rests in turn on standard 10. The fly-wheel is thus enabled to rotate, and is caused to rotate by gear 38, independently of the oscillation of shaft 8, the shaft merely affording a convenient means for mounting the fly-wheel.

When handle 34 is oscillated between the positions indicated, then the shaft 8 will be oscillated through practically a half revolution and gear 38 will be rotated, thereby rotating fly-wheel 40. The weight and momentum of the fly-wheel is sufficient to keep gear 38 rotating uniformly and to thereby keep up the oscillation of lever 27 and of handle 34. The whole device is thus constrained to move smoothly and the operator only applies a uniform force to handle 34 sufficient to overcome the retarding action within the tube. If the operator acted directly on the retarding force within the tube without the intervention of any means to keep the device working smoothly, it would be necessary to apply at times a force much greater than the uniform force applied to the handle when the fly-wheel mechanism is provided. The application of a uniform force to do a certain amount of work is always less fatiguing than the application of a varying force to do the same amount of work; and my construction and device enables the operator to do the work required for washing a certain amount of clothes in the manner requiring the least effort. It will also be seen that the device is simple in construction and operation; that it is almost entirely mounted beneath the tub where it is out of the way and not liable to injury. These, and the simplicity of construction of the various parts, are the features of my invention.

Having described my invention, I claim:

1. Driving mechanism for washing machines and the like, comprising a frame, a vertical shaft journaled on the frame, a gear

on the shaft, a horizontal rack meshing with the gear, sliding supports for the rack, a lever pivoted on the frame, a fly-wheel mounted on the frame, the lever and rack being connected together, and connecting means between the lever and fly-wheel, whereby the oscillation of the lever will cause the movement of the rack and cause the rotation of the fly-wheel.

2. Driving mechanism for washing machines and the like, comprising a frame, a vertical shaft journaled on the frame, a gear on the shaft, a horizontally reciprocating rack mounted on the frame to mesh with the gear, a fly-wheel loosely mounted on the shaft below the gear, an oscillating lever pivotally mounted on the frame, connecting means between the rack and the lever, and connecting means between the fly-wheel and the lever.

3. Driving mechanism for washing machines and the like, comprising a frame, a vertical shaft journaled on the frame, a gear on the shaft, a horizontally reciprocating rack mounted on the frame to mesh with the gear, a fly-wheel loosely mounted on the shaft below the gear, a bevel gear on the under side of the fly-wheel, a gear mounted on a horizontal axis below the fly-wheel and meshing with the bevel gear thereon, a crank pin on the last mentioned gear, an oscillating lever mounted on the frame and pivotally connected with the rack, and a connecting rod between the end of the lever and the crank pin on the gear.

4. Driving mechanism for washing machines and the like, comprising a frame, a vertical shaft journaled on the frame, a gear mounted on the shaft, a horizontally reciprocating rack frame mounted on the first mentioned frame and having rack teeth engaging the gear, guide rods and bearings for supporting the rack frame; a standard beneath the lower end of the shaft, a fly-wheel loosely mounted on the shaft and resting on the standard, a bevel gear on the lower side of the fly-wheel, a horizontal pivot stud mounted on the standard, a gear on the stud and meshing with the bevel gear on the fly-wheel, a crank pin on the stud mounted gear, a connecting rod connected to the crank pin, an oscillating lever mounted on the frame and pivotally connected to the connecting rod and to the rack frame, and manually operable means to oscillate the lever.

5. Driving mechanism for washing machines and the like, comprising a frame, a vertical shaft journaled on the frame, a gear rigidly mounted on the shaft, a rack frame horizontally reciprocative on the main frame and having a rack thereon meshing with the gear, a bearing standard below the vertical shaft, a fly-wheel loosely mounted around the shaft and resting upon the standard, a

bevel gear on the lower side of the fly-wheel,
a bevel gear mounted on a horizontal axis
on the standard below the fly-wheel and
meshing with the fly-wheel gear, a lever piv-
5 otally mounted on the frame to oscillate in
a plane determined by the axis of the verti-
cal shaft and parallel to the plane of the
bevel gear mounted on the standard, a con-
necting rod between the lever and the said

bevel gear, and connection between the rack 10
frame and the lever.

In witness that I claim the foregoing I
have hereunto subscribed my name this 22d
day of July 1911.

JAMES M. MERRITT.

Witnesses:

CORA E. MONTGOMERY,
JAMES T. BARKELEW.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
