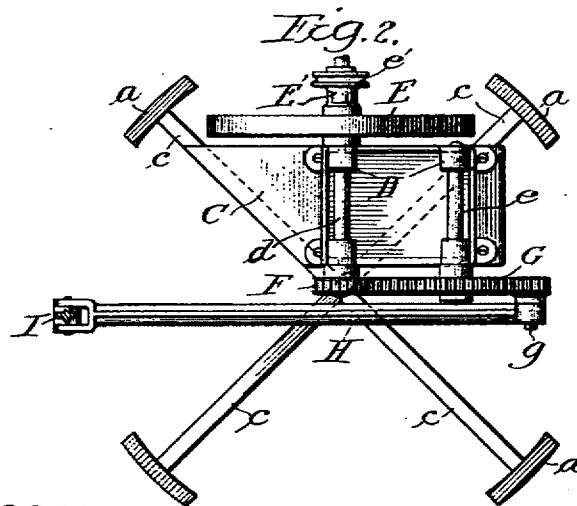
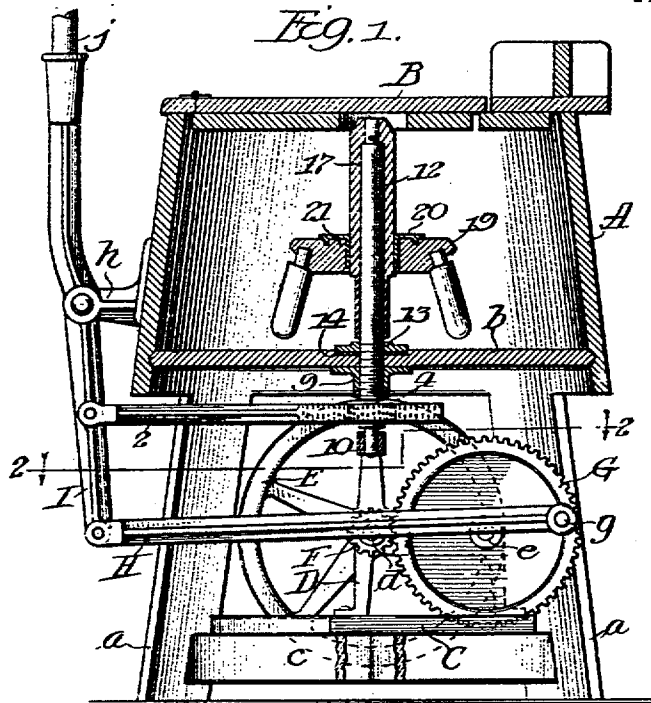


S. T. WHITE.
MECHANICAL MOVEMENT FOR WASHING MACHINES.
APPLICATION FILED FEB. 8, 1912.

1,056,872.

Patented Mar. 25, 1913.

2 SHEETS—SHEET 1.



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Fig. 3.

Fig. 4.

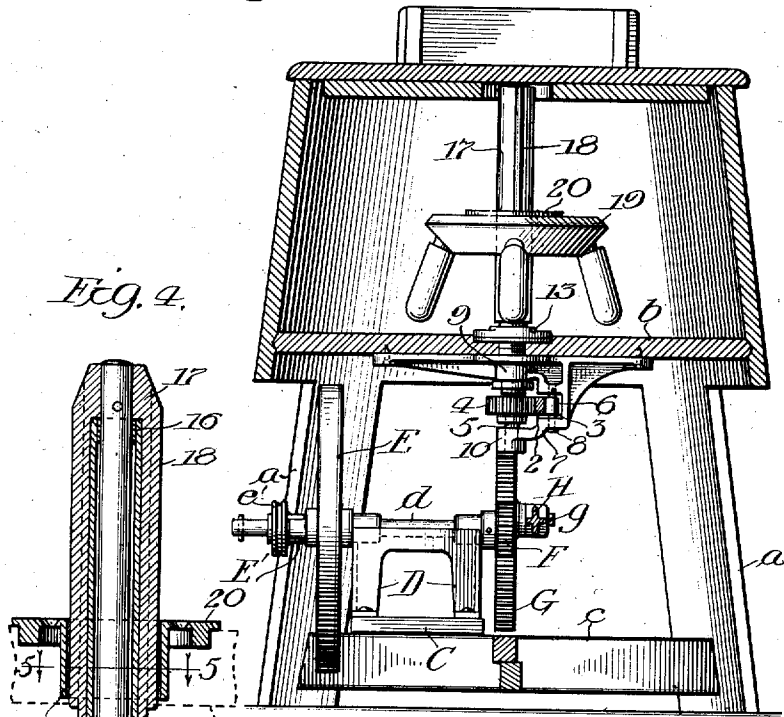


Fig. 6.

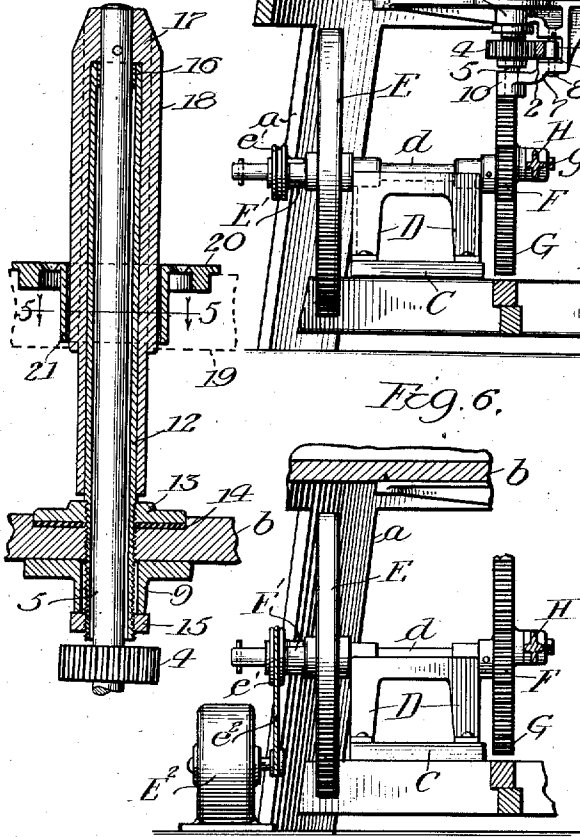
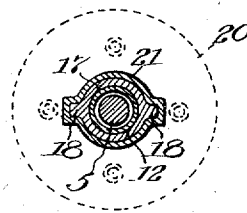


Fig. 5.



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SAMUEL T. WHITE, OF DAVENPORT, IOWA.

MECHANICAL MOVEMENT FOR WASHING-MACHINES.

1,056,872.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed February 8, 1912. Serial No. 676,178.

To all whom it may concern:

Be it known that I, SAMUEL T. WHITE, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented new and useful Improvements in Mechanical Movements for Washing-Machines, of which the following is a full, clear, and exact description.

My invention relates to improvements in mechanical movements that are particularly designed for use in washing machines.

The objects of my invention are to provide single mechanism for actuating the rotary reciprocal shaft of a washing machine from beneath the bottom of the tub; to so construct the casing in which said shaft operates as to prevent the tub from leaking; to enable the dolly or agitator to automatically adjust itself to the depth of the wash within the tub, and to provide a combined governing and momentum gear for the above which will be located below the tub out of the way of the operator. This I accomplish by the means hereinafter fully described, and as particularly pointed out in the claims.

In the drawings: Figure 1 is a vertical central section of a washing machine with my improvements applied thereto. Fig. 2 is a horizontal section taken on dotted lines 2—2, Fig. 1. Fig. 3 is a vertical central section of said washing machine taken in a plane at right-angles to that shown in Fig. 1. Fig. 4 is a vertical section of the rotary reciprocal shaft, the casing therefor, and means for securing the latter in the bottom of said machine, drawn to a slightly larger scale, and segregated from the remainder of the same. Fig. 5 is a detail view showing a horizontal section of the agitator shaft and casing, taken on dotted line 5—5, Fig. 4. Fig. 6 is a fragmentary detail view of the balance-wheel and the motor for driving the mechanism.

Referring to the drawings, A, represents a washing machine tub of a conventional design, which is provided with a hinged cover or top B, and is supported by legs, *a*, so that the bottom, *b*, thereof is a suitable distance above the floor or ground upon which said legs stand. These legs are connected near their lower edges by cross-braces *c*, and these braces at one side of their intersection support a suitable platform, C, upon which is mounted a metal frame-work, D, consisting of four legs connected at their

upper ends by the longitudinal and transverse members of a rectangular metal supporting frame. At their upper ends, these legs are provided with bearings and a balance-wheel shaft *d*, and a drive-gear shaft *e*. The balance-wheel shaft *d*, is arranged, preferably, in a vertical plane intersecting the intersection of braces *c*, *c*, and on its outer extended end it has the balance-wheel, E, secured thereto, and at its other extended end it is provided with a pinion, F. This pinion, F, is engaged and driven by the large drive-gear, G, which is secured on the extended end of shaft *e*, arranged parallel to shaft *d*. The outer portion of the hub of the balance-wheel E, is, preferably, provided with two teeth that comprise one of the members of a suitable clutch mechanism E'. The counter-part member of this clutch is, preferably, a part of or is secured to the adjacent boss of a suitable grooved pulley *e'* and it is so arranged that by sliding the pulley backward and forward on the shaft the latter and said pulley may be connected or disconnected, as desired. This pulley may be connected by means of a belt *e*² to a motor E² of any suitable type.

Gear G, is provided with a stud or crank-pin *g*, projecting therefrom, as shown, and said gear is driven by a connecting-rod H, one end of which is journaled on crank-pin *g*, and whose opposite end is pivotally connected to the lower end of a vertical disposed lever I. This lever extends in a vertical direction outside of the tub, from connecting-rod H, to a point at or slightly above the plane of the top of the tub, and it is fulcrumed at about its center of length to a bracket *h*, secured to and projecting from the side of said tub in a horizontal plane slightly above the bottom of the same. The upper end of this lever is, as shown in Fig. 1, formed into a socket for the reception of a suitable handle *j*, with which to give it an oscillatory movement back and forth.

At a point just below the plane of the lower edge of the tub, lever I has the divided end of a reciprocal rack, 2, pivoted thereto in any suitable manner. The opposite end of this rack travels in a guide-recess, 3, of a hanger 7, and is kept in engagement with a pinion, 4, secured to a vertical rotary reciprocal shaft, 5, by means of an anti-friction roller, 6, mounted upon a vertically

disposed spindle 8, the ends of which latter are secured in the metal forming the top and bottom of said recess.

Hanger, 7, has an elongated plate by means of which it is secured to the bottom 6 of the tub, and at about its center of length it is provided with a downwardly projecting boss, 9. The side of this hanger in which the guide-recess, 3, is made extends down below this boss and below the guide-recess it is provided with a lateral extension, 10, the end of which is provided with suitable bearings for the lower end or heel of the vertically disposed rotary reciprocal shaft 5. The inner circumference of the boss, 9, is, preferably, smooth and has the lower screw-threaded end of a tubular casing, 12, passed through it, which casing extends vertically up through the bottom of the tub to a suitable point below the cover of the tub. The screw-threaded lower portion of casing 12, extends through the bottom of the tub, and just above the bottom has a flanged nut or arbor, 13, engaging it which is tightened to clamp the casing firmly to the bottom. A rubber washer or gasket 14, is, preferably, placed between nut 13, and the bottom of the tub, so that when the casing is clamped thereto the perforation of the bottom of the tub at this point will be water-tight. In order to lock the joint thus made and prevent the casing from working loose in the bottom of the tub, I extend the lower screw-threaded end of the casing below boss, 9, and screw a nut-lock 15, thereon tightly against the lower edge of said boss.

The upper end of shaft 5, extends up above the upper end of casing 12 and, I prefer to provide the inner circumference with a bushing 16, to center and journal the upper end of said shaft. Above the upper end of casing 12, shaft 5 has the upper end of a sleeve 17, secured thereto, and this sleeve extends downward and the diameter of its inner circumference is increased and surrounds and incloses casing 12 to a point very near the bottom of the tub. Mounted upon sleeve 17, is an agitator 19, which is of a conventional type and consists of a disk-shaped bouy the circumference of which has an undercut bevel and has pegs, whose shanks are secured therein and extend downward a suitable distance, substantially as shown. This agitator is provided with a center-plate 20, and this plate has a sleeve 21, extending down from its central opening that is provided with grooves in its inner circumference, into which longitudinal tenons 18, projecting from sleeve 17 enter, and permits the agitator to freely move longitudinally, but causes it to rotate with said sleeve.

The operation of my invention is substantially as follows, to-wit:—Lever I is worked back and forth and its lower end imparts a

reciprocal movement to rack 2, which, through the medium of pinion 4, imparts a rotary reciprocal motion to vertical shaft 5, that extends up through the bottom and into the tub of the machine. This shaft 5, imparts its rotary reciprocal motion to sleeve 17, and the latter, in turn imparts a rotary reciprocal movement to the dolly or agitator 19, and suitably stirs the clothes immersed in the water and suds in the tub. At the same time this movement is going on, the lower end of the lever I, through the medium of connecting-rod H, revolves the large gear, G, and imparts an increased revolution to shaft d, and the fly-wheel, E, on the outer end thereof, which latter, running as it does at a very high rate of speed, controls and causes a rhythmic movement of the lever I, and assists the muscular efforts of the operator in driving the mechanism for stirring the clothes in the tub.

What I claim as new is:

1. Mechanism of the kind specified comprising, in combination, a suitable support, a vertically disposed lever fulcrumed mediate its ends to the side of said support, a vertical rotary reciprocal shaft extending up through the bottom of the same, a pinion on the lower end thereof, a plate secured to the underside of said bottom having a boss alining with the perforation through which said shaft passes, an integral hanger depending from said plate having a guide-recess therein and, beyond the position of said recess, a bearing for the lower end of said shaft, and a reciprocal rack actuated by said lever and slidable in said guide-recess and engaging said pinion.

2. Mechanism of the kind specified comprising, in combination, a suitable support, a vertically disposed lever fulcrumed mediate its ends to the side of said support, a vertical rotary reciprocal shaft extending up through the bottom of the same, a pinion on the lower end thereof, a plate secured to the underside of said bottom having a boss alining with the perforation through which said shaft passes, an integral hanger depending from said plate having a guide-recess therein and, beyond the position of said recess a bearing for the lower end of said shaft, a reciprocal rack actuated by said lever and slidable in said guide-recess and engaging said pinion, a balance-wheel located below the bottom of said support, and mechanism actuated by said lever for revolving the same.

3. Mechanism of the kind specified comprising, in combination, a suitable support, a vertically disposed lever fulcrumed mediate its ends to the side of said support, a vertical rotary reciprocal shaft extending up through the bottom of the same, a pinion on the lower end thereof, a plate secured to the underside of said bottom having a boss

alining with the perforation through which said shaft passes, an integral hanger depending from said plate having a guide-recess therein and, beyond the position of said recess a bearing for the lower end of said shaft, a reciprocal rack actuated by said lever and slidable in said guide-recess and engaging said pinion, a balance-wheel the axis of which is horizontal and is located below the bottom of said support, and means including speeding up gears actuated by said lever for revolving said wheel.

4. Mechanism of the kind specified comprising in combination, a suitable support, a vertically disposed lever fulcrumed mediate its ends to the side of said support a vertical rotary reciprocal shaft extending up through the bottom of the same, a sleeve surrounding said shaft and through which said shaft extends, an upper and a lower nut clamping said sleeve to the bottom of said support, a pinion on the lower end of said shaft, a plate secured to the underside of said bottom having a boss alining with the perforation through which said shaft passes, an integral hanger depending from said plate having a guide-recess therein, a bearing in said hanger for the lower end of said shaft, and a reciprocal rack actuated by said lever and slidable in said guide-recess and engaging said pinion.

5. Mechanism of the kind specified comprising, in combination, a suitable support, a vertically disposed lever fulcrumed mediate its ends to the side of said support, a vertical rotary reciprocal shaft extending up through the bottom of the same, a sleeve surrounding said shaft and through which said shaft extends, an upper and a lower nut clamping said sleeve to the bottom of said support, a pinion on the lower end of said

shaft, a plate secured to the underside of said bottom having a boss alining with the perforation through which said shaft passes, an integral hanger depending from said plate having a guide-recess therein, a bearing in said hanger for the lower end of said shaft, a reciprocable rack actuated by said lever and slidable in said guide-recess and engaging said pinion, a balance-wheel located below the bottom of said support, and mechanism actuated by said lever for revolving the same.

6. Mechanism of the kind specified comprising, in combination, a suitable support, a vertically disposed lever fulcrumed mediate its ends to the side of said support, a vertical rotary reciprocable shaft extending up through the bottom of the same, a sleeve surrounding said shaft and through which said shaft extends, an upper and a lower nut clamping said sleeve to the bottom of said support, a pinion on the lower end of said shaft, a plate secured to the underside of said bottom having a boss alining with the perforation through which said shaft passes, an integral hanger depending from said plate having a guide-recess therein, a bearing in said hanger for the lower end of said shaft, a reciprocable rack actuated by said lever and slidable in said guide-recess and engaging said pinion, a balance-wheel the axis of which is horizontal and is located below the bottom of said support, and means including speeding up gears actuated by said lever for revolving said wheel.

In witness whereof I have hereunto set my hand this 20th day of Jan. 1912.

SAMUEL T. WHITE.

Witnesses:

O. R. MECKELNBURG,
I. A. MORGAN.