C. D. DEWEY.

DRIVING MECHANISM.

APPLICATION FILED JUNE 26, 1914.

**1,175,618.** Patented Mar. 14, 1916.

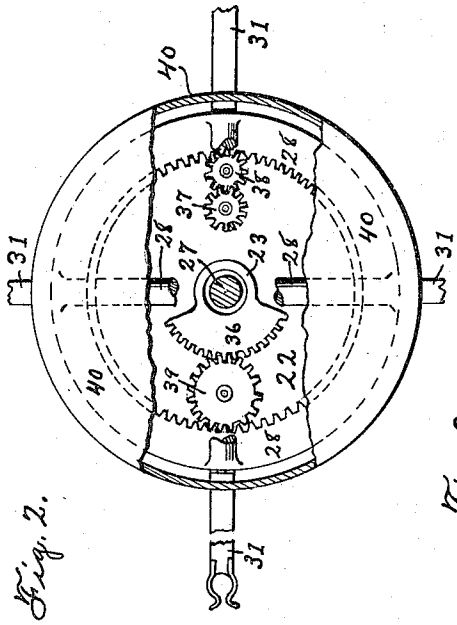


Fig. 2.

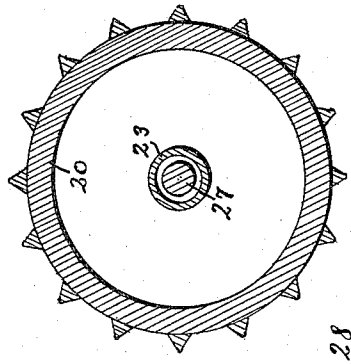


Fig. 3.

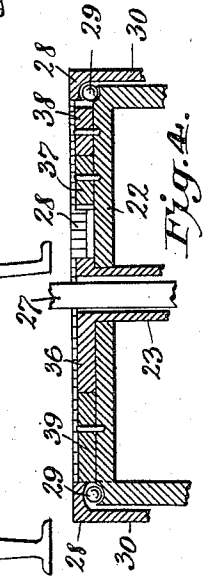


Fig. 4.

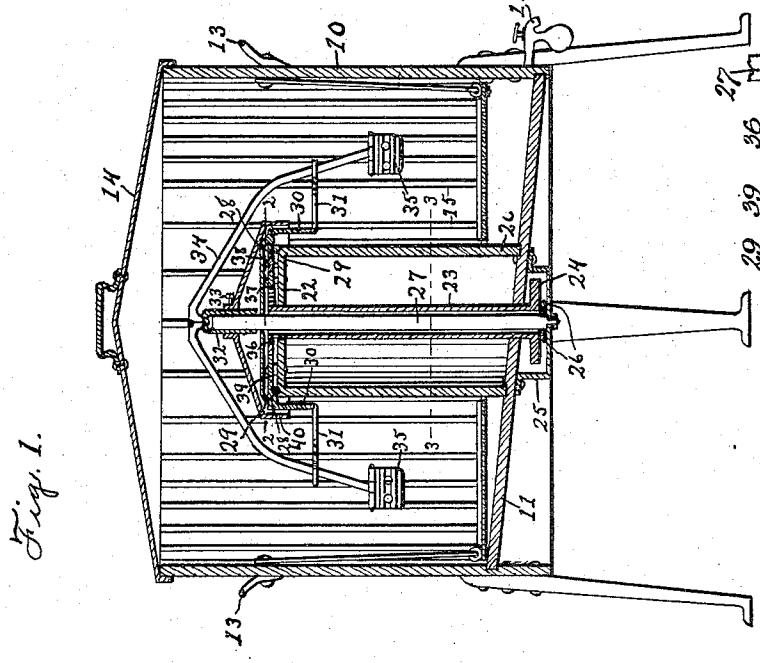


Fig. 1.

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# UNITED STATES PATENT OFFICE.

CHARLES D. DEWEY, OF LONG BEACH, CALIFORNIA.

## DRIVING MECHANISM.

1,175,618. Specification of Letters Patent. Patented Mar. 14, 1916.

Original application filed October 24, 1912, Serial No. 727,544. Divided and this application filed June 26, 1914. Serial No. 847,555.

*To all whom it may concern:*

Be it known that I, CHARLES D. DEWEY, citizen of the United States of America, and resident of Long Beach, Los Angeles county, California, have invented a new and useful Driving Mechanism, of which the following is a specification.

The object of this invention is to provide improved means for driving the dolly mechanism of a washing machine from beneath a tub without any devices on or through the cover of the tub.

A further object of this invention is to provide improved means for carrying a dolly device on roller bearings.

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 vertical section of a machine embodying my invention. Fig. 2 is a sectional plan, on an enlarged scale, on the line 2—2 of Fig. 1. Fig. 3 is a cross-section, on an enlarged scale, on the line 3—3 of Fig. 1. Fig. 4 is a central vertical section of a portion of the mechanism.

The subject matter of this invention was originally included in and has been divided from my application Number 727,544 for washing machine, filed October 24, 1912.

In the construction of the device as shown the numeral 10 designates a tub preferably of cylindrical form, made of wooden staves or sheet metal and a plurality of legs suitably connected and bound together, and having an inclined bottom 11 directed toward a drainage faucet 12 of globe shape in the wall which is adapted to retain the dirt which flows to it on the inclined bottom. The tub also is provided with suitable handles such as 13 and a removable and replaceable cover 14, which cover may be of sheet metal if desired.

A cap 22, of metal, is mounted on the upper end of the cylinder 20 and is secured rigidly thereto, and said cap is formed with a ball-race in its upper surface concentric with the center of the cylinder and cap. A tubular shaft 23 is mounted for rotation through the cap 22 and bottom 11, in upright position. A gear 24 is fixed to the lower end of the tubular shaft 23 and is adapted to be driven by any suitable mechanism (not shown) beneath the tub. A bearing plate 25 is mounted on the bottom 11 of the tub and is formed with a ball-race in its upper face corresponding with a ball-race in the lower face of the gear 24, and bearing balls 26 are interposed between said races. A spindle 27 is mounted in upright position through the center of the tubular power shaft 23 and has its lower end supported by the bearing plate 25. An internal gear 28, formed with a ball-race in its lower surface, is superposed on the cap 22 and is supported by balls 29 in the races of said cap and gear. The internal gear 28 is mounted loosely and for rotary oscillation on the spindle 27. The internal gear 28 is formed with downwardly extending arms 30, preferably four in number, and spring clamping members 31 are hinged on horizontal axes to the lower ends of said arms and extend radially of the tub, approximately to the center of the space between the concentric rubbing surfaces in the tub. A tubular cap 32 is mounted on the projecting upper end of the spindle 27 and is adjustable altitudinally thereon and held in such adjustment by a set screw 33. The cap 32 is formed with a bearing surface in its top and a spider dolly 34, with four radiating arms, is formed with a downwardly projecting pivot adapted to rest and turn in said bearing. The arms of the dolly 34 extend outwardly and downwardly and are adapted to be engaged and firmly held by the spring clamps 31. Agitating paddles 35 are hinged on horizontal axes to the extremities of the dolly arms 34 and depend therefrom. It is the function of the paddles 35 to move clothes in an annular path between and against the concentric rubbing surfaces in the tub. The paddles also press the clothes toward the false bottom of the tub in reversing direction of travel of the dolly mechanism. A mutilated gear 36 is mounted for rotation on the upper portion of the spindle 27 and is fixed to the tubular power shaft 23, and is adapted to be driven continuously in one direction by said shaft. The mutilated gear

36 meshes, during part of each revolution, with one of a pair of driving pinions 37, 38 which are in train with the internal gear 28 and are adapted to drive said internal gear somewhat less than one-half a revolution in the same direction as the mutilated gear is driven. The mutilated gear 36 is in mesh, during the major part of the remainder of each revolution, with a reversing gear 39 opposite the pinion 37 and in train with the internal gear 28; and said reversing gear is adapted to drive said internal gear somewhat less than one-half a revolution in a direction opposite to that in which the mutilated gear is driven. Thus is provision made for transforming rotary motion of the tubular shaft 23 and mutilated gear 36 into oscillatory motion of the internal gear and agitating devices, through the arms 30 and clamps 31. A cap 40 is provided and is adapted to be superposed over the gears 28, 37, 38 and 39 before the dolly 34 is placed in position on the cap 32. It is the function of the cap 40 to guard and cover the gearing, and shed water therefrom.

In practical use the dolly 34 is removed manually by disengaging its arms from the clamps 31 and lifting from the pivotal connection on the upper end of the cap 32. The dolly is then replaced, and the altitude of the same is adjusted by means of the set screw 33, depending upon the amount of clothes in the tub. Power is applied to the gear 24 to the end of driving the shaft 23, mutilated gear 36, and thence the gear 39 and pinions 37, 38 alternately, whereby the internal gear 28 receives an oscillatory motion and transmits the same to the dolly. The hinged paddles 35, which preferably are corrugated transversely, stir and agitate the clothes, and press downwardly thereon at every reverse motion. This action, together with the concentric outer and inner wash-boards of the tub, accomplish the washing operation easily and quickly.

The weight of the dolly rests entirely upon the stationary shaft or spindle 27 and does not at all impede the gearing, thus securing a very easy starting and light running driving mechanism, which end also is facilitated by the ball bearing supports of the gears 24 and 28.

I claim as my invention—

1. A driving mechanism, comprising a support, a spindle fixed to and rising therefrom, a device to be driven carried by said spindle, a tubular shaft mounted for rotation in upright position and concentric with said spindle, a mutilated pinion fixed to the upper end of said tubular shaft, an internal gear mounted for rotary oscillation and connected to said device to be driven, a train of pinions in mesh with said internal gear and adapted to be driven by said mutilated pinion throughout a portion of the revolution thereof, and a reversing gear in mesh with said internal gear and adapted to be driven by said mutilated pinion throughout the major portion of the remainder of the revolution thereof.

2. A driving mechanism, comprising a support, a spindle fixed to and rising therefrom, a device to be driven carried by said spindle, a tubular shaft mounted for rotation in upright position and concentric with said spindle, a gear on the lower end of said shaft and adapted to be driven, a mutilated gear fixed to the upper end of said tubular shaft, an internal gear mounted for rotary oscillation and connected to said device to be driven, a train of pinions in mesh with said internal gear and adapted to be driven by said mutilated gear throughout a portion of the revolution thereof, a reversing gear in mesh with said internal gear and adapted to be driven by said mutilated gear throughout the major portion of the remainder of each revolution thereof, and ball bearing supports for said internal gear and said driving gear.

3. In a washing machine, a support, a cylinder rising from said support, a cap on said cylinder, a spindle mounted through said cap and support and extending through said cylinder, a tubular shaft journaled in said support and cap and concentric with said spindle, a gear on said shaft beneath the support, a device to be driven carried by said spindle, a mutilated gear on said shaft, an internal gear on said device to be driven, and separate spaced trains of gearing between said mutilated gear and the internal gear.

4. In a washing machine, a support, a cylinder rising from said support, a cap on said cylinder, a spindle mounted through said cap and support and extending through said cylinder, a tubular shaft journaled in said support and cap and concentric with said spindle, a gear on said shaft beneath the support, a device to be driven carried by said spindle and pivotally supported thereon, a mutilated gear on said shaft, an internal gear mounted for rotary oscillation and removably connected to said device to be driven, and separate spaced trains of gearing between said mutilated gear and the internal gear.

5. In a washing machine, a support, a device to be driven, a tubular shaft mounted for rotation, a gear on said shaft adapted to be driven, a mutilated gear on said shaft, an internal gear mounted for rotary oscillation and connected to said device to be driven, and separate spaced trains of gearing between said mutilated gear and the internal gear.

6. In a washing machine, a device to be

driven, a shaft mounted for rotation, a driving gear on said shaft, a mutilated gear on said shaft, an internal gear mounted for rotary oscillation and connected to said device to be driven, and separate spaced trains of gearing between said mutilated gear and the internal gear.

Signed by me at Long Beach, California, this sixth day of February, 1914.

CHARLES D. DEWEY.

Witnesses:
HARRY D. MOORE,
O. H. ADY.

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