A. S. KIBBY.

GEARING.

APPLICATION FILED AUG. 13, 1910.

1,020,913.

Patented Mar. 19, 1912.

2 SHEETS—SHEET 1.

Fig. 2.

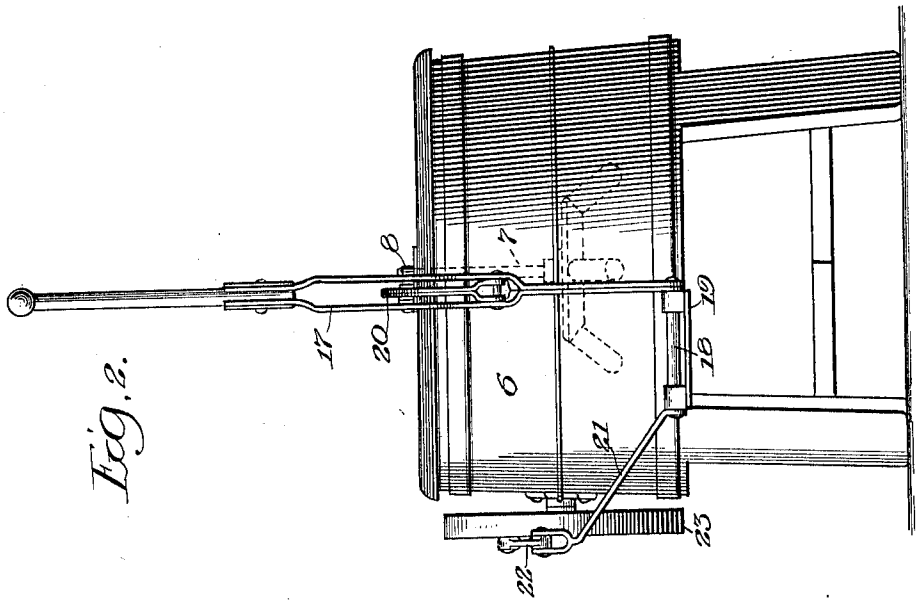
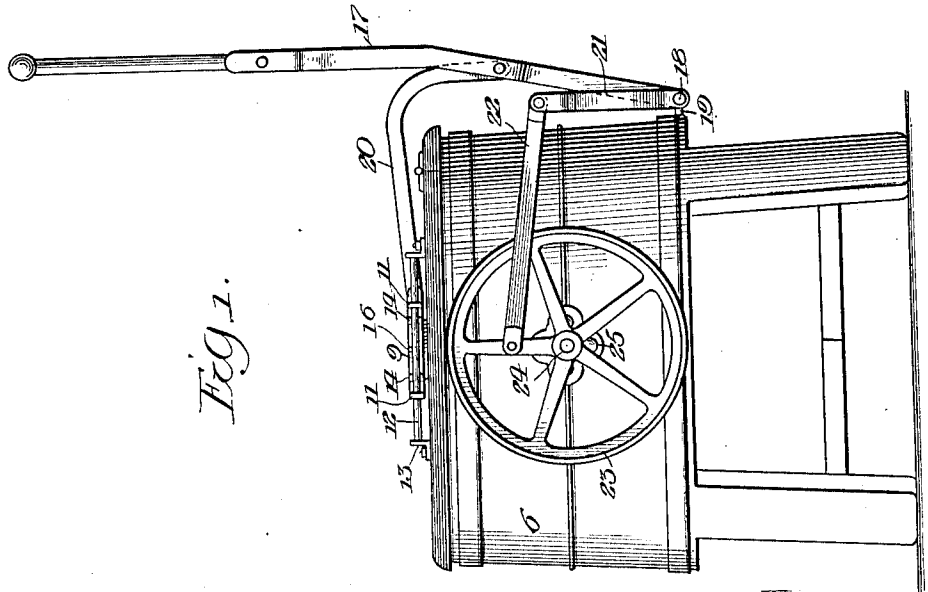


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 5.

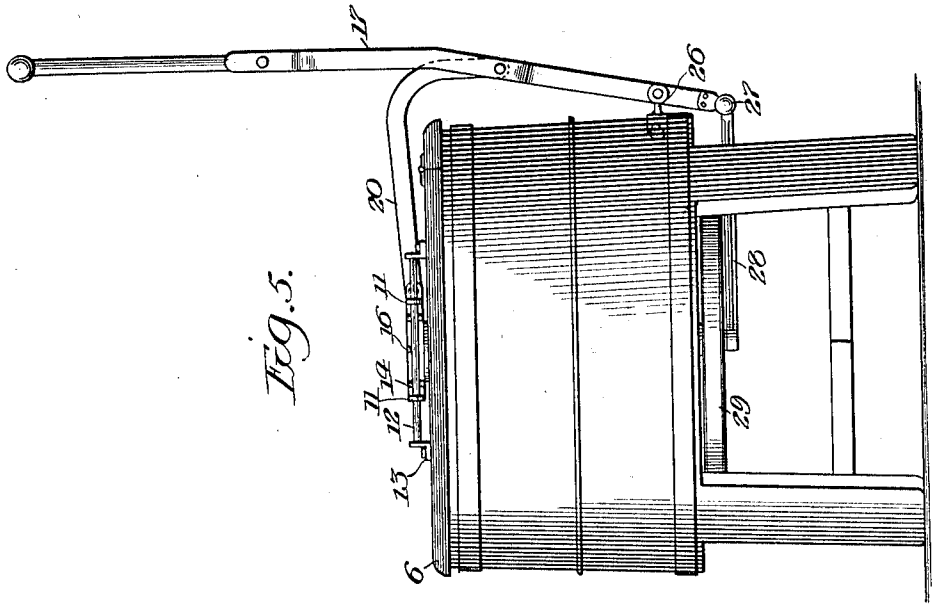


Fig. 3.

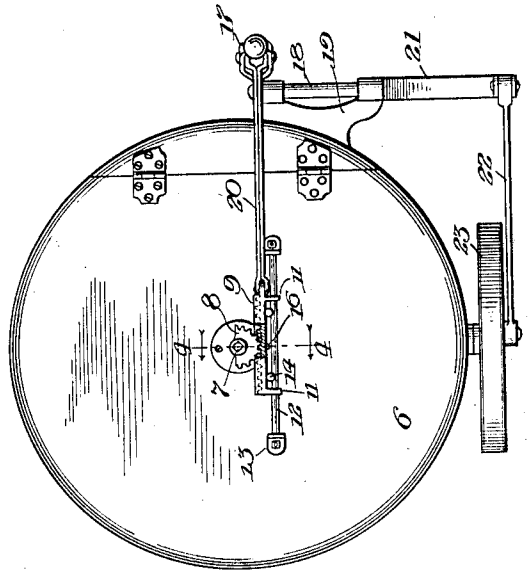
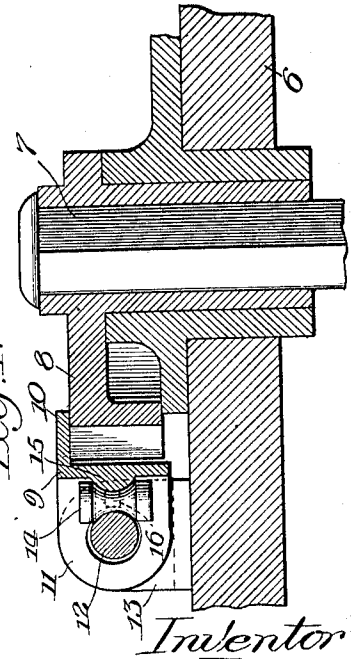


Fig. 4.



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UNITED STATES PATENT OFFICE.

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GEARING.

1,020,913. Specification of Letters Patent. Patented Mar. 19, 1912.

Application filed August 13, 1910. Serial No. 577,093.

To all whom it may concern:

Be it known that I, ALBERT S. KIBBY, a citizen of the United States, residing at Perry, in the county of Dallas and State of Iowa, have invented new and useful Improvements in Gearing, of which the following is a full, clear, and exact description.

My invention relates to gearing for operating washing machines, churns, and other similar devices wherein it is desirable to impart a rotary reciprocal motion to the dasher or agitator-shaft.

One of the objects of my invention is to provide a mechanism in which the momentum of a rapidly revolving balance or fly-wheel is utilized to assist in the reversal of the gearing and to accomplish this in as easy and as noiseless a manner as possible by absorbing or disintegrating the shock and jar, incident to such reversal.

It is also an object of my invention to greatly simplify the mechanism in such a device by eliminating unnecessary parts and also to provide roller or antifriction bearings for the operating rack utilized in performing the reversal of the rotary reciprocal shaft or agitator. This I accomplish by the means and in the manner hereinafter fully described and as more particularly pointed out in the claims, reference being had to the accompanying drawings that form a part of this specification, wherein:—

Figure 1 is a vertical front elevation of a laundry washing machine showing my improved mechanical movement applied thereto. Fig. 2 is a vertical side elevation thereof. Fig. 3 is a top plan view of the same. Fig. 4 is a fragmentary vertical section taken on line 4—4, Fig. 3 and drawn full size. Fig. 5 is a vertical front elevation, similar to Fig. 1, of a modified construction, wherein the balance wheel is mounted below the tub.

Referring to the drawings, 6 represents a suitable tub-body that is preferably provided with supporting legs and has a suitable cover hinged to a segmental plate secured to a portion of the top edge of said tub-body. This cover has suitable bearings at approximately its radial center for a vertically disposed rotary reciprocal shaft 7 which latter owing to its construction and arrangement in its bearings, has vertical play therein in order to accommodate the stirrer head or dasher on its lower inner end. The opposite upper end of this shaft is provided with a suitable pinion 8 that rotates with said shaft and which is engaged and operated by the teeth of a suitable elongated rack 9 that is reciprocated longitudinally past said pinion in a plane tangential to the outer circumference thereof and which is actuated by means of a suitable hand-lever fulcrumed to the side of the tub, as will hereinafter be more fully described. This rack 9, which is preferably of cast-metal, is made with an overhanging lip or flange 10, extending horizontally out beyond its teeth, and rests upon the upper smooth surface of the pinion 8 which thereby assists in supporting the same. At each end of said rack is an outwardly projecting semi-circular bearing-lug 11 provided with an opening that permits said rack to slide longitudinally on a horizontally disposed guide-rod 12. Said guide-rod is slightly longer than the distance traversed by the rack at each reciprocation of the latter and is held in place by suitable L-shaped supporting brackets 13 that support the rod a suitable distance above the cover of the tub. In order to reduce the friction during the reciprocation of said rack, suitable anti-friction rollers 14 are placed between the same and the guide-rod 12. These rollers 14 are approximately spool-shaped; that is, they are cylindrical in outline and have their sides preferably grooved or concaved, substantially as shown, to conform to the contour of the guide-rod and a convex embossment or rib 15 made integral with and extending the length of the adjacent face of the rack. When in position, these rollers are prevented from falling out by their spool-shape, which causes them to be interlocked with the guide-rod and rib. If desired, a lateral pin 16 may be tapped into the rib midway its length and projected into the path of these rollers for the purpose of keeping them apart and at their respective end of the rack.

Rack 9 is preferably reciprocated by means of the vertically disposed hand-lever 17, heretofore mentioned, having its lower end secured on a rock-shaft 18, journaled in bearings carried by a suitable bracket 19 projecting from the lower edge of the tub. This lever is connected to and actuates rack 9 through the medium of a link 20 one end of which latter is pivotally connected to the adjacent end of said rack and the opposite end of which is curved downwardly and connected in a similar manner to operating le-

ver 17. This particular construction permits of the cover of the tub being raised in the usual manner, but without the necessity of having to disconnect the operative parts or to lift the balance-wheel of the machine.

Rock-shaft 18 is preferably horizontally disposed and at its end opposite that to which lever 17 is secured, has an upwardly projecting arm 21 that is deflected outwardly a slight distance. To the upper end of this arm one end of a link or pitman 22 is pivotally secured, and the opposite end of this pitman engages a lateral pin projecting from a vertically mounted balance-wheel 23. This balance-wheel is mounted on a stud 24 projecting horizontally out from a bracket 25 secured to the side of the tub about midway its height.

In operation, when the lever 17 is moved to and fro by the operator, the link 20 reciprocates the rack 9 causing a rotary reciprocal motion of the pinion 8 on the upper end of the stirrer shaft 7. At the same time the rock-shaft, through the medium of arm 21 and pitman 22 revolves the fly-wheel and the motion thereof greatly assists in the reversal movement of the mechanism. In Fig. 5 of the drawings a slightly modified arrangement of the lower portion of this mechanism is shown. The lever 17 and the parts of the top of the tub are the same as in the preferred form just described. The lever 17, however, is fulcrumed near its lower end to a bracket 26 projecting from the lower edge of the tub and on its end that extends below this bearing, it is provided with a universal joint 27. A link or pitman 28 connects this universal joint to a crank-pin on a balance-wheel 29 mounted in a horizontal position beneath the bottom of the tub. Thus it will be seen that, when the lever 17 is moved to and fro, the motion of the lower end thereof is transmitted to the pitman 28 and the balance-wheel 29 is caused to revolve, the effect being the same as in the preferred form, shown in the other figures of the drawings.

What I claim as new is:—

1. A mechanical movement comprising a rotary reciprocal shaft, a pinion thereon, a reciprocal rack engaging said pinion and provided with a longitudinal rib on one side and an overhanging lip that rests upon said pinion, supporting means alongside said rack upon which the same is slidably mounted, anti-friction rollers arranged between the rib on said rack and said means, a lever operatively connected to said rack, a balance-wheel and a link that transmits the motion of said lever to said balance-wheel.

2. A mechanical movement comprising a rotary reciprocal shaft, a pinion thereon, a reciprocal rack engaging said pinion and provided with a longitudinal rib, a rod upon which said rack is slidably mounted, anti-friction rollers arranged between the rib on said rack and said rod, a lever operatively connected to said rack, a balance-wheel, and a link that transmits the motion of said lever to said balance-wheel.

3. A mechanical movement comprising a rotary reciprocal shaft, a pinion thereon, a reciprocal rack engaging said pinion and provided with a longitudinal rib, a rod upon which said rack is slidably mounted, anti-friction rollers arranged between the rib on said rack and said rod, and having their sides concaved to fit said parts, a lever operatively connected to said rack, a balance-wheel, and a link that transmits the motion of said lever to said balance-wheel.

4. A mechanical movement comprising a rotary reciprocal shaft, a pinion thereon, a reciprocal rack engaging said pinion, longitudinally extending means arranged alongside said rack upon which said rack is slidably mounted, anti-frictional devices arranged between said rack and means, and a manually actuated lever operatively connected to said rack.

5. A mechanical movement comprising a rotary reciprocal shaft, a pinion thereon, a reciprocal rack engaging said pinion, and provided with a longitudinal rib on the side thereof, longitudinally extending means arranged alongside said rack upon which said rack is slidably mounted, anti-frictional devices arranged between said rib and means, and a lever operatively connected to said rack.

6. A mechanical movement comprising a rotary reciprocal shaft, a pinion thereon, a reciprocal rack engaging said pinion and provided with a longitudinal rib, a rod upon which said rack is slidably mounted, anti-frictional rollers arranged between said rib and rod, and a lever operatively connected to said rack.

In witness whereof I have hereunto set my hand this 8th day of August, 1910.

ALBERT S. KIBBY.

Witnesses:
ERNEST C. KIBBY,
MATTIE M. BRODY.