No. 688,123. Patented Dec. 3, 1901.

F. C. RICE.

REVERSING MECHANISM.

(Application filed Feb. 26, 1901.)

(No Model.)

Fig. 1.

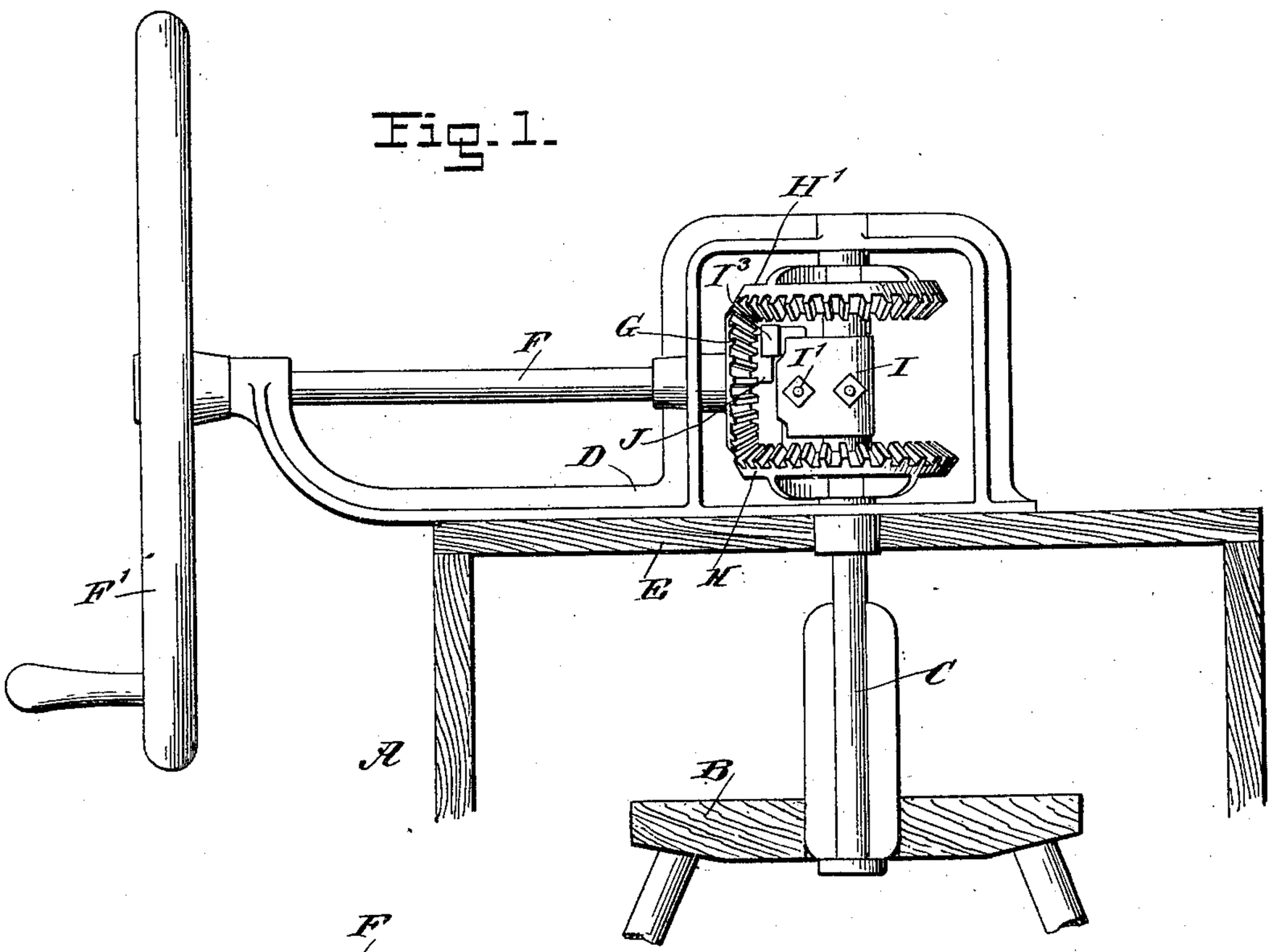


Fig. 2.

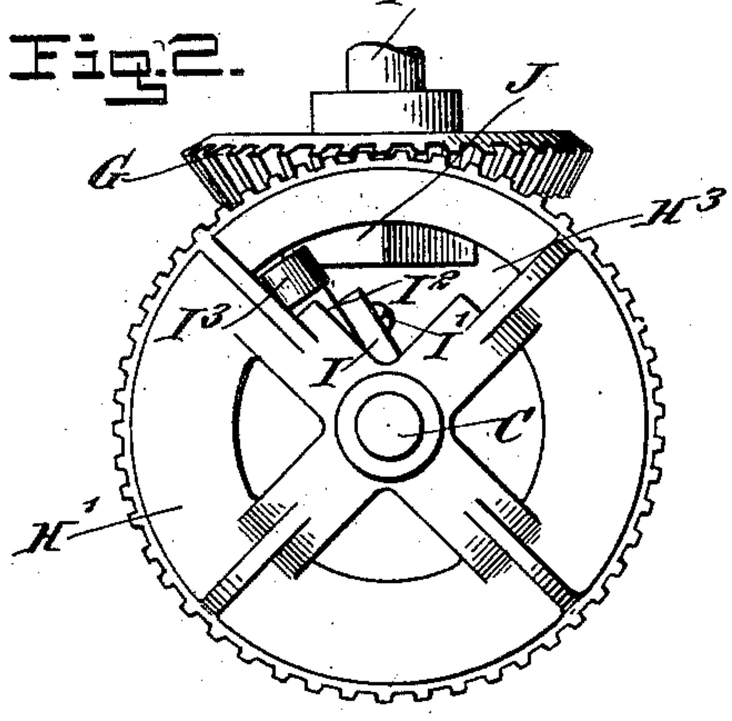


Fig. 3.

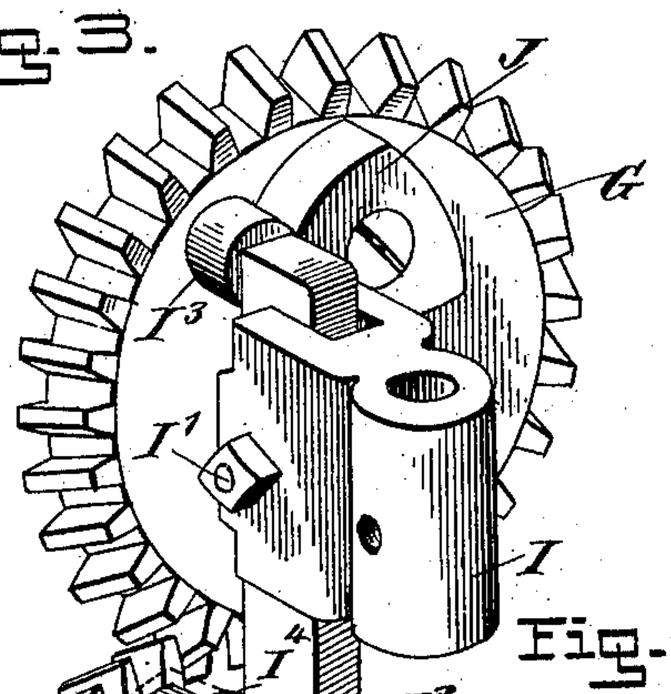


Fig. 4.

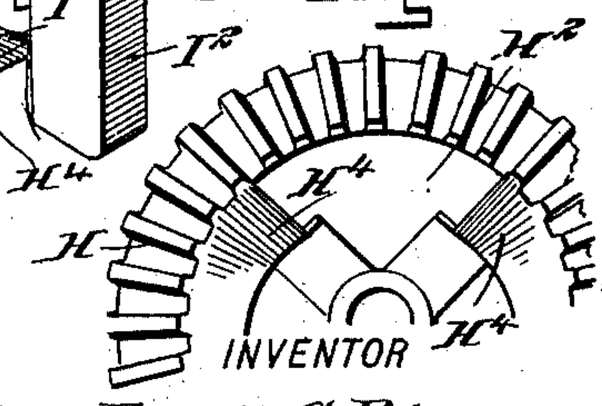


Fig. 6.

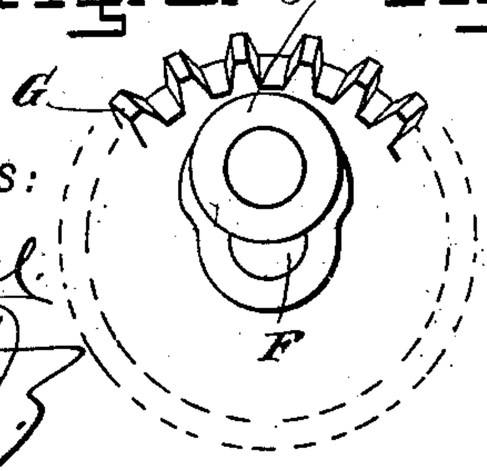
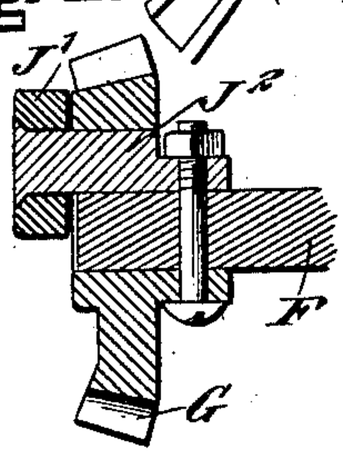


Fig. 5.



WITNESSES:

James F. Duhamel.

Geo. J. Porter.

INVENTOR

Frank C. Rice

BY

Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK CLARENCE RICE, OF JAMESTOWN, NEW YORK, ASSIGNOR TO GEORGE V. BLACKSTONE, OF JAMESTOWN, NEW YORK.

REVERSING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 688,123, dated December 3, 1901.

Application filed February 26, 1901. Serial No. 48,952. (No model.)

To all whom it may concern:

Be it known that I, FRANK CLARENCE RICE, a citizen of the United States, and a resident of Jamestown, in the county of Chautauqua and State of New York, have invented a new and Improved Reversing Mechanism, of which the following is a full, clear, and exact description.

The invention relates to reversing mechanism such as shown and described in the Letters Patent of the United States No. 633,783, granted to George V. Blackstone on September 26, 1899.

The object of the present invention is to provide a new and improved reversing mechanism for use on washing-machines, churns, and other machines and devices to rotate the dasher or other part alternately in opposite directions and arranged to reduce friction to a minimum and to allow of running the machine with comparatively little power.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied to a washing-machine. Fig. 2 is an enlarged plan view of part of the improvement. Fig. 3 is a perspective view of the same. Fig. 4 is a plan view of one of the loose gear-wheels. Fig. 5 is a sectional side elevation of a modified form of driving gear-wheel, and Fig. 6 is a face view of the same.

The washing-machine on which the improvement is applied is provided with a suitable box A, in which is mounted to revolve a dasher B, mounted to slide on and to turn with a dasher-shaft C, journaled in suitable bearings arranged in a bracket D, secured to the cover or lid E of the box A. In the bracket D is journaled, at a right angle to the shaft C, a driving-shaft F, having a suitable crank-arm F′, under the control of the operator, for turning the shaft F in either direction.

On the inner end of the shaft F is secured a bevel-pinion G, in mesh at opposite sides with bevel gear-wheels H H′, mounted to rotate loosely on the shaft C. On the latter is secured a locking device consisting of a member I, secured to said shaft C and carrying a bolt I′, on which is mounted to slide vertically a movable member I^2, carrying at its upper and lower ends friction-rollers I^3 I^4, adapted to be engaged by a projection in the form of a cam J, held on the face of the pinion G and arranged in such a manner that when the pinion G is turned and the two gear-wheels H and H′ are rotated then the cam alternately moves in engagement with the friction-rollers I^3 I^4 to impart an up-and-down sliding motion to the member I^2 to engage the friction-rollers I^3 I^4 with recesses H^2 H^3, formed in the webs of the gear-wheels H H′, respectively. The said friction-rollers I^3 I^4 are also adapted to travel on cam-surfaces H^4, formed on the webs of the bevel gear-wheels H H′ and leading from the recesses H^2 H^3, so that when the cam J has engaged, say, the friction-roller I^3 and moved the member I^2 in an upward direction then the other friction-roller I^4 in moving out of its recess H^2 is brought to the cam-surface H^4 to push the slidable member I^2 into a final uppermost position on a further rotation of the pinion G and the gear-wheels H H′. In a similar manner the friction-roller I^3 engages the cam-surface H^4 on the under side of the web of the gear-wheel H′ at the time the cam J acts on the friction-roller I^4 and pushes the member I^2 in a downward direction.

From the foregoing it will be seen that by having the friction-rollers I^3 I^4 traveling on the cam J the incident friction is reduced to a minimum, and consequently it requires comparatively little power on the part of the operator to rotate the shaft F. It will further be seen that by having the cam-surfaces H^4 the movable member I^2 is thrown far enough during each stroke to insure a positive engagement of the corresponding friction-roller I^3 or I^4 with the recess H^2 or H^3 in the gear-wheels H H′.

In order to still further decrease the friction, the projection on cam J is preferably made in the form of a friction-roller J′, journaled on a stud J^2, secured to the driving-pinion G eccentrically to the shaft F, so that the

friction-rollers I^3 I^4 travel with their peripheral surfaces on the peripheral surface of the friction-roller J', when the latter alternately engages the said friction-rollers upon rotating the pinion G, as above described.

It is evident from the foregoing that when the shaft F is rotated in one direction the shaft C and the dasher B are alternately revolved in opposite directions, the gearing being so proportioned that it requires one and one-half revolutions of the pinion G to give one full turn to the gear-wheels H H', and consequently after another one and one-half turn of the pinion G the cam or friction-roller J stands in an opposite position to that which it had upon the previous shifting of the movable member I^2 of the locking device, and as the gear-wheels H H' now have each made a full revolution the corresponding recesses are directly or nearly opposite each other, and the shifting of the movable member I^2 can now take place to move the friction-rollers I^3 or I^4 out of mesh with the corresponding recess and in mesh with the recess in the other gear-wheel H' or H.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A reversing mechanism, comprising a driving-pinion, a projection on said pinion, gear-wheels in mesh with said pinion at opposite sides thereof, and a locking device on the shaft to be driven and having a fixed member secured to the shaft and a locking member mounted to slide on the fixed member, and antifriction-rollers on the ends of said movable member, and adapted to be engaged by said projection on the pinion, to throw the movable locking member alternately into engagement with the said gear-wheels, as set forth.

2. A reversing mechanism comprising bevel gear-wheels having shoulders and inclines, a driving-pinion, for driving said gear-wheels in opposite directions, a locking member adapted to be shifted, to alternately engage the shoulders and inclines of the gear-wheels, and means moving with said pinion for shifting said locking member as set forth.

3. A reversing mechanism comprising bevel gear-wheels having shoulders and inclines, a driving-pinion, for driving said gear-wheels in opposite directions, a locking member adapted to be shifted, to alternately engage the shoulders and inclines of the gear-wheels, means moving with said pinion for shifting said locking member, and antifriction-rollers at the ends of said locking member, to engage the shoulders and inclines of the gear-wheels alternately upon shifting the member, as set forth.

4. A reversing mechanism, comprising a driving-pinion, a stud projecting from the free end of the driving-pinion eccentric to the shaft of the pinion a friction-roller journaled on the said stud, gear-wheels in mesh with the driving-pinion at opposite sides thereof, and a locking device on the shaft to be driven and having a movable locking member adapted to engage said friction-roller and throw the locking member alternately into engagement with said gear-wheels, as set forth.

5. A reversing mechanism, comprising a driving-pinion, a friction-roller journaled on the free end of said pinion, gear-wheels in mesh with the driving-pinion at opposite sides thereof, the said gear-wheels having recesses formed in their webs and cam-surfaces leading from the recesses a locking device on the shaft to be driven and having a movable locking member, and friction-rollers journaled on the locking member and adapted to engage the said friction-roller and throw the locking member alternately into engagement with said recesses in the gear-wheels, as set forth.

6. A reversing mechanism, comprising a driving-pinion, a projection on said pinion, gear-wheels in mesh with said pinion at opposite sides thereof, the said gear-wheels having recesses in their webs and cam-surfaces leading from the recesses, and a locking member adapted to be engaged and shifted by the said projection on the pinion to alternately engage the recesses in the gear-wheels, the said locking device when moving out of the recess of one gear-wheel engaging the cam-surface of said gear-wheel, for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK CLARENCE RICE.

Witnesses:
JOHN P. MOYNIHAN,
ANDREW J. LIND.