

Nov. 17, 1925.

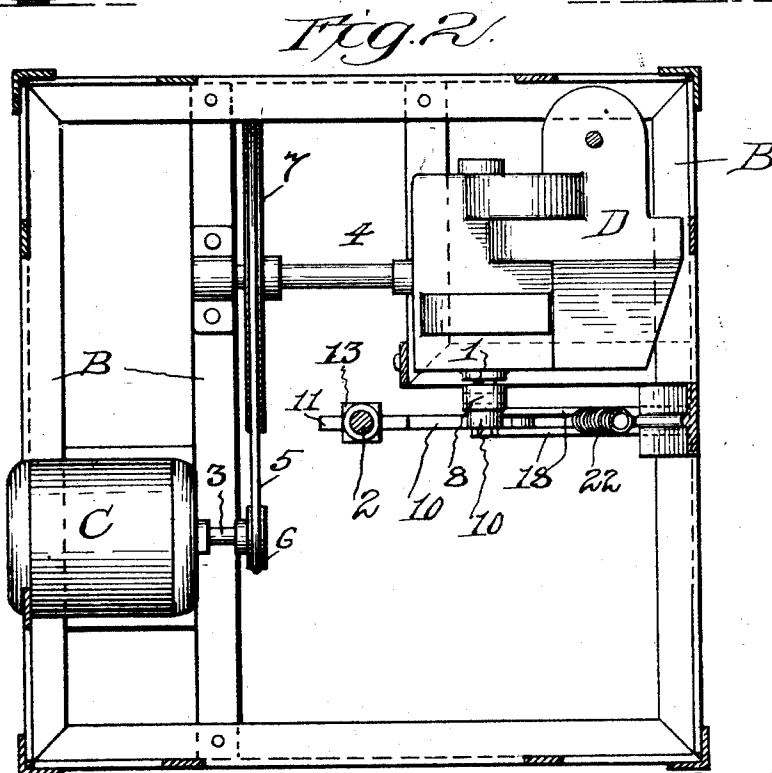
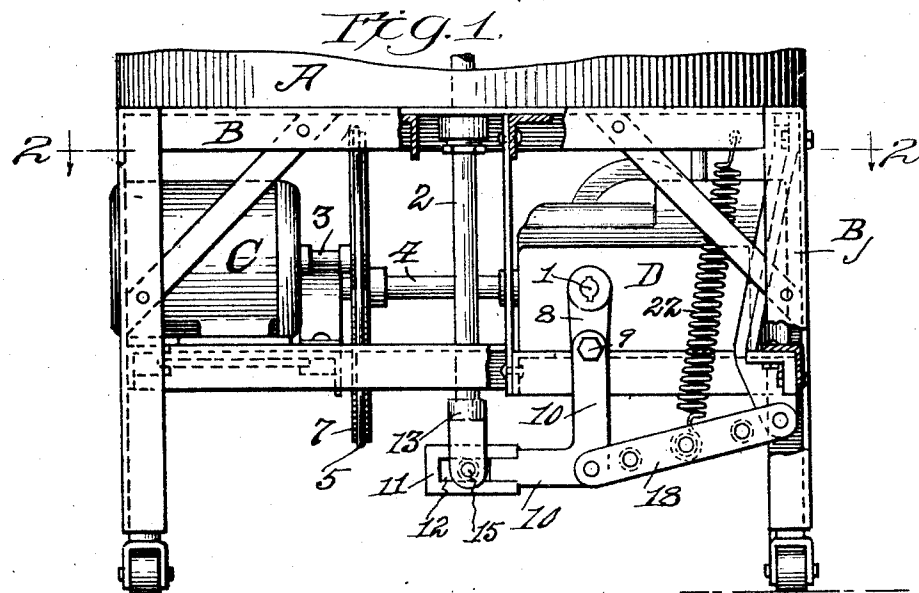
1,561,748

J. G. SHERMAN

MECHANICAL MOVEMENT

Filed Feb. 2, 1924

2 Sheets-Sheet 1



Inventor:
James G. Sherman
by *Napier & Brown* Attorneys

Nov. 17, 1925.

1,561,748

J. G. SHERMAN
MECHANICAL MOVEMENT

Filed Feb. 2, 1924

2 Sheets-Sheet 2

Fig. 3.

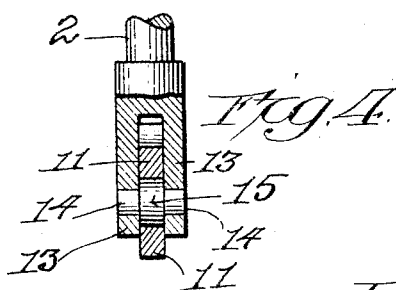
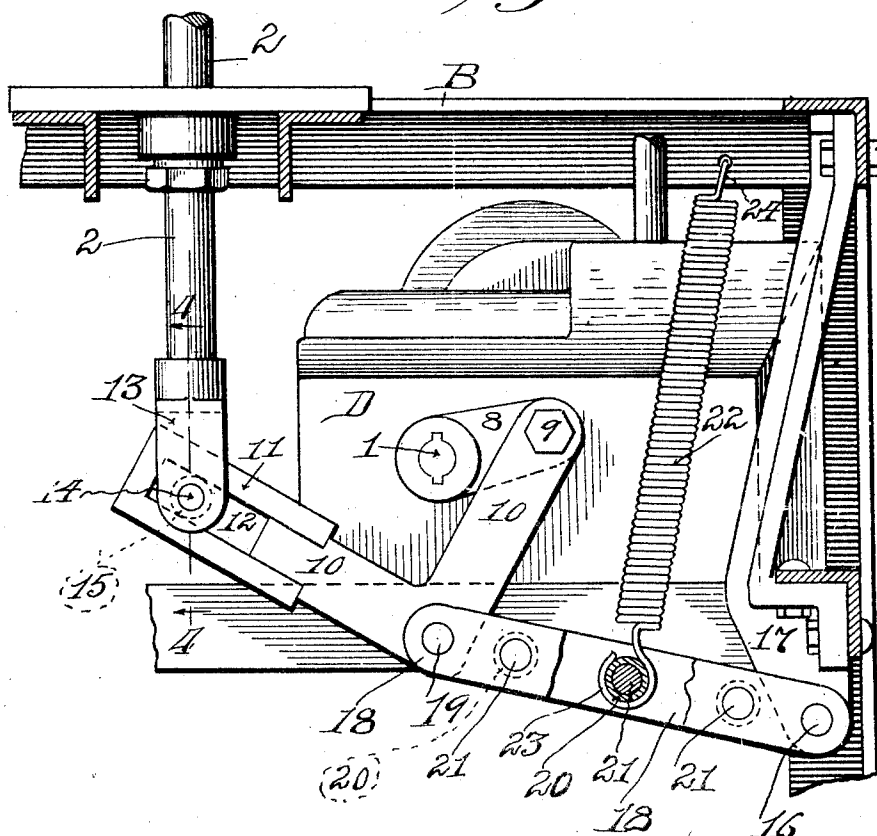


Fig. 4.

Inventor.
James G. Sherman
by *Wm. Brown Atty*

UNITED STATES PATENT OFFICE.

JAMES G. SHERMAN, OF BELVIDERE, ILLINOIS, ASSIGNOR TO NATIONAL SEWING MACHINE COMPANY, OF BELVIDERE, ILLINOIS, A CORPORATION OF ILLINOIS.

MECHANICAL MOVEMENT.

Application filed February 2, 1924. Serial No. 690,104.

To all whom it may concern:

Be it known that I, JAMES G. SHERMAN, a citizen of the United States, residing at Belvidere, in the county of Boone and State of Illinois, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification, reference being had to the accompanying drawings, and to the reference characters marked thereon, which form a part of this specification.

This invention relates to mechanical movements whereby the rotary motion of a shaft, continuous in the same direction, is translated into reciprocatory motion of another shaft, alternately in opposite directions.

The invention consists in the devices and combination of devices herein illustrated, described and claimed.

In the drawings:

Fig. 1 is a side view or elevation of the lower part of an electrically driven washing machine, to which my invention has been applied.

Fig. 2 is a horizontal or plan sectional view of the same, taken in the plane of the dotted line 2—2 of Fig. 1.

Fig. 3 is a side view, enlarged, of my invention, parts of the frame being in section.

Fig. 4 is a vertical, sectional view of a detail, taken on the line 4—4 of Fig. 3.

Referring to said drawings, it will be understood that A represents any suitable container or tub of a washing machine, set upon a frame or support B, the latter carrying an operating motor C and a transmission gear box D. One end of a rotatable drive shaft 1 projects outwardly from this gear box. The driven shaft 2 of the washing machine extends vertically upward and into the tub A. The shaft 3 of the motor C is shown as operatively connected with a shaft 4 of the transmission gear by a belt 5 over the pulleys 6 and 7. It will be understood that suitable gearing is used in the gear box to operatively connect shafts 4 and 1.

Upon the end of the driving shaft 1 is a crank 8, the outer end of which is pivotally connected at 9 to one end of an L-shaped arm 10. To the other end of the arm 10 is secured, by welding or other suitable means, a U-shaped strap 11, thus prolonging the arm 10 and providing a slotted guideway 12.

The lower end of the driven shaft 2 is

provided with a stirrup coupling 13, its two arms embracing the strap 11 and being connected to the strap by the pin 14 carrying an antifriction roller 15.

Pivoted at 16 to a fixed support, i. e. lug 17 of the frame structure B, is a link 18, the forward end of this link being pivotally connected at 19 to the arm 10. As a detail of construction, the link 18 comprises two link bars spaced apart by spreader thimbles 20, tubular in shape, and united by rivets, bolts or pins 21. A coiled spring 22 is secured at its lower end 23 to the link 18 and at its upper end 24 to the fixed support or frame B, and normally holds the link in its raised position.

The operation of the device thus shown and described will be, at once, understood to be as follows.

The shaft 1 being constantly rotated in one direction from any suitable source of power, as for example the motor C through shaft 3, pulley 6, belt 5, pulley 7, shaft 4 and gears in the gear box (not shown), will rotate the crank arm 8. This will carry its pivotal connection 9 and the upper end of the arm 10 in a path concentric with the shaft 1. This movement of the arm 10 will cause a vertical reciprocation of the free end of the link 18, the pivotal connection 19 of the arm 10 and link 18 swinging in the arc of a circle concentric with the pivot pin 16. The arm 10 thus has a bodily up and down movement, as well as a rocking movement about the pivotal connection 19. In its bodily reciprocative movement, the arm 10 actuates the shaft 2 and raises and lowers said shaft alternately. The guide slot 12 and the antifriction roller 15 afford the desired amount of lost motion between the strap-end of the arm 10 and the stirrup 13, when arm 10 is changing the direction of its movement.

The spring 22 exerts a proper tension upon the link 18 to pull it upwardly, and prevents the parts from becoming "clogged" or stopping upon a "dead center". The arrangement is simple, of durable construction, of a character not likely to become deranged or get out of order; and is positive in operation.

While I have shown this mechanical movement as applied to the driven, operative shaft of an electrically operated washing machine, I do not limit the invention to such

use, since it will be manifest that it may be usefully applied in many other structures where motion of rotation of a driving shaft continuously in one direction is to be converted into a motion of reciprocation of a driven shaft or part alternately in opposite directions.

I claim as my invention:

10 1. A mechanical movement comprising a rotatable driving shaft, a crank arm on said shaft, a bent arm one end of which is pivotally connected to said crank arm, a fixed support, a link pivotally mounted at one end upon said support, said link being connected
15 to and affording a movable fulcrum for the bent arm, a flexible tension member connected to said link and a pivotal and slidable connection between the other end of the bent arm and the driven shaft.

20 2. A mechanical movement comprising a rotatable driving shaft, a crank arm on said shaft, a bent arm one end of which is pivotally connected to said crank arm, a fixed support, a link pivotally mounted at one end

upon said support, said link being connected
25 to and affording a movable fulcrum for the bent arm, a flexible tension member connected to said link and a pivotal and slidable connection between the other end of the bent arm and the driven shaft comprising a stirrup coupling on the driven shaft carrying
30 an engaging member.

3. A mechanical movement comprising a driving shaft, a crank arm mounted thereon, a driven shaft, a bent arm pivotally connected at one end to the crank arm, a movable fulcrum for said bent arm and a slidable pivotal connection between the other
35 end of the bent arm and the driven shaft, comprising a slotted guideway in the bent arm, a stirrup coupling on the driven shaft
40 having an antifriction roller adapted for movement in said guideway.

In testimony that I claim the foregoing as my invention, I affix my signature, this
45 28th day of January, 1924.

JAMES G. SHERMAN.