2 Sheets—Sheet 1.

F. L. MITCHELL.
Washing Machine.

No. 229,547. Patented July 6, 1880.

Fig. 1.

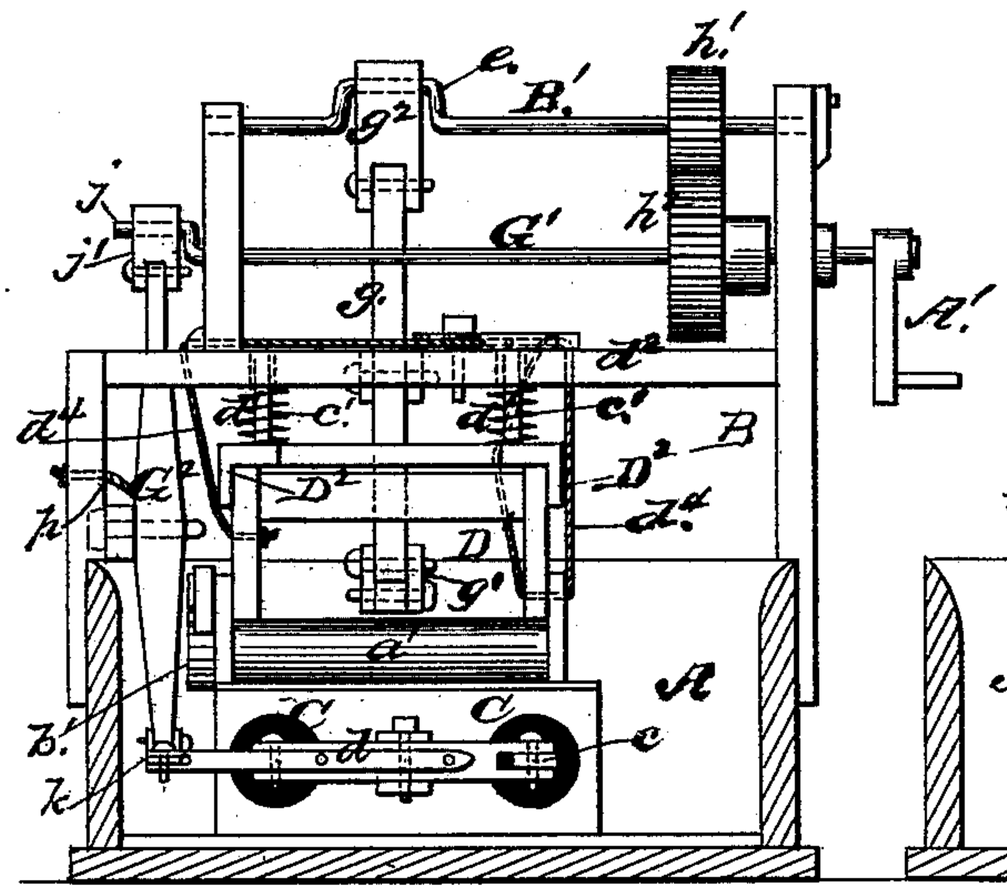


Fig. 2.

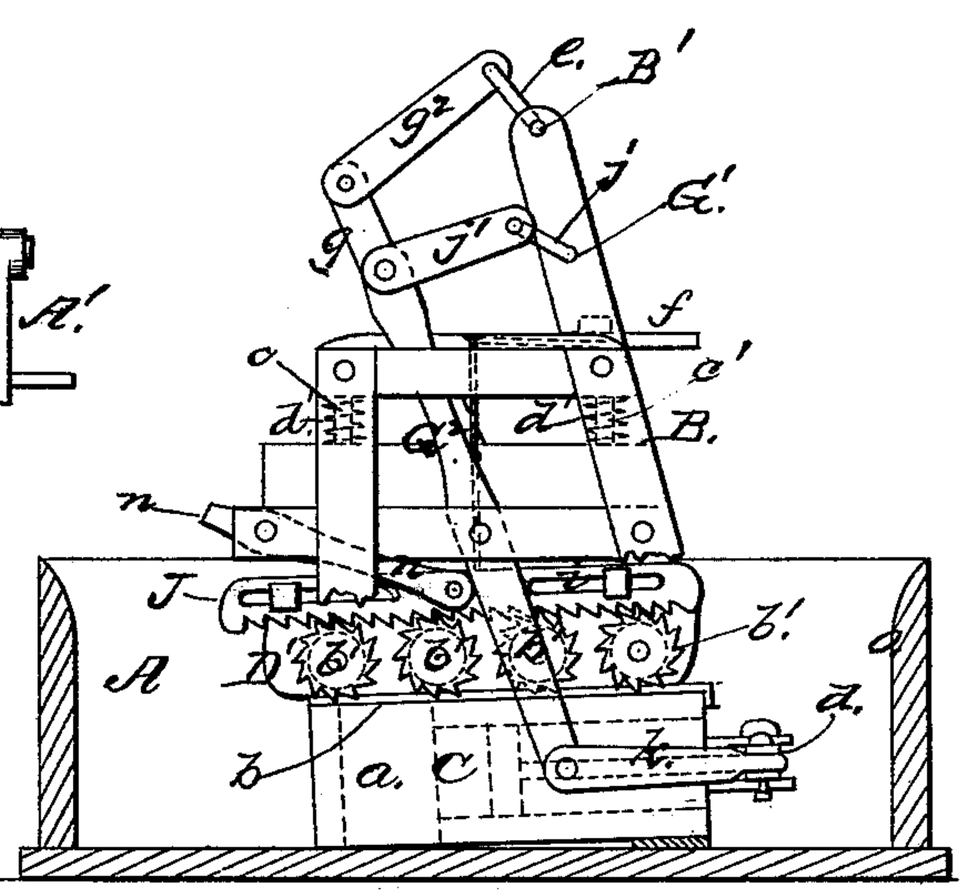


Fig. 3.

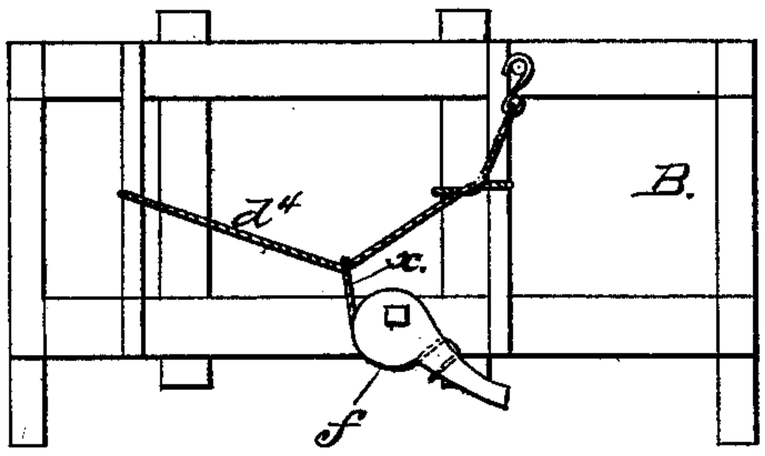


Fig. 4.

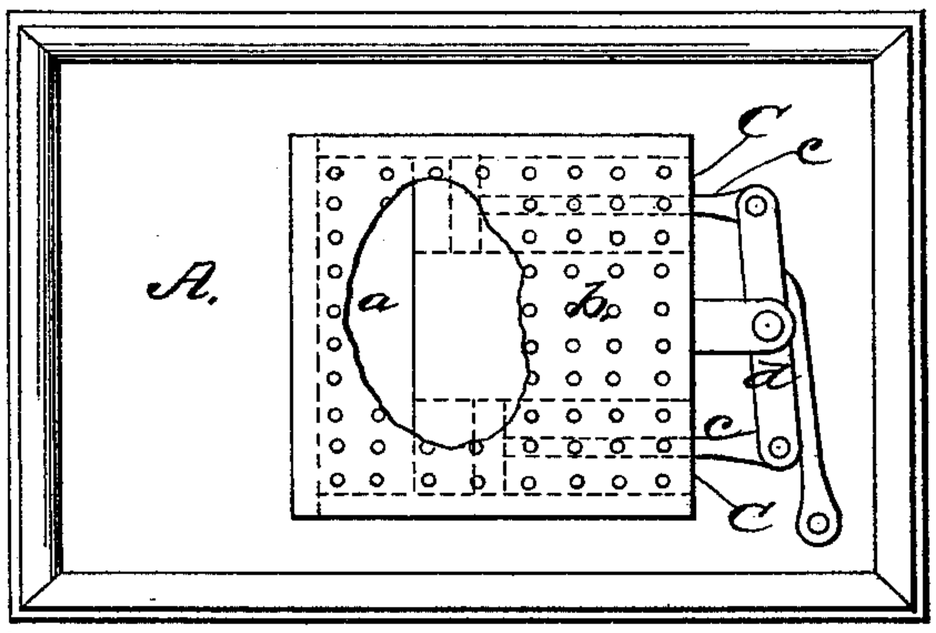
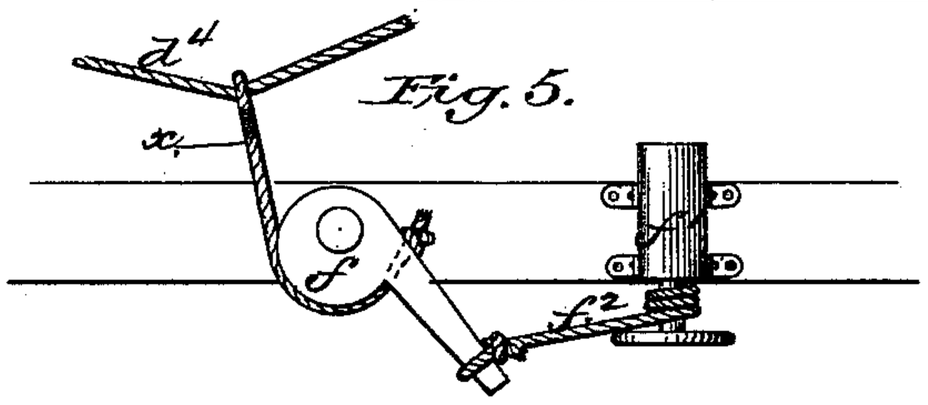


Fig. 5.



WITNESSES
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Frank. J. Masi.

INVENTOR
F. L. Mitchell,
by E. W. Anderson
his ATTORNEY

2 Sheets—Sheet 2.

F. L. MITCHELL.
Washing Machine.

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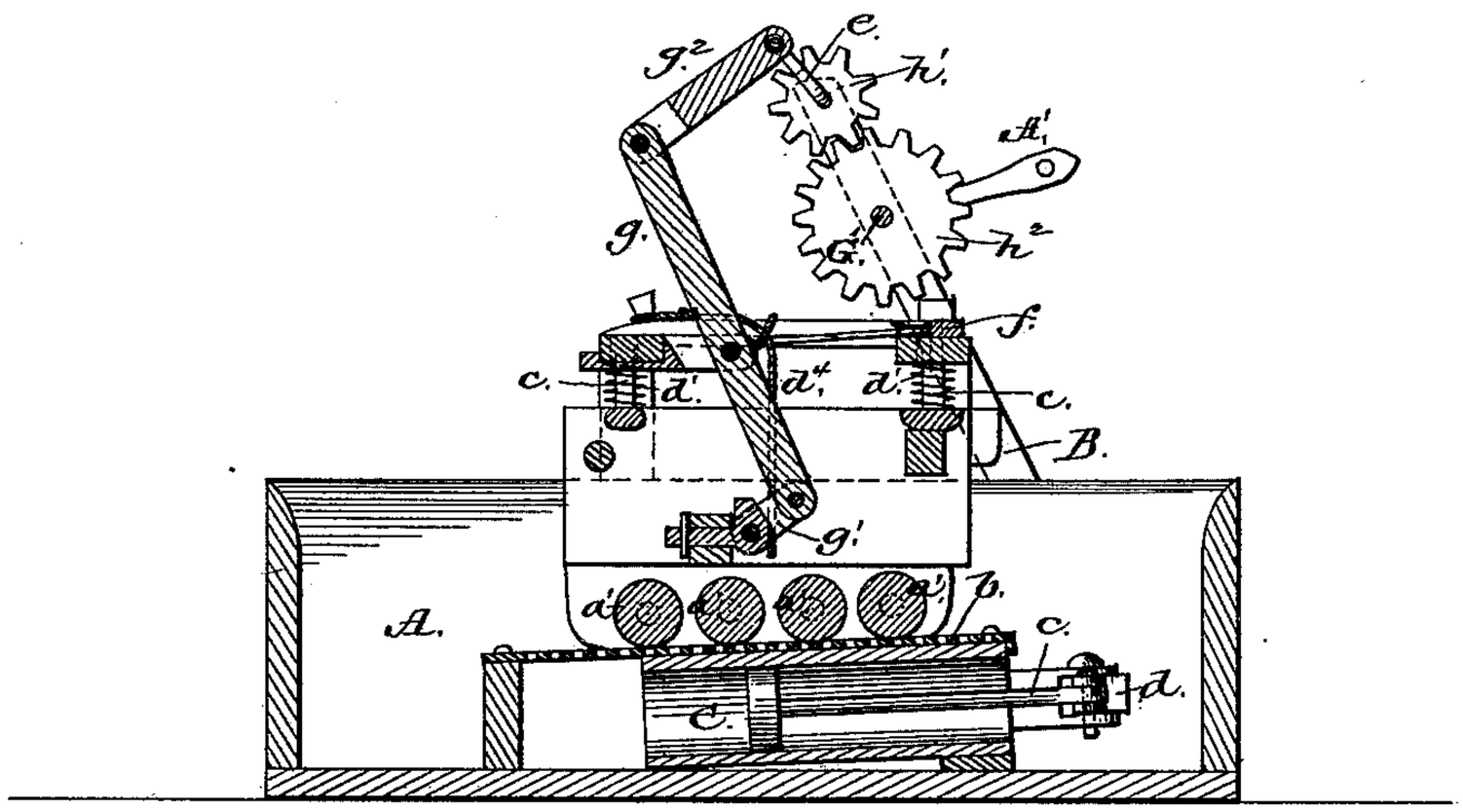
Fig. 6.



WITNESSES

John A. Ellis.
Phil. C. Casi.

INVENTOR

F. L. Mitchell
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UNITED STATES PATENT OFFICE.

FRANCIS L. MITCHELL, OF ST. JOSEPH, MISSOURI.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 229,547, dated July 6, 1880.

Application filed November 8, 1879.

To all whom it may concern:

Be it known that I, FRANCIS L. MITCHELL, of St. Joseph, in the county of Buchanan and State of Missouri, have invented a new and valuable Improvement in Washing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a transverse section of my improved washing-machine. Fig. 2 is a longitudinal section of the same. Figs. 3, 4, and 5 are details; and Fig. 6 is a longitudinal section.

This invention has for its object the improvement of washing-machines; and the nature of the invention consists in combining with the rubbing-surfaces of a washing-machine a pump or pumps arranged under the lower rubbing-surface and forcing the suds through it upon and through the clothes while they are being rubbed, thereby carrying off the impurities loosened by the rubbers.

It also consists in certain novel combinations of mechanical devices, whereby from a single driving-shaft motion is communicated to the pump or pumps and to the rubbing device, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates a suds box or tank of suitable construction and rectangular form, having erected thereon a strong frame, B, in the upper end of which is journaled the shaft B′.

C indicates pumps, arranged side by side at the bottom of the tank, having the usual pistons and rods, and acting by suction to draw in the suds.

The chamber *a* is covered in by a metallic friction-plate, *b*, having in it numerous perforations of small size, through which the water is expelled in forcible streams against the under side of the fabric to be cleansed.

The piston-rods *c* are pivoted to the ends of a horizontally-arranged walking-beam, *d*.

D′ indicates a strong rectangular frame, in which are journaled transversely the rubbing-rollers *a′*, which are provided upon one of their journal ends each with a ratchet-wheel, *b′*. The frame D′ bears upward against the ways D^2, that are strongly braced together, and has free endwise motion relative to them.

The ways are provided with a number of pins, *c′*, that project upward through the horizontal bars d^2 of the frame, and upon which are arranged the coil-springs *d′*, that cause the rollers to bear down upon the perforated plate and subject the fabric between it and the said rollers to a proper rubbing pressure. This pressure is decreased to suit various exigencies by means of the draw-cords d^4, supporting said frame and extending across the main frame B, a cord, *x*, secured to the middle of cords d^4, and attached to a cam-lever, *f*, and a suitable winch, *f′*, and cord f^2.

The roller-bearing frame D′ is reciprocated by means of a vertically-vibrating lever, *g*, having its fulcrum on the main frame, and connected to the said frame D′ by means of a link, *g′*, and with the crank *e* of the shaft B′ by a pitman, g^2.

Shaft B′ is provided with a pinion, *h′*, that engages a gear-wheel, h^2, upon a shaft, G′, having its bearings in frame B below shaft B′, and actuated by means of a crank, A′. This shaft has on its other end a crank-arm, *j*, connected by means of a pitman, *j′*, to a vertically-vibrating lever, G^2, having its bearing or fulcrum on the main frame and connected at its lower end to the walking-beam *d* by means of a link, *k*.

The rotation of shaft G′ imparts a horizontally-reciprocatory motion to the roller-bearing frame over the perforated plate *b*, and a vibratory motion to the walking-beam, causing the pumps to come into play alternately.

J indicates a rack-bar, having formed in it a longitudinal slot, *i*, and secured to the side of the roller-bearing frame by means of suitable headed guide-pins. This rack engages each of the ratchet-wheels of the rubbing-rollers, and is held against endwise motion during the reciprocation of the frame D′ by the bar *n*, pivoted at one end to the rack and at the other to the main frame.

As the roller-bearing frame moves toward the front end, *o*, of the tank the rack-bar aforesaid takes hold upon the ratchet-wheels *b′*, giving them motion, but releases them as the said frame moves backward, this result being

due to the rising of the said bar, allowed by the upward vibration of bar *n*. The said bar *n* is supported by a cord, *p*.

By means of the rack-bar and its connections intermittent rotation is given to the rollers *a'*, which causes them to slowly feed the garment being washed from the front to the rear end of the perforated plate, this action being automatic. The garment is thus thoroughly rubbed and frequently permeated by the streams of water issuing forcibly from the perforations of plate *b*, thus first loosening the impurities on the garment and then carrying them off therefrom. It consequently passes from under the rollers at the end of the plate *b* thoroughly cleaned; but if the garment be very dirty it may be necessary to pass it through the machine a second or even a third time.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the pumps C, having a chamber, *a*, and the perforated plate *b*, closing said chamber and extending over the pumps of a reciprocating frame, D', carrying the rollers *a'*, acting in connection with the said plate, substantially as specified.

2. The combination, with the reservoir or tank A, the frame B, erected thereon, and the ways D^2, supported under said frame and vertically adjustable relative thereto, of the endwise-reciprocating frame D', carrying the rollers *a'*, the stationary perforated plate *b*, the pumps C, and chamber *a*, both covered by said plate, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

FRANCIS L. MITCHELL.

Witnesses:

R. W. MUSSER.

JOHN K. PAULSON.