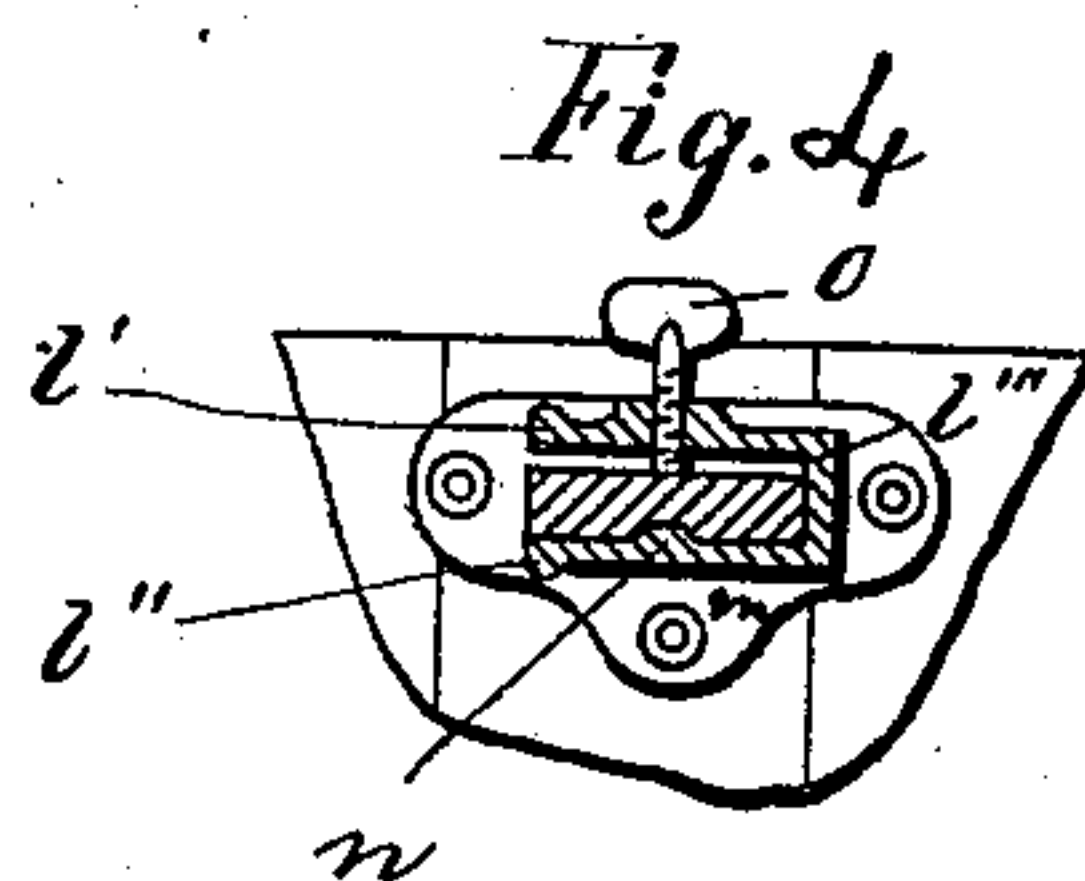
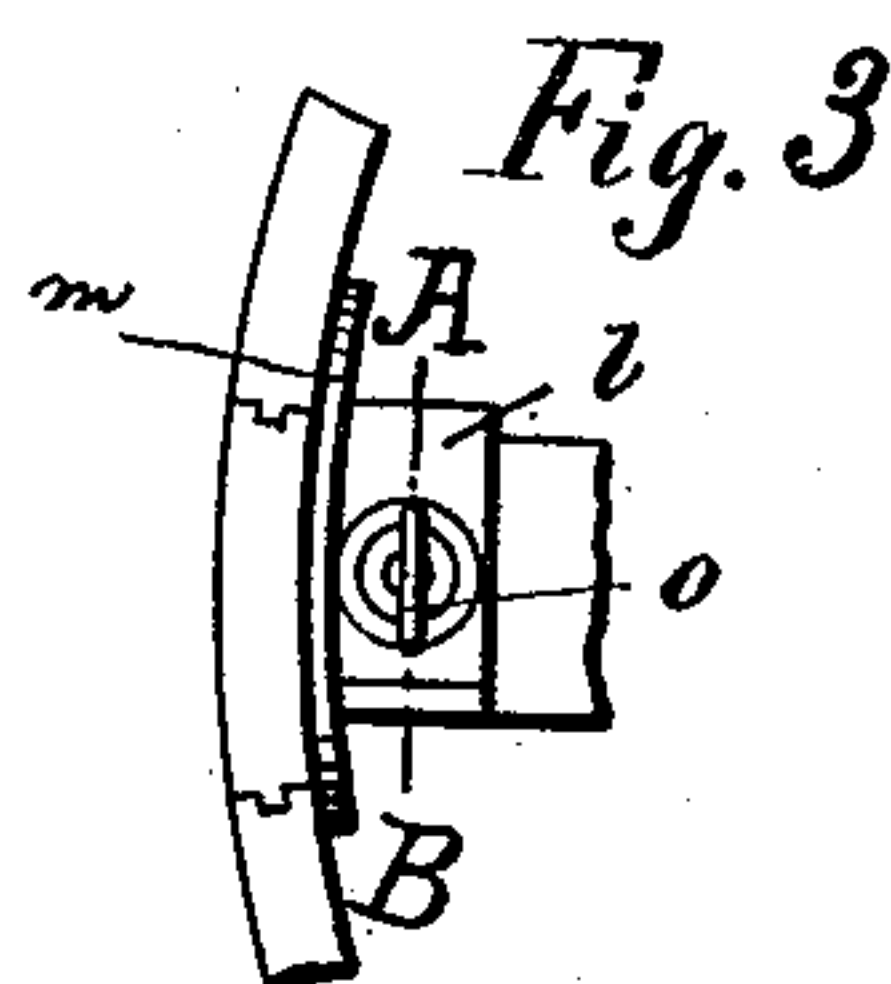
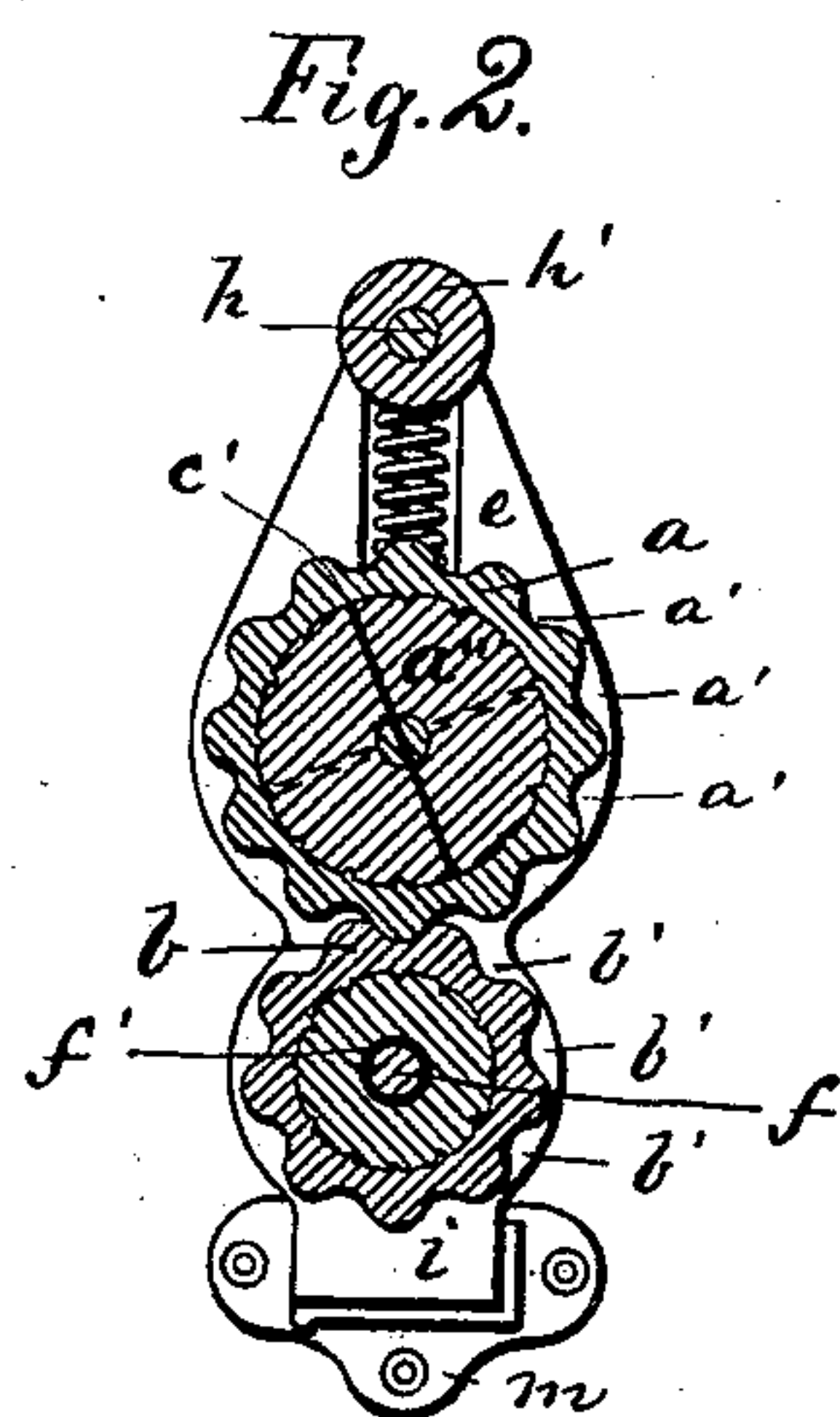
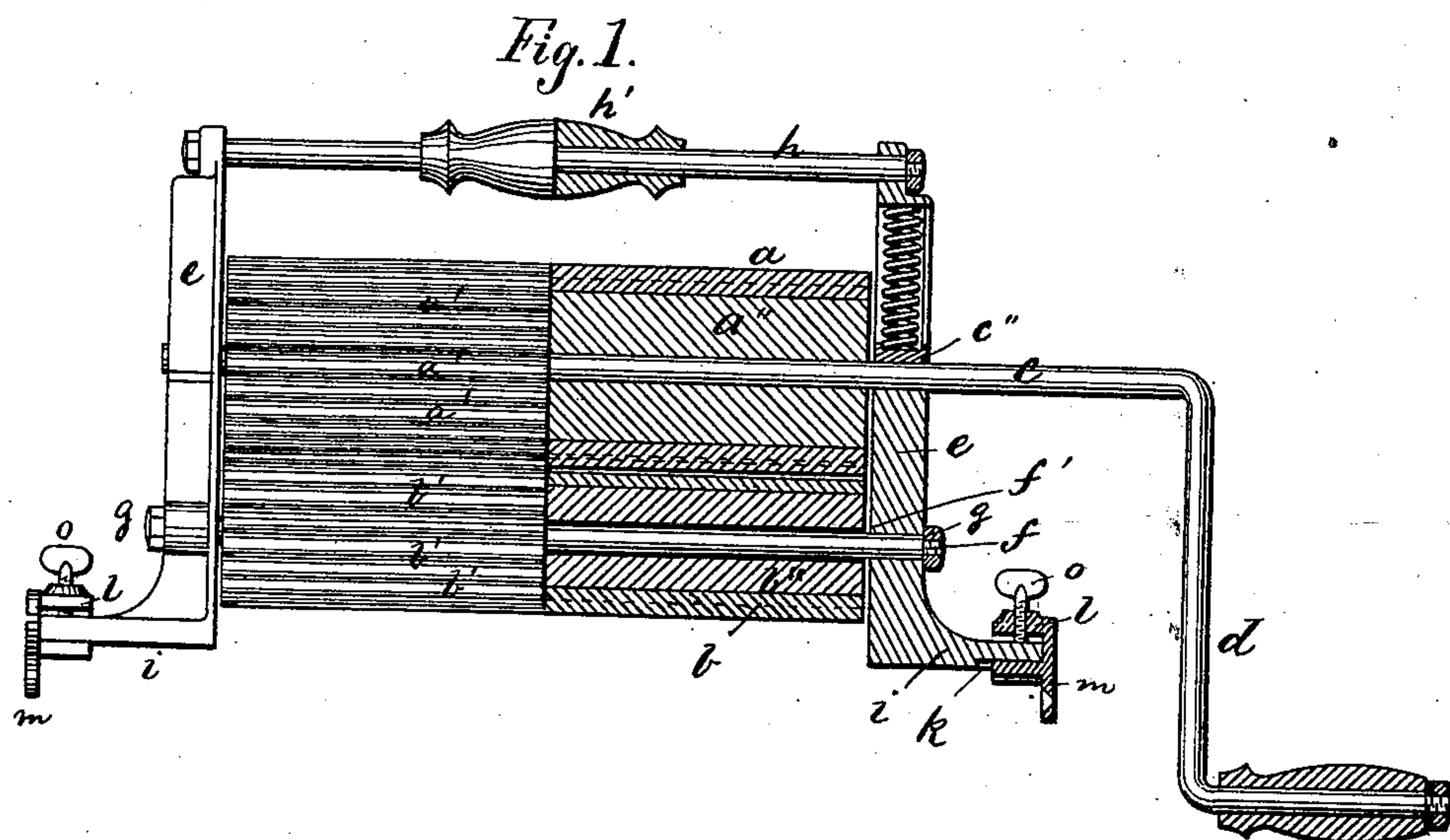


J. W. CALEF.
Washing-Machine.

No. 201,224.

Patented March 12, 1878.



WITNESSES:

Alvan Andriew.

Henry Chadbourne

INVENTOR:

Joseph Warren Calef

UNITED STATES PATENT OFFICE.

JOSEPH W. CALEF, OF NORTH EASTON, MASSACHUSETTS, ASSIGNOR TO
OLIVER AMES.

IMPROVEMENT IN WASHING-MACHINES.

Specification forming part of Letters Patent No. **201,224**, dated March 12, 1878; application filed
December 12, 1877.

To all whom it may concern:

Be it known that I, JOSEPH WARREN CALEF, of North Easton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Washing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in portable washing-machines, consisting of a pair of longitudinally-corrugated rubber rollers, one of which is secured to a shaft located in yielding bearings, and provided with a crank by which it can be revolved. The other grooved rubber roller is made to run freely around a stationary shaft secured to the upright frames of the machine. The lower end of each upright frame is provided with an angular foot-piece, having a notch on its under side fitting into a holding-piece designed to be secured to the inside of the tub or other receptacle in which the washing is done. Each of said foot-pieces is open on one side for the reception of the foot-piece of the frame, and is furthermore provided with a projection or guide fitting into the recess or notch on the under side of the foot-piece, and, finally, with a thumb-screw on the top for the purpose of fastening the foot-piece to the holding-piece. Said holding-pieces are arranged with their jaws opening in opposite directions, so that the frame of the machine can easily be inserted or removed from them by swinging the frame of the washing-machine on its center.

The lower loose-running longitudinally-corrugated roller is provided with a central hollow metallic sleeve or tube fitting loosely around the stationary shaft for the said roller.

Both rollers are preferably made with a core of wood or other suitable material, around which the longitudinally-corrugated rubber is secured; but I may also make the rollers of solid rubber, or otherwise, as may be desired. This machine has no bar or extension between the frames below the lower roller, which is gen-

erally considered as a great obstacle to the clothes that overhang the lower roller during the progress of the washing.

With this my improved machine I am able to wash clothing of thick or thin materials a great deal quicker and with less effort than could be done on any of the ordinary machines. The rotary longitudinally-grooved rollers, as they are rotated, press the clothes between them, and thus effectually cleanse and wash the same without the need of a rubbing-board, or without in the least tearing or defacing them.

On the accompanying drawings, Figure 1 represents a sectional elevation of my invention. Fig. 2 represents a cross-section over the rollers. Fig. 3 represents a plan view of the foot-piece of the frame and its holding-piece, and Fig. 4 represents a cross-section of the foot and holding pieces on the line A B, shown in Fig. 3.

Similar letters refer to similar parts wherever they occur on the drawings.

a represents the upper, and *b* represents the lower, rubber roller. Both rollers are grooved longitudinally from end to end all around the circumference, as shown by the grooves *a'* *a'* *b'* *b'*. *a''* represents the core of the upper roller, that is firmly secured to the crank-shaft *c* by means of the pins *c'* *c'*, or in a suitable manner. The shaft *c* is provided with a crank, *d*, by which it is operated. The said shaft *c* is made to rotate around its axis in yielding bearings *c''* *c''* in the frames *e e*, as shown. *b''* represents the core of the lower roller, having a metallic tube or sleeve, *f'*, that fits loosely around the stationary lower shaft *f*, the latter being firmly secured to the frames *e e* by means of nuts *g g* on the outside of said frames and collars on the shaft on the inside of the frames, as shown in Fig. 1. *h* represents an upper brace or stay between the frames *e e*, above the upper roller *a*, which brace is provided with a suitable handle, *h'*, by which the machine can easily be lifted out of the washing-receptacle, or otherwise transported with ease. *i i* represent the foot-pieces, each forming a lower angular termination of each of the frames *e e*. Each foot-piece is provided on the under side with a notch or recess, *k k*, as shown. *l l* rep-

resent the holding-pieces into which the foot-pieces *i i* are inserted and secured when the washing-machine is in use. Each holding-piece *l* is provided with a flange, *m*, that is screwed or otherwise secured to the inside of the tub or washing-receptacle, a portion of which is shown in Fig. 3.

Each holding-piece is formed of a top, *l'*, bottom *l''*, and one close side, *l'''*, the part opposite to the side *l'''* being open, as shown, for the insertion of the foot-piece on the washing-machine. The bottom of each holding-piece is provided on the inside with a projection or guide, *n*, fitting into the recess or notch *k* on the under side of the foot-piece when the latter is inserted into the holding-piece *l*.

Each holding-piece is further provided with a thumb-screw, *o*, as shown, by which the foot-piece *i* and holding-piece *l* are firmly secured together when the machine is in its proper position for use on the tub or other washing-receptacle.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. A washing-machine consisting of one longitudinally-corrugated rubber roller, *a a' a'*, firmly secured to its shaft *e*, in combination

with the longitudinally-corrugated rubber roller *b b' b'*, provided with a central hollow metallic tube or sleeve, *f'*, running loosely on its stationary shaft *f*, substantially as and for the purpose set forth and described.

2. In combination with the upright frames *e e* and foot-pieces *i i*, having notches *k k*, the holding-pieces *l l*, adapted to be arranged with the jaws opening in opposite directions to permit of the removal or insertion of the frame therein by a half-turn of the frame, and provided with projections *n n* and the thumb-screws *o o*, to prevent lateral, vertical, or horizontal displacement, substantially as and for the purposes set forth.

3. The combination of frame *e*, having yielding bearings *c''*, with shaft *e*, to which is firmly secured roller *a a' a'* and roller *b b' b'*, sleeve *f'*, and shaft *f*, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own invention I have affixed my signature in presence of two witnesses.

JOSEPH WARREN CALEF.

Witnesses:

ALBAN ANDRÉN,

HENRY CHADBURN.