

No. 647,564.

Patented Apr. 17, 1900.

F. D. HARDING.
WASHING MACHINE.

(Application filed Jan. 12, 1899.)

(No Model.)

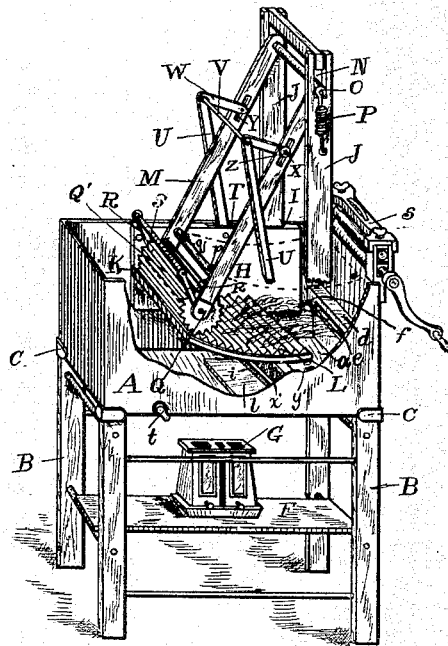


Fig. 1

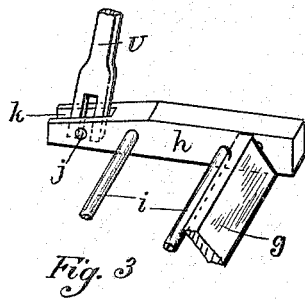


Fig. 3

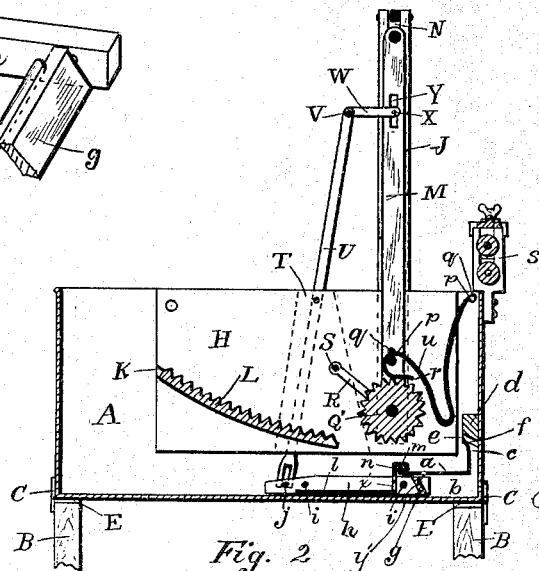


Fig. 2

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UNITED STATES PATENT OFFICE.

FRED D. HARDING, OF BALDWIN, MAINE.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 647,564, dated April 17, 1900.

Application filed January 12, 1899. Serial No. 701,899. (No model.)

To all whom it may concern:

Be it known that I, FRED D. HARDING, a citizen of the United States of America, residing at Baldwin, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Washing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in washing-machines, and more particularly to that class of machines which have a scrubbing-board, an oscillating scrubbing-roller, and mechanism connected with said oscillating frame carrying a roller, whereby an intermittent stream of water is thrown upon the board by the oscillation of said frame.

In the drawings herewith accompanying and making a part of this application, Figure 1 is an isometric view of my improved machine, parts being broken out to show the operating mechanism and the apron indicated in dotted lines. Fig. 2 is a central sectional view of same, and Fig. 3 is a detail view showing the plunger and its connection with the sweep.

Same letters of reference refer to like parts.

In said drawings, A represents a tub of a suitable size, shape, and material. The tub for convenience of operation is mounted on a suitable bench consisting of a rectangular frame having four posts B. Secured to the tops of the posts are angular stays C, which are of universal application by reason of a centrally-located web E, which rests upon the tops of the posts. The upright posts are connected by suitable rounds upon which rests a shelf or bracket F, which in turn supports a suitable heating apparatus G.

Secured to either side of the inside of the tub are plates H, between which and the sides of the tub, in grooves I, for convenience are set upright bars J, which are held rigidly by said plates and sides of the tub. In grooves K in the sides of said plates is mounted a corrugated scrubbing-board L, which is curved and projects downwardly and forwardly, as seen in the drawings. A rectangular frame M is loosely mounted in slots N in the top of the upright bars J. The frame is pivotally mount-

ed by having the ends of the upper cross-bar of the frame extend beyond the sides of the frame and into the slots in the bars J. The frame is held yieldingly down by springs P, secured to the bars J and the ends of the cross-bars in the frame. In the lower extremity of the frame, in suitable castings Q, is journaled a fluted roller Q', adapted to register and operate on said scrubbing-board. The castings have projecting lugs R, which carry a handle-bar S. Pivotally mounted in slots or grooves T, made in the plates H next the sides of the tub, are sweeps U, which are connected together at the top by a cross-bar V and connected to the aforesaid swinging frame by links W by means of bolts X passing through the said links and slots Y in the sides of said frame, the ends of the links being adjustable vertically in said slots and held at any desired position therein by means of nuts Z on said bolts. The grooves T in the sides of the plates may, if desired, be greater in extent at the bottom than at the top, as indicated in Fig. 2. In the bottom of the tub is secured an angular plate *a*, forming between it and the bottom and end of the tub a conduit *b*. The upright portion of the angular plate is bent inward, as seen at *c*. Above the edge of the angular plate is a transverse bar *d*, forming between it and said plate a small orifice *e*. The mouth of the orifice may be somewhat smaller than the throat. The ends *f* of the bar *d* rest down upon the edge of the angular iron, making the orifice of less extent than the width of the tub, thus limiting the width of the stream of water delivered.

Adapted to reciprocate in the horizontal portion of the conduit formed by the angular iron and the bottom of the tub is a plunger *g*, pivotally mounted in a rectangular frame having sides *h* and suitable cross-bars *i*, one of said cross-bars lying in the path of the pivoted plunger and adapted to limit the upward movement of the lower edge of the plunger when it is drawn back in said conduit, said plunger being eccentrically mounted. The plunger is somewhat wider than the depth of the conduit and can only assume a position extending downwardly and diagonally, but subject to said limitation has some movement on its pivot. In the free end of the

side bars *h* are pins *j*, and the lower ends of the sweeps are forked and loosely bestride said pins. The ends of the side bars *h* have slots *k*, the pins pass through the slots therein, and the forked ends of the sweeps engage the pins within said slots, as clearly illustrated in Fig. 3. This arrangement allows the ends of the sweep to adjust on the pins and prevents the lifting of the plunger-frame, which would result if the pivot were fixed.

To prevent the clothes while being washed from being drawn into the conduit and interfering with the operation of the plunger, I cover the open end of the conduit and the plunger, with its frame, with a perforated shield *l*. The shield may be secured in place conveniently and removably by having the inner end of the angular iron turned up, forming a rim *m*, and provide the shield with an offset *n*, adapted to engage said rim. The vertical part of the shield extends to the bottom of the tank just back of the plunger and just filling the space between the sides of the plunger-carrying frame, said vertical portion having perforations *X'* therein to admit water to the conduit behind the plunger.

In the rear end of the conduit, at the top, are perforations *y'*, which are over and in front of the plunger when it is drawn back to its fullest extent, as when the roller is off the board, as seen in Fig. 2. For the purpose of pumping this extension of the conduit would be unnecessary, because no pumping is done or desired when the roller is off the board; but it is necessary to keep the plunger in position. Now it will be evident that no pumping force will be required until the plunger advances in the conduit beyond the holes *y'*, which takes place about the time the roller takes the board when being swung toward the operator. This is of great advantage, because it makes it very much easier for the operator, no pumping force being required until the roller takes the board.

To prevent water or steam from being thrown or rising into the face of the operator, I secure a flexible apron *u* above the board, one end being secured by suitable eyelets *p* to pegs *q* at the front of the tub and at a point between the ends of the apron and similar eyelets adapted to engage similar pegs on the oscillating frame. The free end *r* of the apron hangs loosely down upon the roller.

The tub may be provided with a wringer *s* and may have at the bottom a waste-pipe *t*.

The operation of my improved machine is as follows: In operation the clothes to be washed are placed upon the scrubbing-board. The roller-bearing frame is oscillated over the clothes upon the board. The sweep, when the frame is drawn backward, moves the plunger forward in the conduit and forces a stream of water through the orifice upon the clothes upon the board, as shown in Fig. 1. As the roller-bearing frame is pushed forward the sweep draws the plunger back, causing its lower edge to float upward until the upper

edge comes in contact with the limiting-bar and allows a fresh supply of water to pass behind the plunger into the conduit. Thus the continual oscillation of the plunger throws an intermittent stream of water upon the board. The distance the plunger moves, and consequently the quantity of water to be thrown upon the board, is regulated by the adjustment of the links connecting the upper ends of the sweep in the slots in the swinging frame.

The upright bars *J* are located in front of the front edge of the scrubbing-board, so that when the swinging frame is in its normal position there is an open space between the edge of the board and the roller. This is an important feature, because it renders unnecessary any devices for supporting the roller out of the way of the operator when the roller is not in use.

The operation of the apron is shown in one position in dotted lines in Fig. 1 and in the other position in Fig. 2. The apron, when the machine is in operation, of course becomes wet, and the free end rests continuously upon the roller, traveling from one side to the other as the frame oscillates, and thus effectually preventing the water from being spattered upon the operator.

The operation of the other parts of my improved machine not hereinbefore described are obvious from the illustration and description hereinbefore given.

Having thus described my invention and its use, I claim—

1. In a washing-machine, a tub, a scrubbing-board mounted therein, upright bars secured to the tub, a swinging frame pivotally mounted in said bars and carrying a scrubbing-roller on its free end, sweeps pivotally mounted in said tub and secured at the top to said swinging frame, a reciprocating frame carrying a plunger, the lower extremities of said sweeps having an automatic sliding vertical adjustment on said frame, and a conduit in which said plunger reciprocates.

2. In a washing-machine, a tub, a scrubbing-board mounted therein, upright bars secured to the tub, a swinging frame pivotally mounted in said bars and carrying a scrubbing-roller at the lower end thereof, sweeps pivotally mounted in said tub, slots in the sides of said swinging frame, links connecting the upper ends of said sweeps and said sides of said swinging frame, a plunger secured to and adapted to be operated by the lower ends of said sweeps and a conduit in which said plunger reciprocates.

3. In a washing-machine, a tub, a scrubbing-board mounted therein, upright bars secured to the tub, a swinging frame mounted in said bars and carrying a scrubbing-roller on its lower extremity, sweeps pivotally secured to said tub, means for connecting the upper extremities of said sweeps with said swinging frame, an angular conduit in said tub, an upwardly-projecting flange at the edge of said conduit, a plunger-carrying frame

adapted to reciprocate in said conduit and means for connecting said plunger-frame with the lower extremities of said sweeps, a shield having a perforated vertical section, an off-set on one edge adapted to removably engage said flange and a horizontal section adapted to rest on the bottom of the tub and adapted to extend under and to be held down by said plunger-frame and means for admitting water to the conduit behind the plunger.

4. In a washing-machine, a tub, a scrubbing-board mounted therein, a swinging frame pivotally mounted and carrying a roller adapted to reciprocate on said board, sweeps pivotally mounted in said tub and adapted

to be operated by said swinging frame, a plunger adapted to be reciprocated by said sweeps and a conduit in which said plunger reciprocates, means for admitting water into said conduit back of said plunger and means for admitting the water into said conduit in front of said plunger when the roller is off the scrubbing-board.

In testimony whereof I affix my signature, in presence of two witnesses, this 22d day of November, A. D. 1898.

FRED D. HARDING.

Witnesses:

ELGIN C. VERRILL,
NATHAN CLIFFORD.