(No Model.)

F. D. HARDING.

WASHING MACHINE.

No. 589,427. Patented Sept. 7, 1897.

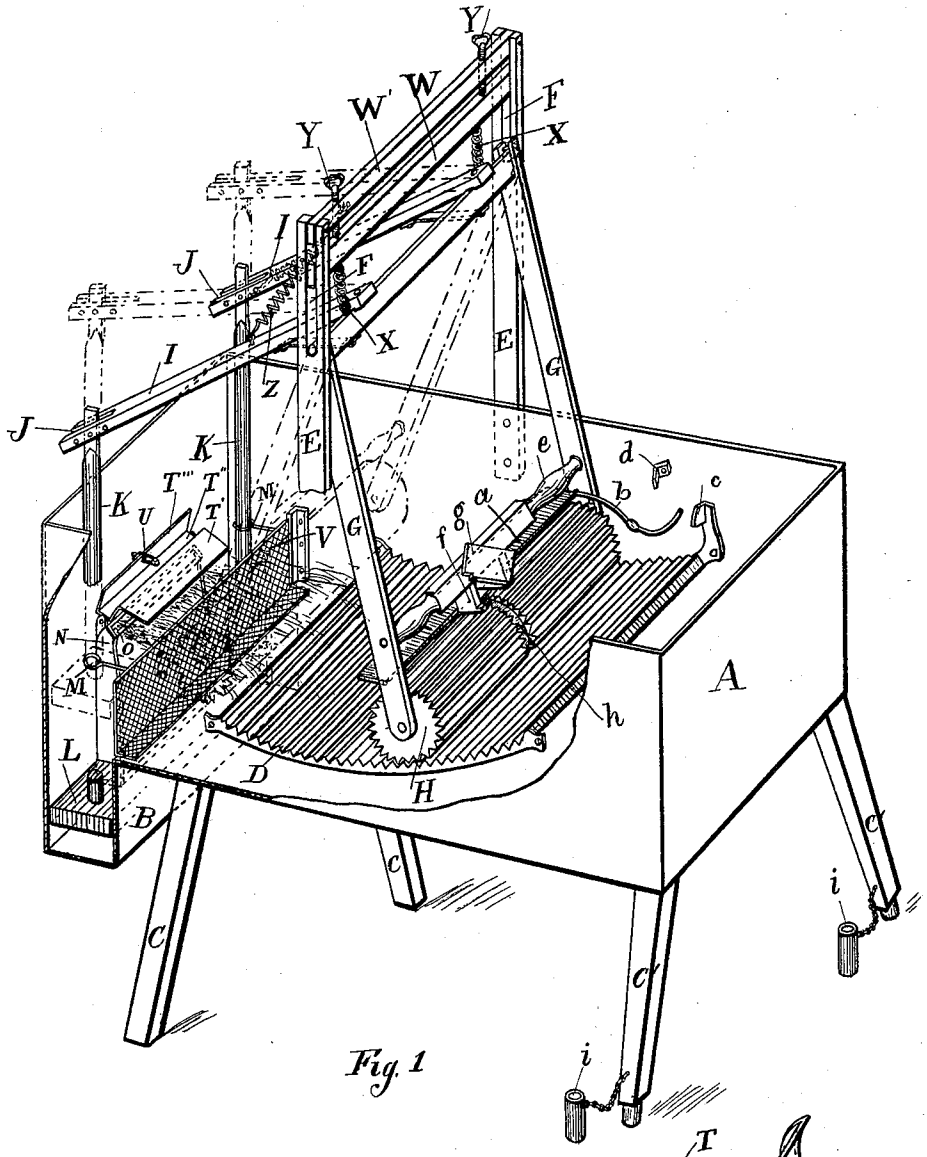


Fig. 1

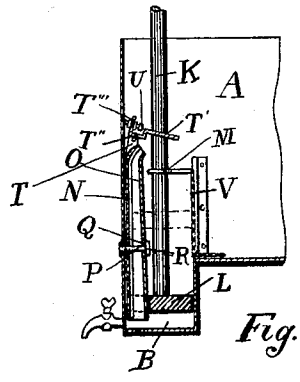


Fig. 2.

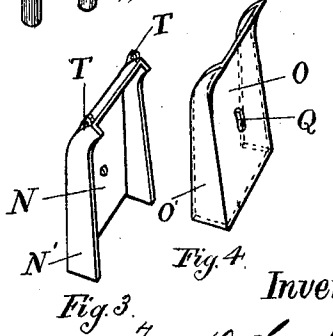


Fig. 3. Fig. 4.

Witnesses:
Marion Richards.
Walter T. Caufield.

Inventor.
Fred. D. Harding,
by Merrill & Clifford,
his attorneys.

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UNITED STATES PATENT OFFICE.

FRED D. HARDING, OF BALDWIN, MAINE.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 589,427, dated September 7, 1897.

Application filed February 3, 1897. Serial No. 621,797. (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 having a stationary scrubbing-board and an oscillating rubbing-roller adapted to operate thereon. It is designed to throw automatically and intermittently a supply of water upon the surface of the board, to prevent the clothes from getting in the path of the operative parts, to hold the roller automatically and yieldingly away from the board and out of the way of the operator when not in use, to prevent spattering, and to regulate the use of the soap.

In the drawings herewith accompanying and forming a part of this application, Figure 1 is a perspective view of my machine, the side being broken out to show the interior arrangement of the mechanism. Fig. 2 is a sectional detail view of the end of the tank having the offset, delivery-spout, and plunger; and Figs. 3 and 4 are detail perspective views of the back and front parts, respectively, of the delivery-spout.

Like letters refer to like parts.

In said drawings, A represents a suitable tank having at one end a downwardly-extending offset B, said tank being supported upon suitable legs C and C′ and having therein near the bottom a scrubbing-board D. Secured to the upright walls of the tank in any convenient manner are standards E, having near the top slots F. Journaled in the bottom of said slots F is a rectangular frame G, in the lower extremities of which is journaled the roller H. Secured to the cross-bar of the frame are arms I, in the ends of which are sockets J. Pivotally secured to the ends of said arms are connecting-rods K, carrying on the bottom a plunger L, adapted to reciprocate into and out of said offset.

Secured to the end of the tank is a wide delivery-spout, its lower end extending down into said offset, having a wide orifice extending forwardly and adapted to deliver a sheet of water therefrom upon the scrubbing-board rather than a round stream. The delivery-spout consists of two telescoping sections N and O, secured together by a bolt P, and in order that the size of the orifice may be adjusted the bolt passes through a vertical slot Q in the section O and has on the end thereof a nut R, so that the section O may move up or down on said bolt and be secured in any given position by said nut. The two side sections have side flanges N′ and O′, respectively, and the body portions are curved forwardly at the top, as seen in the drawings. The delivery-spout extends downwardly to a point near the bottom of the offset B in the tank.

At the sides of the delivery-spout the flanges extend upwardly, forming ears T, in which is journaled a hood, the journals being so arranged that the forward portion T′ rests normally down upon the end of the spout, but being nearly counterbalanced by the rear portions T″ and T‴. Thus the water issuing from the end of the spout is directed forward and downwardly upon the board. To regulate the throw of the water upon the board, the hood has an adjusting threaded bolt U passing through the part T‴ and adapted to engage the wall of the tank and limit the upward movement of the forward portion of the hood. The angle at which the water is thrown from the orifice of the delivery-spout on the board can be regulated by changing the limit of the upward movement of the hood by means of said bolt.

To prevent the clothes while being washed from being drawn down into the path of the plunger, a perforated guard V is set in the bottom of the tank at a point near the edge of the offset portion, said guard being provided with rings M, through which the connecting-rods K pass. The guard should be of less height than the open end of the delivery-spout, so that the water from the spout will be thrown over the guard. Secured to said standards is a cross-head W, between which and the upper bar of the swinging frame are coiled springs X, adapted to hold the frame

steady, but to yield to permit the roller-frame and roller to rise to pass over bunches that may be in the clothes on the board.

If desired, the cross-head may be made adjustable, its ends being loosely mounted in slots F in the standards, and a supplemental stationary cross-head W′, secured to said standards.

Thumb-screws Y, set in cross-head W′, bear against the sliding cross-head and may be screwed down or up, thus increasing or diminishing the compression of said springs.

To hold the roller-frame away from the board when not in use, a strong coil-spring Z is secured to the standard and to the arm I, the tension of the spring tending to hold the frame in the forward position away from the board and out of the way of the operator, (indicated by dotted lines, Fig. 1,) the roller swinging on the arc of a circle beyond and above the end of the board and held normally but yieldingly suspended thereby.

Pivotally secured to the front of the roller is a guard *a*, adapted to prevent the spattering of the water as it is thrown upon the board and as it comes in contact with the roller in its reciprocation. Secured to said guard is a curved arm *b*, which is adapted to contact with a lug *c*, secured to the side of the tank, when the roller-frame is withdrawn, and riding upon said lug depresses the guard just at the time that the roller is drawn back and the water is thrown upon the board, so that the water that would otherwise be thrown upon the floor is thrown back down upon the board. The movement of the roller-frame toward the operator may be limited by a lug *d*, secured to the side of the tank against which the upright portion of the frame contacts.

Secured to the handle *e* of the roller-frame is a soap-box *f*, having a sliding cover *g* and no bottom, arranged directly over the roller. The roller has a circumferential groove *h* directly beneath the soap-box, so that when the soap is placed in the box it rests down upon the roller at a point over said groove. The soap resting directly upon the corrugated roller would be worn away too rapidly; but it will be seen that the smooth bottom of the recess will tend to retard the wear of the soap as soon as the portion over the groove strikes the bottom thereof, the bottom of the groove then presenting a perfectly smooth surface to the portion of the soap in the groove. The wider the groove the less rapid will be the wear.

The legs C′, which support the tank at the end next to the operator, may be somewhat longer than the others, thus causing the bottom of the tank to incline downwardly toward the offset end to facilitate the flow of the water into the offset. In order to reduce the amount of water required when only a few things are to be washed, I provide the legs C′ on the end opposite the offset with means for lengthening them—for example, extension-tubes *i*, adapted to be secured thereto.

The operation of my improved device is as follows: Water is placed in the tank and the clothes upon the scrubbing-board. The scrubbing-roller is normally in the position shown in dotted lines in Fig. 1. The operator, standing at the end opposite the offset in the tank, draws the swinging frame and roller toward him, which causes the plunger to descend in the offset below the bottom of the main portion of the tank. As soon as it passes below the bottom of the tank the water confined below the plunger is displaced and thus forced up through said spout and by reason of the curved position of the orifice and the hood is directed forward upon the board. The hood in its normal position rests down upon the end of the delivery-spout and is thus out of the way of the roller and saves space in the tank, the hood being raised by the force of the water. At the completion of the stroke the water is being thrown at its farthest distance and falls at a point directly in front of the roller. As the swinging frame is drawn toward the operator the lever-arm, which is attached to the pivoted shield and holds the shield normally up, engages the lug at the side of the tank and is tipped down in front of the roller. This is important because the roller and shield swing on the arc of a circle and the shield in the same position relative to the roller which would be right to prevent the water from spattering when the swinging frame is drawn way back it would be tipped down, so as to receive the water on the top of the shield instead of under it when the roller was at a point at or near the center of the board. The swinging roller is then pushed back or allowed to return by force of the spring acting thereon to substantially the position shown in dotted lines, thereby raising the plunger to a point above the bottom of the tank. As the plunger rises above the bottom of the tank the water flows from the tank back into the offset through the space between the bottom of the tank and the plunger in its raised position.

The clothes in the bottom of the tank are prevented from being drawn down into the offset into the path of the plunger by the perforated guard set between the board and the offset. The continued oscillation of the roller causes a sheet of water to be thrown intermittently upon the scrubbing-board.

The operation of the soap-feeding box is automatic and at first affords a free supply of soap, due to the fact that all parts of the cake except the part directly over the groove rest down upon the corrugated surface of the roller, thus wearing directly thereon. After a little this ridge becomes equal to the depth of the groove, and thus presents a smooth surface to the wear of the roller instead of having all the wearing surface fall on the corrugated surface of the roller. It will be evi-

dent that the depth of this groove may be varied and that more than one groove may be employed, if desired.

The construction of the delivery-spout in two sections, removable and adjustable, admits of their being made so as to throw a sheet of water of any desired thickness instead of a stream, which adds very much to the value of the machine.

The construction of the tank with a downwardly-extended offset in which the plunger operates obviates the necessity for valves and enables the machine to throw a stream of water full force even at the first movement of the scrubbing-roller, the great advantage of which is manifest.

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

1. In a washing-machine, a suitable tank provided with a downwardly-extending offset at one end, a scrubbing-board, standards, an oscillating frame mounted on said standards and carrying a scrubbing-roller, a plunger adapted to be forced into and withdrawn from said offset by the oscillation of said roller and a delivery-spout having its lower extremity extending down into said offset, substantially as and for the purposes set forth.

2. In a washing-machine, a suitable tank having a downwardly-extending offset at one end, a scrubbing-board, upright standards, an oscillating frame mounted in said standards and carrying a scrubbing-roller, a plunger secured to and adapted to be operated by the oscillation of said frame, said plunger being adapted to be forced into and entirely withdrawn from the offset, a delivery-spout having its lower end extending down into said offset and its delivery and curved ends toward the scrubbing-board, a hood pivotally mounted above the delivery end of said spout and resting lightly thereon and means for limiting the upward swing of said plate, substantially as and for the purposes set forth.

3. In a washing-machine, a suitable tank having a downwardly-extending offset at one end, a delivery-spout having one end extending down into said offset, a plunger adapted with the delivery-spout to close said offset and to be alternately forced down into and lifted out of the same, a perforated guard between the scrubbing-board and the offset and means for operating said plunger, substantially as and for the purposes set forth.

4. In a washing-machine, a suitable tank having a downwardly-extending offset at one end, a plunger operating therein and adapted to be withdrawn entirely therefrom, a delivery-spout having one end extending down into said offset and the other curved to deliver water upon the scrubbing-board, a scrubbing-board mounted in said tank, standards secured to the sides thereof, a rectangular frame pivotally mounted in said standards and carrying a scrubbing-roller at its lower extremity, horizontal arms secured to said swinging frame, connecting-rods between said arms and plunger, and a tension-spring connecting said standards and said horizontal arm, said spring tending to hold the roller suspended above the board at the end opposite the operator, substantially as and for the purposes set forth.

5. In a washing-machine, a tank having a downwardly-extending offset at one end, a plunger operating in said offset, a delivery-spout mounted in said offset, the upper end extending above the offset and curved toward the opposite end of the tank, a hood pivotally mounted on said delivery-spout and adapted to rest normally down upon the delivery end thereof and means for adjustably regulating the upward movement of said hood, substantially as and for the purposes set forth.

6. In a washing-machine, a suitable tank having a downwardly-extending offset at one end, a plunger adapted to reciprocate in said offset, a delivery-spout consisting of two telescoping sections mounted in said offset, means for adjusting said sections to regulate the size of the orifice and means for operating said plunger in said offset, substantially as and for the purposes set forth.

7. In a washing-machine, a suitable tank having a downwardly-extending offset at one end, a plunger, a delivery-spout, standards, an oscillating frame carrying a scrubbing-roller adapted, through intermediate mechanism, to operate said plunger and a water-shield pivotally mounted on the roller-frame and normally held in a raised position and means for tilting said guard downwardly as the swinging frame is oscillated, substantially as and for the purposes set forth.

8. In a washing-machine, a suitable tank, a scrubbing-board mounted therein, standards, a swinging frame carrying a scrubbing-roller, means for intermittently conveying water to the board, a shield pivotally mounted on the swinging frame near said roller, a lug on the side of the tank and a curved arm secured to said pivoted shield whereby, when the roller is drawn back, said arm contacts with said lug and depresses the shield in front of the roller, substantially as and for the purposes set forth.

In testimony whereof I affix my signature, in presence of two witnesses, this 1st day of February, 1897.

FRED D. HARDING.

Witnesses:
ELGIN C. VERRILL,
WALTER T. CAMP.