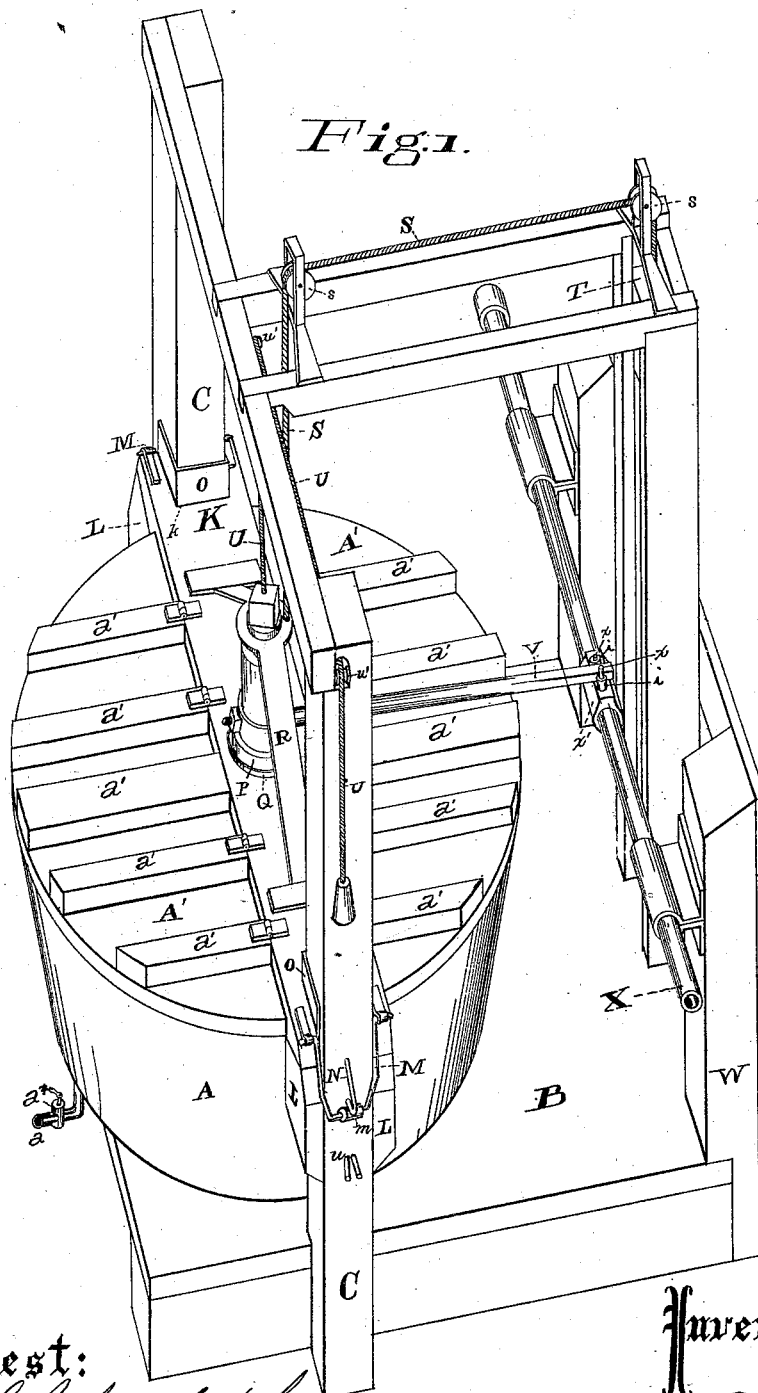


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Washing-Machine.

No. 217,549.

Patented July 15, 1879.



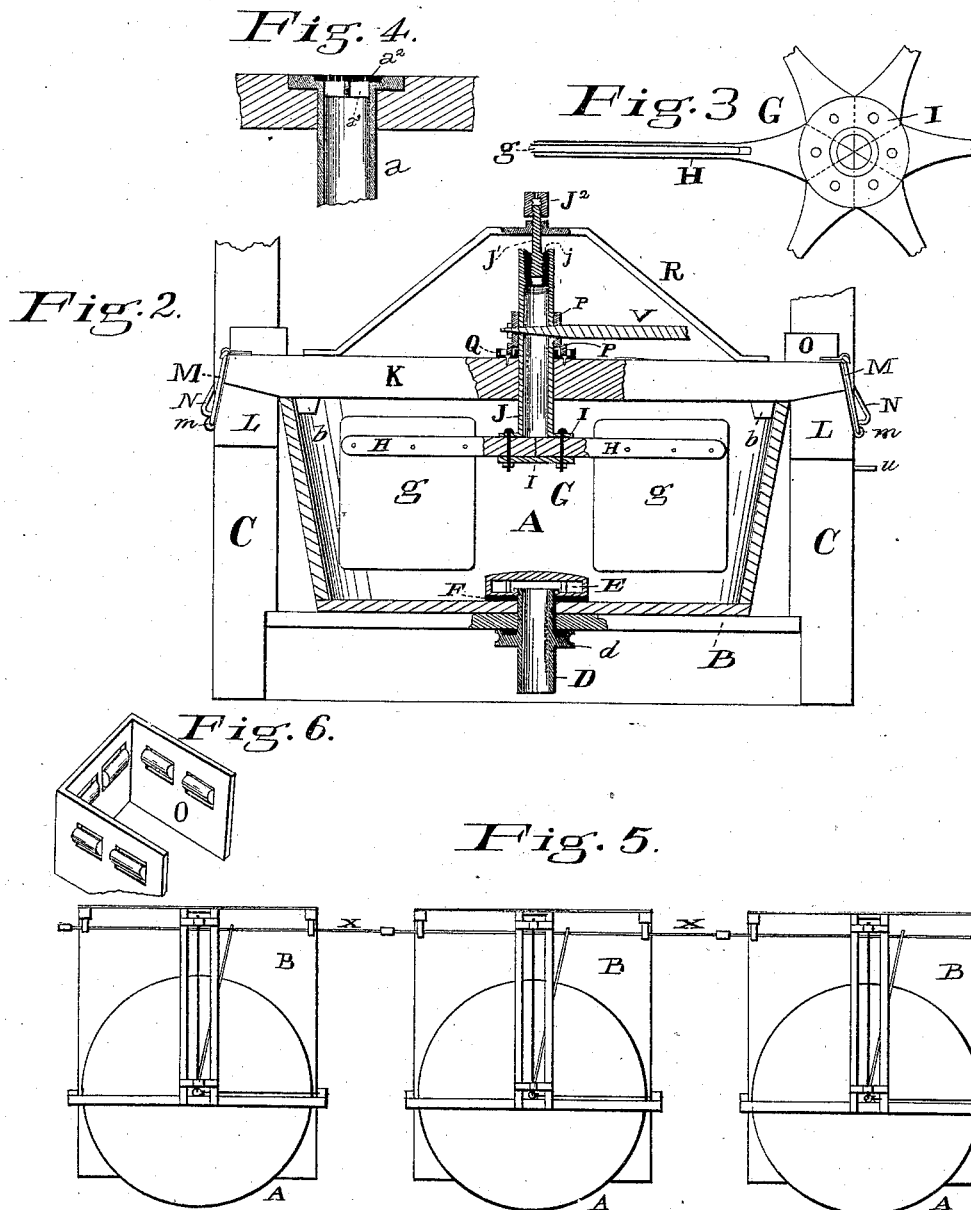
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# UNITED STATES PATENT OFFICE.

WILLIAM PRICE, OF CINCINNATI, OHIO.

## IMPROVEMENT IN WASHING-MACHINES.

Specification forming part of Letters Patent No. **217,549**, dated July 15, 1879; application filed August 17, 1878.

### *To all whom it may concern:*

Be it known that I, WILLIAM PRICE, of the city of Cincinnati, county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification.

My invention relates to a class of washing-machines which preferably employ steam as a means for purifying clothing; and it has for its objects to more thoroughly utilize the steam, and to provide a machine that shall more perfectly separate the dirt from the clothing at a less expense of power and with less wear upon the clothes, while being simple in construction and easy and convenient of management.

To these ends my invention consists, first, in certain means for more thoroughly securing the bearing that supports the agitating-dasher; second, in a certain construction whereby the dashers and dasher-shaft may be elevated and held in that position without opening the tub and thus allowing the steam to escape into the room, and at the same time the reciprocating device (whereby the dashers are agitated) may be thrown out of gear; third, in a certain construction whereby the dasher, its bearing, and the lids of the tub may be easily elevated and suspended, to enable the deposit and removal of clothes from the tub; fourth, in a peculiar construction of the dasher-shaft and radial arm (through which motion is imparted to the dashers) and the bearings of the shaft, whereby the three may be firmly united together and as easily separated for repairs; fifth, in certain means of operating the dasher through a radially-extending arm by means of a reciprocating rod; sixth, in a peculiar construction whereby the reciprocating rod and radial dasher-arm may be connected or disengaged while the rod is in motion, to start or stop the motion of the dasher.

In the accompanying drawings, Figure 1 is a perspective view of my machine. Fig. 2 is a partial central sectional elevation of my machine, the lids being removed and the top parts broken away. Fig. 3 is a top view of the dasher. Fig. 4 is a central sectional elevation of the upper part of the waste-pipe. Fig. 5 shows a series of my machines in plan.

Fig. 6 is a perspective view of a guide-plate provided with friction-rollers.

Referring to the drawings, A is the cleansing chamber or tub, mounted upon suitable platform B, and between vertical posts C. The tub at the bottom is provided with a waste-pipe, *a*, provided with a stop-cock, *a*<sup>1</sup>. The flange of this waste-pipe is sunk flush with the bottom of the tub, as shown in Fig. 4, and is provided with a depression, into which is placed the strainer *a*<sup>2</sup>. This strainer is supported by the usual radial supports *a*<sup>3</sup> across the mouth of the waste-pipe. In this machine, as the waste-pipe is large, the number of radial supports *a*<sup>3</sup> is preferably five or six.

The tub is preferably of the usual shape, slightly wider at the top than at the bottom, and it is provided at the bottom with a steam-pipe, D, about the center thereof, and which pipe pierces the bottom until its collar *d* comes in contact therewith, where it is secured by means of screw-head E and a water-tight gasket, F.

The collar *d* may fit against the bottom of the platform B. The head E is formed with a flat circular horizontal chamber, opening out through the periphery thereof into the tub. This chamber connects directly with the steam-pipe D, so that steam may be admitted thereto and be caused to enter the tub and forced out laterally under the clothes in all directions from its periphery.

By this means the steam is distributed evenly throughout the tub, and comes in contact with every part of the clothing submitted for cleansing, thereby securing a most perfect utilization of the steam.

The steam serves to loosen the dirt in the clothing, and in order to separate it therefrom, as well as to continually change the position of the clothing so that new portions shall be brought in direct contact with the steam, I have provided an agitating-dasher, G. This dasher consists of upright paddles *g*, in rectangular form, secured near their upper ends to radial arms H, secured by bolts to a hub, I. The hub I is provided with a shaft, J, to extend upward through a cross-piece, K, and supports the dasher in the tub.

By reason of the fact that the paddles *g* are secured to the radial arms *H* by their upper ends only, their lower ends are smooth and disencumbered, to enable their engaging freely with the clothing in the tub, and their corners are carefully rounded to prevent injury to the clothes. It has been found in practice that a very slight motion of the dasher is sufficient to agitate the clothing so as to free the previously-loosened dirt and change the position of the clothes, and consequently I have arranged the said dasher to oscillate about one-eighth of a revolution, although the movement may be made greater if desired.

The cross-piece *K* rests across the top edges of the tub, and by reason of the slots *k*, formed in its ends, it embraces the posts *C*, and rests upon blocks *L* upon the sides thereof. The supporting-surfaces of the blocks are inclined toward the tub and in the line of the cross-piece, whose ends are correspondingly beveled, so that when secured from vertical play by the clasps *M* and staples *N* it will also be secured against horizontal play, as will be readily seen.

The clasps *M* are provided with anti-friction rings *m*, to enable the easier fastening of the cross-piece. The ends of the cross-piece *K* are also provided with upwardly-extending guide-plates *O*, which embrace the posts *C*, and serve to steady the movement of the cross-piece when elevated or depressed. When desired these guide-plates *O* may be provided with friction-rollers, as shown in Fig. 6.

Hinged upon each side of the cross-piece *K* are lids *A'*, formed to snugly cover the tub, and provided with stiffening-strips *a'* above, and with flanges *b b* beneath, to conform closely to the inner surface of the tub, and serve to tighten the joint between tub and lids. A continuation of the flanges *b b* is formed upon the under side of the cross-piece, as shown.

To support the dasher *G* when in operation, its shaft *J* is provided with a downwardly-extending annular bearing, *P*, which rests in the groove of a corresponding annular plate, *Q*, on the cross-piece.

By this construction the bearing may be nicely lubricated without permitting the lubricant to drop into the cleansing-chamber, as the groove in the plate *Q* securely retains it.

The shaft *J* is preferably made hollow, as shown, and in its upper end is screwed a bushing, *j*, into which latter is screwed a pin, *J'*. The bushing *j* is formed with a countersunk cavity at its top, which may serve as an oil-receptacle to take up the superfluous lubricant at the brace *R*, immediately above it. When preferred, the bushing *j* may be cast solid with shaft *J*.

The brace *R* is supported from the cross-piece, as shown, and serves to steady the shaft *J*. The pin *J'* passes through an opening in the brace *R*, and over its top is screwed a cap, *J<sup>2</sup>*. This cap *J<sup>2</sup>* has a hole passing through its top, through which passes a hand-rope, *U*,

which is prevented from being detached from the cap by a knot in the interior of the cap.

Secured to the top of the brace *R* is a rope, *S*, preferably made of wire, which runs over pulleys *s*, and is provided at its other end with a weight, *T*, to nearly counterbalance the dasher, cross-head, and dependent devices. To elevate the said dasher, cross-head, &c., rope *U* is used. This rope runs up over guide-pulleys *u'*, and is provided with a handle at its free end. When the dasher is elevated by pulling on the rope *U*, it may be secured by pushing the handle under the fork *u* on the post *C*, the rope running between the tines of the fork.

The weight *T*, it will readily be seen, serves to assist the operator in elevating the dasher, cross-piece, and lids, which it is desirable, if not necessary, to do in order to introduce clothing to the tub or remove it therefrom.

Secured to the shaft *J*, above the cross-piece *K*, is a radial arm, *V*, which, in this case, passes through the annular bearing *P*, as well as the shaft, and secures it in position. The end of the arm which passes through the bearing-plate *P* and shaft *J* is tapered, to enable the taking up of wear.

The machine is readily detached for repairing by removing the handle *V*.

On account of the radial arm *V* passing through the vertical dasher-bearing shaft *J* and the bearing-collar *P*, the result of removing the radial arm is to entirely disconnect the bearing-collar and shaft.

If, now, when arm *V* is disconnected, the cap *J<sup>2</sup>* is unscrewed from the top of the shaft, the shaft, dasher-arms, and dasher-blades will immediately drop to the bottom of the tub. If, now, the tub-covering is elevated so high that the cross-piece *K* is entirely above the upper end of the shaft, the shaft and dashers can be taken out for repairs. Upon being replaced in the tub, (the dasher-shaft passing through cross-piece *K* and brace *R*), and the nut *J<sup>2</sup>* screwed on the end of shaft *J*, arm *V* being also placed through the shaft and bearing-collar, and the nut being tightly screwed onto the end of said arm, the whole is ready for work again.

It will be noticed that, on account of the peculiar construction of the machine, upon the hand-rope *U* being pulled the first result would be that the shaft *J*, together with the arm *V*, passing through it and bearing-collar *P*, would be elevated. Upon the hand-rope *U* being pulled farther down, the bushing *J'* would come in contact with the brace *R*, and the dasher-paddles would come in contact with cross-piece *K*. As soon as this happens, and further power is placed upon rope *U*, the whole top of the tub, together with the shaft and its attachments, is elevated, the counter-balance *T* coming in to aid the operator. The object of this arrangement, whereby the pulling down of hand-rope *U* through the first two or three inches results only in elevating the dasher,

shaft and its attachments, is very important. It enables the operator instantly and easily to throw the radial arm and the reciprocating devices, which will be described hereinafter, out of gear without stopping the motion of said reciprocating rod. The importance of this is more apparent when there are a number of tubs arranged to be worked by one rod. (See Fig. 5.)

Secured to suitable frame-work W upon the platform B is a horizontal reciprocating rod, X, which is provided with vertical projections *x*, to engage the free end of dasher-arm V. These projections are in the nature of set-screws, passing through a collar, *x'*, which they bind to the rod in any desired position, and thus fix their position.

Inasmuch as it is intended to disengage the arm V from the rod X when it is desired to stop the machine, one of the projections *x* is shorter than the other.

When the radial arm V is elevated, as described, the shorter projection no longer engages it, while the longer one does. The result is that arm V receives a sharp blow from the longer projection, and is knocked around so far that it will no longer be engaged by the sleeve or projections on rod X. When it is desired to reconnect them, the arm V is dropped between the projections while they are in motion without rod X being stopped.

To render this operation easier, and to reduce the friction of the connection, the projections are provided with friction-washers *ii*. The rod X is usually provided with a device to prevent its rotation, and is preferably reciprocated by steam, but may be operated by hand. When operated by steam it may be increased in length, in sections, or otherwise, and serve to operate a series of washing devices, like that shown in Fig. 5.

The construction whereby the agitating de-

vice may be thrown out of gear without elevating the tub-covering prevents the escape of steam into the room, and also the loss of heat and steam that would follow. The suds can be removed from the tub by opening the faucet *a*, and rinse-water can be introduced through a tube or pipe in the upper part of the side of the tub or in the cover without opening the tub and allowing the steam to fill the room.

Having thus described my invention, I claim—

1. In a washing-machine, in combination with the dasher thereof, the cross-piece K, secured against inclined blocks L, whereby horizontal as well as vertical play is prevented, substantially as specified.

2. The dasher-bearing shaft J, in combination with the radial arm V and the actuating-rod X, working in the direction of its length, as and for the purposes set forth.

3. The combination of the vertical dasher-bearing shaft J and the radial arm V, locking the shaft and bearing-collar P together, as shown, substantially as and for the purposes set forth.

4. In combination with the tub-covering and dasher-bearing shaft, the cord S, provided with weight T, and the hand-rope U, the former—namely, cord S—being attached to the tub-covering, and the latter—namely, rope U—being attached to the dasher-shaft, for the purposes specified.

5. The combination, in a washing-machine, of an elevating-rope, U, a movable dasher-bearing shaft, radial arm V, reciprocating rod X, and engaging device *x x'*, all arranged substantially as and for the purposes set forth.

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