(No Model.)

A. E. WORDEN.

WASHING MACHINE.

No. 493,957. Patented Mar. 21, 1893.

Fig II.

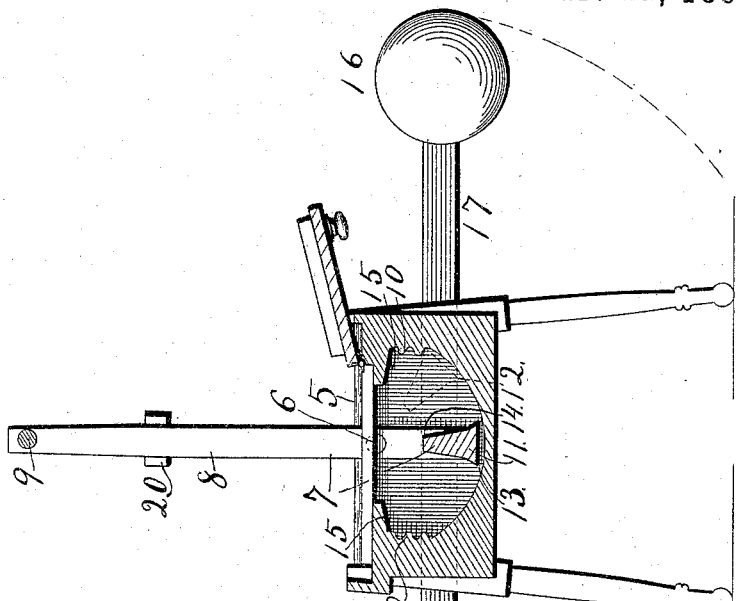
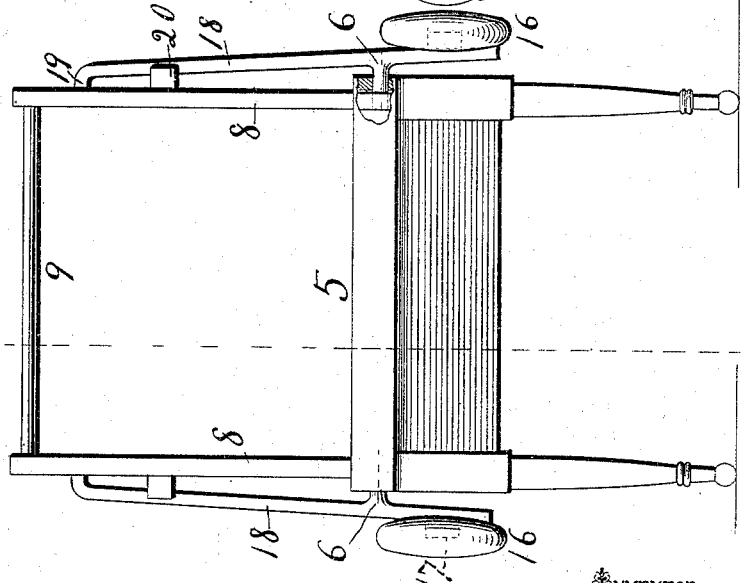


Fig I.



WITNESSES,
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UNITED STATES PATENT OFFICE.

ASA E. WORDEN, OF PHILADELPHIA, PENNSYLVANIA.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,957, dated March 21, 1893.

Application filed May 31, 1892. Serial No. 434,860. (No model.)

To all whom it may concern:

Be it known that I, ASA E. WORDEN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, 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.

This invention relates to that class of washing machines which are used to wash clothes, and its object is to squeeze with great force the bunch of clothing which is being washed, then to permit the bunch to roll into another position while the squeezer or dasher recedes so that the next action of the dasher will be to squeeze the water out of the clothing in a different direction, and by thus repeatedly squeezing the clothes in various directions and permitting them to soak in water after each squeezing, to rapidly dissolve the dirt and force it out of the clothing without injury to the most delicate fabric thereof, and without knocking off buttons, and particularly to obtain the great squeezing force required with the least practicable outlay of strength by the operator.

To this end my invention consists in the construction and combination of parts forming a washing machine, hereinafter described and claimed reference being had to the accompanying drawings, in which:

Figure I, is a front view of a washing machine according to my invention. Fig. II, is a transverse vertical section of the same at line *x*, Fig. I.

5 represents the wash tub, consisting of a box with parallel sides and ends, the bottom being preferably curved in a cylindrical arc whose center line is at 6.

7 represents the dasher which is pivoted by its side arms 8 to the ends of the tub at the center line 6, and it is provided with a light crossbar 9 which serves as a handle by means of which the dasher is to be reciprocated in operation.

10 represents two fluted washboards standing along the sides of the tub and vertically within the arc of the tub bottom and forming an inward angle with the said arc, and an upward angle with the side of the dasher head 11, when the latter is at the end of its arc of motion as shown in dotted lines 12. The lower side 13 of the dasher head 11 is much wider than its upper side or edge 14, so that the dasher acts like a hoe to take the clothes up from the bottom of the tub and to prevent small pieces getting below the dasher and clogging its movement.

15 represents bumpers consisting of portions of the sides of the tub located parallel with the adjacent faces of the dasher head, between which bumpers and the said dasher head, the bunch of clothes being washed, is squeezed at every stroke of the dasher.

16 represents balance weights, one pair of which may be hung upon each side-arm 8, of the dasher by means of horizontal arms 17, supported midway upon vertical arms 18 and each pair of weights is located a short distance below the common pivotal line 6, to overbalance the weight of the handle a little and act as a unit in restoring the dasher to its normal vertical position when free to swing. The arms 18 are attached at 19 directly to the arms 8 and supported by means of lugs 20 and the bearing pivots at 6.

By making the two weights of each pair to exactly balance each other it requires but a few ounces pull or push upon the handle 9 to swing the dasher through its whole arc of movement and yet if a quick pull or push be made the squeezing effect at the end of the stroke is multiplied by the momentum of both weights.

The horizontal arms enable me to locate the weights at a greater distance from center than could be done if the weight were hung on a vertical arm which had to pass close to the floor thus obtaining greater effect from a given amount of weight.

It is a well known principle of physics that the effect of impact of moving bodies is proportional directly "as the weights are to each other" and as their velocities squared, then if I place the same amount of weight twice as far from center it moves through twice as great an arc in a given time and produces four times the effect; or by dividing one-half the weight and placing the two quarters at the ends of my horizontal arms twice as far from center as the floor will permit a hanging

weight to be, I still obtain double the effect with that half. By this means the efficiency of the washing machine is greatly increased and a single person may with this machine do more washing in a given time than two or three could do with a hanging weight machine.

One pair of weights instead of two would obtain some of the advantages of my invention, and that one pair may be both located at one end of the machine or one weight of a pair may be located at one end and the other weight at the other end of the machine, but in any case the two weights should be hung at horizontally opposite sides of the pivot so as to counterbalance each other. The bottom of the tub may be a series of plane surfaces instead of a cylindrical arc but the latter is better.

The inward angular slant of the washboards relative to the tub bottom causes the clothes to roll together into a smaller bunch as the dasher advances and when the squeeze takes place between the dasher and bumper it is very effective because of the compactness of the roll of clothes.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

The combination in a washing machine, of a tub provided with bumpers at its sides; a dasher pivotally hung to reciprocate therein between the bumpers and provided with a vertically projecting handle; a pair of arms connected with the handle outside of the tub, and located below the pivots and projecting in opposite directions from the vertical plane of the pivots; and weights located upon those arms at opposite sides of the pivots to balance each other, the united weight of the arms and weights a little overbalancing the handle, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ASA E. WORDEN.

Witnesses:
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M. C. HILLYARD.