(Model.)

2 Sheets—Sheet 1.

J. W. RHOADES.

WASHING MACHINE.

No. 263,355. Patented Aug. 29, 1882.

Fig. 1.

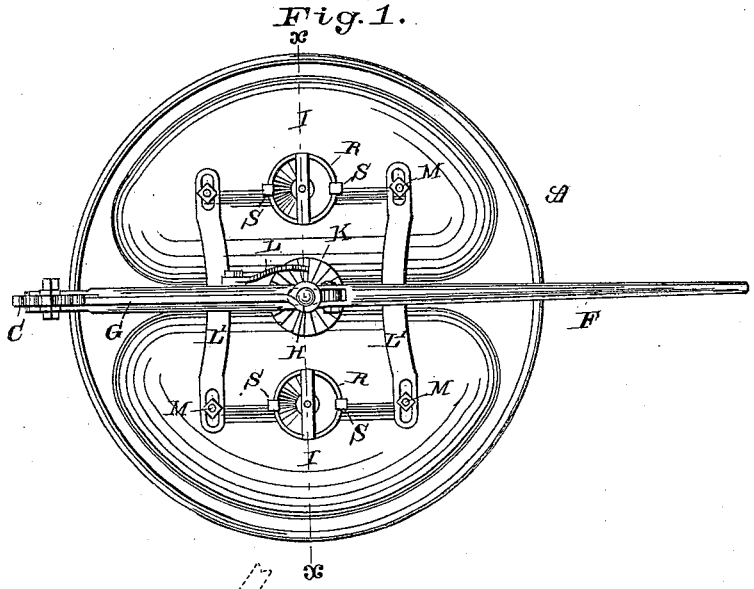
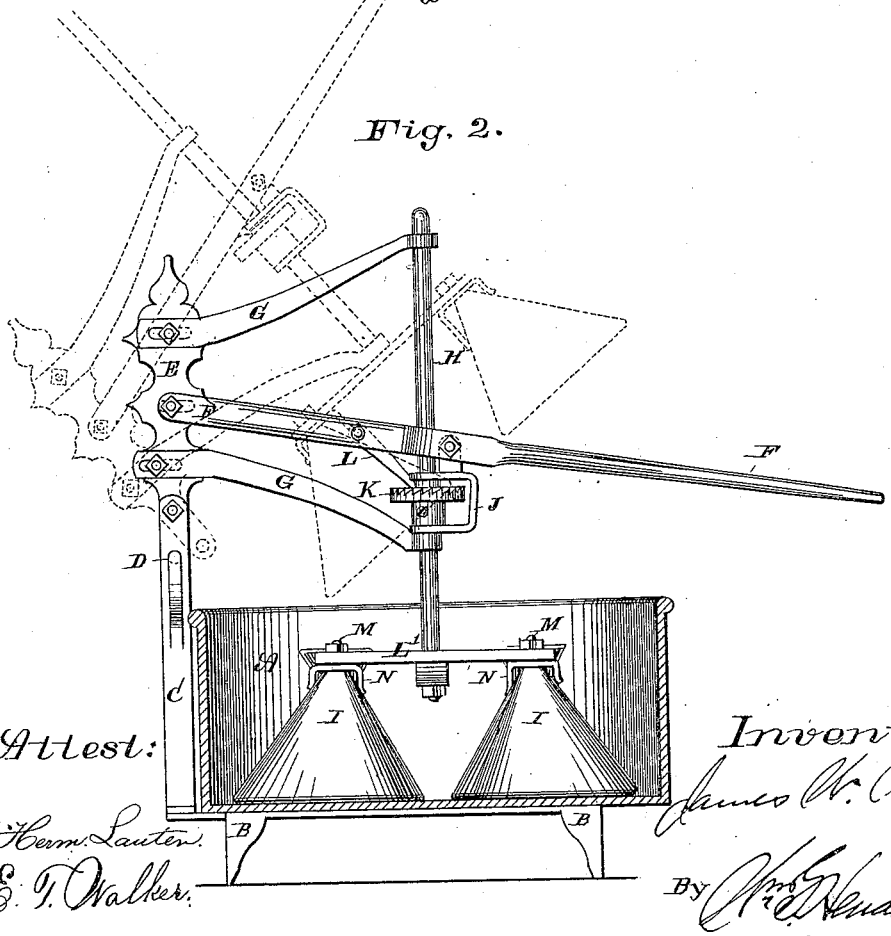


Fig. 2.



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(Model.)

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Fig. 3.

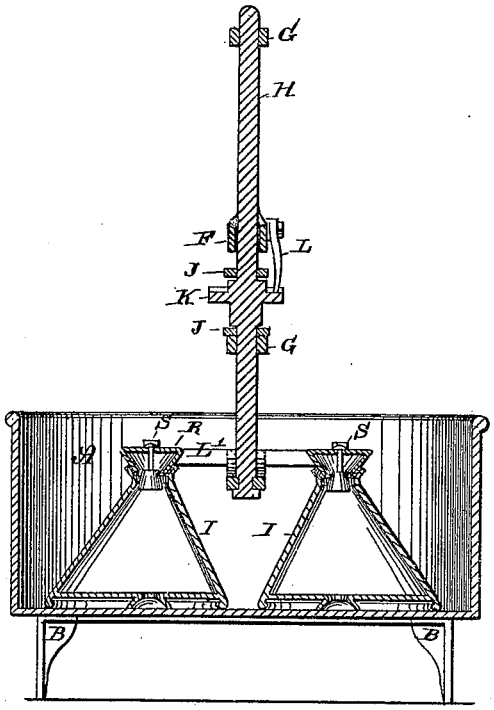
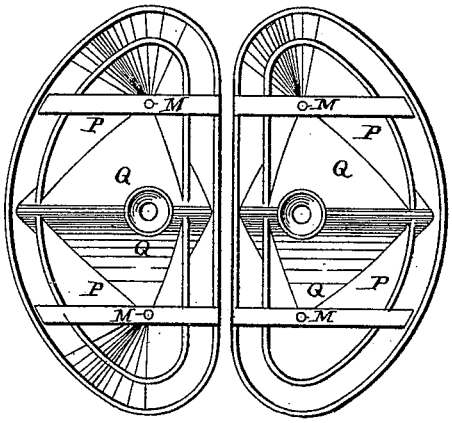


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES W. RHOADES, OF METZ, INDIANA.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 263,355, dated August 29, 1882.

Application filed November 9, 1881. (Model.)

To all whom it may concern:

Be it known that I, JAMES WILLIAM RHOADES, a citizen of the United States of America, residing at Metz, in the county of Steuben and State of Indiana, 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, reference being had to the accompanying drawings and figures of reference, in which—

Figure 1 is a plan view of the machine; Fig. 2, a side elevation, with a portion of the tub broken away. Fig. 3 is a vertical section on the line *x x* of Fig. 1; and Fig. 4 is a bottom view showing the interior of the plunger.

My invention has reference to pounder washing-machines in which the plunger is also rotated; and it consists in the construction and combination of parts hereinafter particularly described, and then sought to be specifically defined by claims.

In the accompanying drawings, the letter A indicates the tub, supported on legs B, and having a post, C, extending above its top edge, which post has a forked upper edge and a spring catch-pin, D, on its side, the pin of which will pass through a hole in the lower portion of the swinging arm E, so as to hold said arm in an upright position, except when it is intended to be thrown or swung back. The arm is pivoted in the fork of the post. To the said arm, between its two ends, there is hinged the operating-lever F, which is connected to the arm E, as shown, by a bolt passed through its slotted end, so as to have an end adjustment. To the same arm, above and below the point of connection of lever F thereto, are connected two guide-rods, G, the same being held to the arm by means of bolts and nuts passed through them and slots formed in the arm. This slotted connection of the rods to the swinging arm permits both rods to be adjusted horizontally, so as to bring the plunger-shaft toward the center of the tub, when the plunger is shifted from one size tub to another. These rods G are intended to brace and guide the plunger-shaft, which is passed through loops at the outer ends of both rods.

The shaft H of the plunger I is passed through the lower rod, G, then through a stirrup or shell, J, suspended from the lever F, then through a slot in lever F, and then through the upper rod, G, and is free to rise and fall and to revolve. The stirrup or shell J is suspended from the lever by means of a bolt and nut passed through the lever and an arm of the shell fitted into the slot in the lever. Within the stirrup or shell is a ratchet, K, which is secured to the plunger-shaft by a thumb-screw or other means passed through a collar to the ratchet and into the shaft. The shaft is thus caused to rise and fall with the lever, and a pawl, L, pivoted to the latter, engages with the ratchet, so as to slip over the ratchet-teeth when the lever is raised and to engage with one of them and move it forward when the lever is lowered, whereby the shaft and its plunger are caused to make a partial rotation. By thus rotating the plunger the same parts are caused to strike the clothes at a different point on each downstroke of the plunger, and the air made to act on all parts of the clothes, whereby they are more effectually pounded and cleansed.

When the clothes are to be placed in or removed from the tub the spring catch-pin is sprung out and the arm E thrown back, whereby the plunger is lifted from out of the tub, and the clothes can then be easily handled.

The plungers I are in two parts or made separate from each other, and are connected at their tops to a frame, so as to be adjustable to and from each other.

The frame consists of two bars, L′, and a cross-bar connecting the two, to which cross-bar the plunger-shaft is secured. The ends of the bars L′ are slotted, and the threaded ends of rods M, which extend up from the top of the plunger near both ends, pass through these slots, and nuts screwed onto the rods hold the plunger to the frame. By loosening the nuts and pushing the plungers one way or the other they may be moved farther from or nearer to each other.

In order to prevent the plunger from slip-

ping sidewise, flanged plates N are slipped over the rods M beneath the bars L, with the flanges bearing against both sides of the plungers, so that when the nuts are screwed down on the rods M the flanged plates will be clamped to their places and prevent the plungers from moving sidewise. The rods M pass clear through the plungers, and at their lower ends are connected to brace-rods O, extending across the under side of the plungers, so as to strengthen the same.

Each plunger tapers on the inside from bottom to top, and is divided into several chambers, similarly tapering, by means of partitions P and Q. The object of dividing the interior of the plungers into several chambers, tapering as described, is to compress the air into a small space, so that it will be caused, when the plungers are forced down upon the clothes, to exert more pressure upon the clothes at different points than it would if the space were larger and the air allowed to expand therein.

An air-cell, open at top and bottom and tapering from top to bottom, is formed within each plunger by means of the partitions Q, which form one side of each of the air-chambers already referred to. This air-chamber is filled with air through the opening in its top when the plungers are raised, and that air, passing into the air-cells, equalizes the pressure of the air inside, thereby breaking the suction under the plungers and permitting the plungers to be easily raised. The air within the air-cell on the downstroke of the plunger is prevented from escaping through the top opening by a valve, which closes that opening on the down movement of the plunger and opens it on the up movement. This valve is illustrated as being of conical form and suspended by means of a wire or rod from a bar extending across the top of a funnel-shaped cup set within the opening at the top of the plunger, the rod to which the valve is connected having a free vertical play through the said cross-bar. This funnel-shaped cup R has its top edge formed into two inclines, and two ears, S, are formed on the top of the plunger about the opening therein, so that when the cup is fitted into the opening, with its top edge under the ears, and turned so as to pass from the lowest to the highest part of the two inclines, the cup will be securely locked to its seat. A packing between the cup and opening in which it fits makes the joint perfectly tight, and the cup, being funnel-shaped, serves to conduct the air into the cell, from whence it passes into the air-chambers of the plunger. The cup is made removable, so that easy access can be had to the air-cell for the purpose of cleaning the same, or for whatever may be found necessary.

The function and operation of the several parts will be understood from the foregoing description thereof made in connection with the description of the construction of the parts, and will not, therefore, be separately described.

Having described my invention, what I claim is—

1. In a washing-machine, the combination of a plunger and its shaft, a horizontally-adjustable operating-lever therefor, guide-rods for the plunger-shaft to move in, having slotted ends, and bolts for connecting said rods at those ends to a standard, and a support for the several parts, substantially as set forth.

2. In a washing-machine, the combination of a plunger and its shaft, a lever for operating the plunger, a stirrup pendent from the operating-lever and hinged thereto, a ratchet connected to the plunger-shaft within said stirrup, and a pawl hinged to the operating-lever and adapted to engage with the ratchet, whereby the plunger-shaft is raised and lowered and rotated, substantially as set forth.

3. In a washing-machine, a frame, a laterally-adjustable plunger connected thereto by fastenings, and a plate secured between the frame and plunger and provided with flanges bearing against the plunger to prevent it from moving sidewise, substantially as set forth.

4. The plunger I, divided into several tapering chambers by partitions P and Q, the partition Q also forming a central air-cell tapering from top to bottom, as shown, and communicating with the interior chambers, and an air-inlet at the top of the plunger, substantially as and for the purposes set forth.

5. In a washing-machine, a plunger divided into a central air-cell and a series of air-chambers by partitions P and Q, in combination with an air-inlet at the top formed of a removable funnel-shaped cup having inclined edges, and a valve, substantially as and for the purposes specified.

In testimony whereof I subscribe my name this 3d day of November, 1881, in the presence of two witnesses.

JAMES WM. RHOADES.

Witnesses:

DANIEL C. BAXTER,

CHARLES A. BOWERSOX.