

UNITED STATES PATENT OFFICE.

NATHANIEL OTIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND JOSEPH FANYON.

IMPROVED WASHING-MACHINE.

Specification forming part of Letters Patent No. 42,259, dated April 5, 1864.

To all whom it may concern:

Be it known that I, NATHANIEL OTIS, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Washing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and the letters and figures of reference marked thereon, which form part of this specification.

In the said drawings, Figure 1 shows a plan or top view of my invention. Fig. 2 is a side sectional view of the same; and Fig. 3 is a detached view showing the position and configuration of the grooves *b*, hereinafter described.

The nature of my invention consists in a novel construction and arrangement of parts in a washing-machine, whereby the clothes are cleansed by direct pressure, the parts acting upon the clothes being so constructed that the water or suds is forced freely through the clothes in both directions, and so arranged that a rolling motion is given to the clothes so as to present all parts thereof to the same action, thus cleaning them more uniformly and thoroughly than can be done by any other combination and arrangement of parts.

To enable others skilled in the art to construct and use my invention, I will proceed to describe the same with particularity.

A represents a rectangular open vessel or tub to contain the water, and into which the clothes are put to wash. In opposite sides of the vessel, at *b b*, are grooves which support the bar B. These grooves are so constructed that their heel serves as a fulcrum for the beater when in operation.

C C are two levers attached to the bar B, which extend back over the end of the vessel, and are connected by the bar D, which can be readily grasped to operate the machine. The arms E E are also rigidly attached to the bar B at right angles with the levers C C, to which they are firmly braced, as shown. To the lower ends of the arms E E is attached the triangular beater F, which extends across the tub, and whose face is provided with a series of deep, narrow grooves, extending lengthwise of the beater, and arranged as near together as possible, providing only that the intermediate lips or ribs shall be strong enough to sustain the requisite pressure. The object

of these deep channels or grooves *a* is not to produce a roughened surface upon the beater to rub or act upon the clothes, but to enable the suds or water in the clothes, when pressed between the beater F and the block H, to pass readily and entirely through the clothes, which object is effected by the employment of the deep grooves *a* in the face of the beater, whose depth and dimensions are such that the pressure upon the clothes cannot force them into the said grooves, and hence the water and suds passes readily through the clothes into said grooves and out at each end of the beater. If the beater were provided with a plain face or with the ordinary ribs with broad open grooves between, the clothes would be forced by the pressure flush against the face of the beater or into the grooves, leaving no outlet for the dirty water forced through the clothes, which would consequently remain in direct contact with the clothes, and deposit the dirt removed from other portions of the clothes upon that portion resting against the beater, and thus cause that streaked appearance which is so common in clothes when imperfectly washed; but by the employment of a beater provided with the deep narrow grooves, which are herein described and shown, this difficulty is entirely obviated, and the clothes are rapidly and thoroughly cleansed. The same result would be secured by using a beater provided with perforations to allow the water to pass through, but I prefer the grooved beater, as it serves this purpose equally well, and at the same time the lips or edges serve to keep the clothes from slipping away from the pressure.

H represents the block or plank against which the clothes are pressed by the beater, which extends across the end of the vessel parallel to the beater. This block is perforated thickly with holes, as shown in the drawings, and does not rest against the end of the vessel, but against intervening strips or cleats, leaving a space behind for the water to flow down, which passes through the perforations. This construction and arrangement of the block H is to produce precisely the same result as that attained by the peculiar grooves or channels in the beater—namely, to permit the water and suds to pass freely and entirely through the clothes in this direction, and pre-

vent the dirty water from remaining in contact with the clothes between them and the block, in which case the pressure would force the dirt into the clothes, soiling and staining them. The face of this perforated block is inclined over, as shown, so as to give a rolling motion to the clothes when being washed, thus presenting all parts alike to the action of the pressing-surfaces, and more uniformly and thoroughly performing the work.

To use my machine hot water or suds to the depth of about three inches is put into the tub and the clothes placed between the beater and block H, when by raising and depressing the levers attached to the bar B the work is accomplished.

My invention consists in arranging the parts in such a manner that the pressure upon the clothes is direct, thereby avoiding friction and rubbing, which wears out the clothes. It further consists in providing both pressing surfaces with perforations or other suitable openings, so that the water may escape freely in both directions, which, for reasons before stated, is highly important in a washing-ma-

chine where the operation is performed by a direct pressure; and also in the inclining the front face of the block H, so as to give a rolling motion to the clothes during the process of washing. That some of these points have been heretofore achieved I am well aware, but there has never been a washing-machine which unites them all and combines so many advantages.

I do not claim the combination of a beater with a perforated block arranged as shown; but

What I do claim as new, and desire to secure by Letters Patent, is—

The combination and arrangement of the beater F, when provided with the peculiarly-constructed grooves herein described, with the perforated block provided with the inclined face, all arranged, constructed, and operating as and for the purposes specified and shown.

NATHANIEL OTIS.

Witnesses:

W. E. MAUS,
THOMAS SHARP.