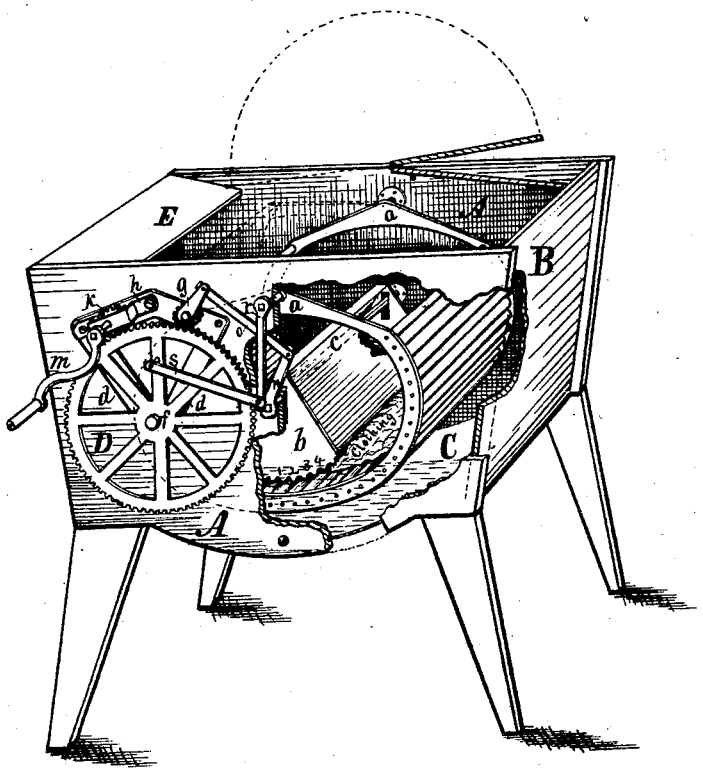
R. G. ORWIG.

Washing-Machine.

No. 163,686. Patented May 25, 1875.



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UNITED STATES PATENT OFFICE.

RUBEN G. ORWIG, OF DES MOINES, IOWA.

IMPROVEMENT IN WASHING-MACHINES.

Specification forming part of Letters Patent No. **163,686**, dated May 25, 1875; application filed February 12, 1874.

To all whom it may concern:

Be it known that I, RUBEN G. ORWIG, of Des Moines, Iowa, have invented an Improvement in Washing-Machines, of which the following is a specification:

The object of my invention is to provide a machine that can be operated by turning a driving-wheel by hand with a crank, or by power applied by belt or gearing, and that will automatically carry and dip the clothing in and out of the water, and turn them, and at the same time constantly press and rub them on a wash-board.

It consists in suspending a wash-board of concave form in a box-tub, and a convex rubbing device within the same, and combining them, by means of cranks and pinions, with a driving-wheel attached outside of the tub in such a manner that the rubbing device will oscillate rapidly, while the suspended wash-board moves slowly and carries the clothing alternately from one end of the tub to the other, all as hereinafter fully set forth.

My drawing is a perspective view, illustrating the construction and operation of my invention.

A A are the wooden sides of an oblong box-tub; B B, the ends; C, a concave bottom, which may be suitable sheet metal. The tub may be joined together in any suitable way, vary in dimensions as desired, and may be mounted on a bench or upon feet attached thereto. *a a* represent the end frames of the suspended concave wash-board. They are made of any suitable material, size, and shape, and may be solid or of skeleton form. Stud-axles or journals attached on the upper points extend laterally through bearings in the sides of the tub; or the end pieces *a a* may be secured to a shaft that spans across the tub. Suitable bearings for a series of loose rollers are formed in, or attached to, the pieces *a a*, along their ends and bottoms, and when fitted with rollers or slats a wash-board surface of concave form is produced. When rollers are used, one at each end should be rigidly secured to the pieces *a a*, to form a rigid frame for the suspended and moving wash-board and carrier. *b b* represent the end pieces of the oscillating rubbing device, in the form of a sector, with vertical slots in their centers. They may vary in size, and material, and form, but must have convex bottoms to conform with the concave wash-board within which they are used. They are connected by a series of slats or rollers, 1 2 3 4, secured to their under edges to produce a serrated rubbing-surface. Slats or boards on the side edges will prevent the clothing from passing. *c* is a shaft resting in suitable bearings in the central portions of the sides A A, and extending through the one to form connection with the mechanism outside of the tub. This shaft *c* passes through the slots in the end pieces *b b*, and secures and operates the rubbing device. *d d* represent a solid or skeleton plate of triangular form bolted against the outside of the tub. A hollow gudgeon on the lower corner is cast solid therewith to form an axle for the driving-wheel D. A bolt, *f*, through the gudgeon secures the driving-wheel to the plate *d d*, and also aids in securing the plate to the side of the tub, through which the bolt extends to receive a nut on the inside of the tub, or vice versa. *g* is a combined pinion and crank secured to the right-hand upper corner of the plate by means of a hollow gudgeon and a bolt similar to those used to secure the driving-wheel D. *h* is a bearer of loop form bolted with the plate *d* to the tub. *k* is a pinion that has its bearings in the plates *d* and *h*, and extends its shaft outward to receive the crank *m*. *n* is a crank on the end of the rubbing-device shaft *c*. *o* is a pitman connecting the combined crank and pinion *g* with the crank *n*. *r* is a crank connected with the end of the shaft or gudgeon projecting from the suspended wash-board frame *a a*. *s* is a pitman connecting the crank *r* with the driving-wheel D.

In the operation of my machine sufficient boiling soap-suds is placed in the tub to immerse the lower portion of the suspended concave wash-board. The garments and fabrics to be washed are placed in and on the wash-board, and aside of the suspended rubbing device. Suitable covers are then placed on the tub to retain the steam and heat, and the driving-wheel D put in motion. Every revolution of the wheel D, caused by power applied through the pinion *k*, will, by means of the pitman *s* and crank *r*, rock the shaft or gud-

geons connected with the frames *a a*, and cause the suspended wash-board to move back and forth, and carry the clothing thereon alternately from one side of the rubbing device to the other. When one end of the wash-board is elevated and the other depressed the clothing will fall back from the elevated portion, and turn and change position in so doing. While the wash-board is thus moving slowly the combined pinion and crank *g* will, by means of the pitman *o* and crank *n*, rock the shaft *c*, and oscillate the rubbing device rapidly. The rubbing device will by force of gravity press upon the clothing passing under it, and continually rub them upon the loose rollers, or wash-board surface, as long as they remain underneath. By fixing springs in the slots of the end pieces *b*, and under the shaft *c*, the pressure upon the clothing may be increased when the weight of the oscillating rubber is not sufficient.

To prevent the ends of the rubbing device from binding against the sides of the tub when one of the ends is elevated, the device may be shorter than the width of the tub, and the end pieces may incline toward each other at their tops.

A faucet at the bottom of the tub may be used to empty the water. A suitable pipe may connect the tub with a boiler, so that the temperature of the water in the tub can be kept at any degree desired.

E represents a shelf at one end of the tub, upon which soap may be placed. Its surface may be prepared and used for a stationary wash-board. A wringer may be attached at the opposite end.

The mechanism attached outside of the tub may be boxed and concealed in any suitable way, to prevent the operator or persons present from coming into contact therewith.

I am aware that a movable wash-board has been suspended in a tub to oscillate and carry the clothing under a fluted roller or revolving rubber; but I claim that my manner of suspending and moving a wash-board back and forth in a tub slowly, to carry and dip the garments in the water, and turn them, and to pass them under, and subject them to the pressure and rapid rubbing device, is new and greatly advantageous.

I claim as my invention—

1. In a washing-machine, the moving carrier and wash-board *a a*, and the oscillating pressing and rubbing device *b b* on the rock-shaft *c*, when arranged and suspended relative to each other in the tub A, substantially as and for the special purposes shown and described.

2. The combination of the driving-wheel D, pitman *s*, crank *r*, carrier and wash-board *a a*, pinion and crank *g*, pitman *o*, crank *n*, shaft *c*, and rubbing and pressing device *b b*, substantially as and for the purposes shown and described.

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Witnesses:
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