

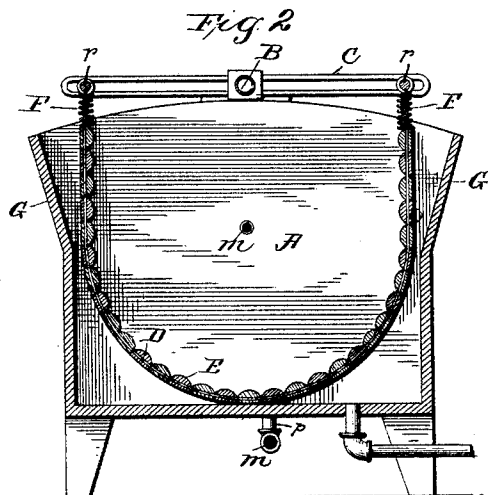
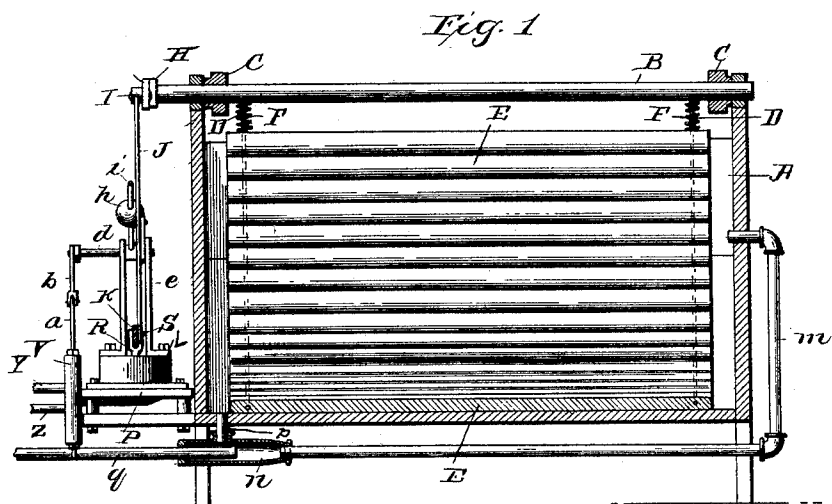
(No Model.)

2 Sheets—Sheet 1.

R. G. FERGUSON.
WASHING MACHINE.

No. 586,814.

Patented July 20, 1897.



Witnesses
E. C. Wurdeman
A. S. Williamson

Inventor
Robert G. Ferguson
by Geo. H. Holgate
Attorney

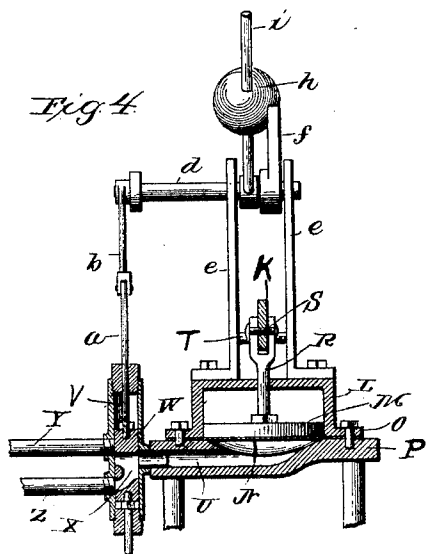
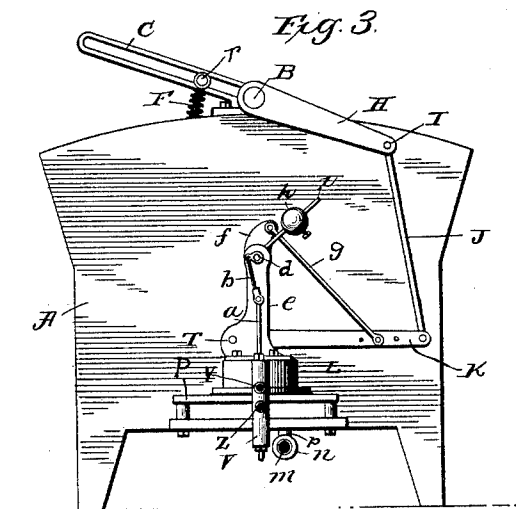
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UNITED STATES PATENT OFFICE.

ROBERT G. FERGUSON, OF LAKEWOOD, NEW JERSEY.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 586,814, dated July 20, 1897.

Application filed September 15, 1896. Serial No. 605,912. (No model.)

To all whom it may concern:

Be it known that I, ROBERT G. FERGUSON, a citizen of the United States, residing at Lakewood, in the county of Ocean and State of New Jersey, have invented a certain new and useful Improvement in Washing-Machines, of which the following is a specification.

This invention relates to a new and useful improvement in washing-machines, and it has for its object to provide a device of this description which will greatly facilitate the cleansing of clothes and which may be operated by power, so as to relieve the attendant of all laborious work and requiring such attendant only to manipulate the clothes to be washed in such manner as to facilitate this operation.

Another object of my invention is to prevent the harsh action of the rubbing-surfaces upon the clothes and also to arrange for the supplying of water thereto, both hot and cold, as well as a certain amount of steam for the scalding of the clothes.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth, and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a section of a washing-machine built in accordance with my improvement; Fig. 2, a similar view taken at right angles to Fig. 1; Fig. 3, an end view of the machine, illustrating the relative position of the motor thereto; and Fig. 4 a section of said motor.

Referring to these figures in details, A represents the tub or tank in which the operation of washing is to be performed and which may be of any convenient size or shape, preferably rectangular. Within suitable bearings supported by the upper portion of the tank is journaled a rock-shaft B, and this shaft has secured thereto the arms C, which in turn have suspended therefrom the cables D. Upon the cables are secured a number of lags E, whose inner surfaces are rounded,

thus forming a corrugated rubbing-surface which is flexible, and therefore readily adapts itself to the clothes placed therein for washing, and I prefer to interpose coil-springs F between the top lags and the arms, so as to hold said lags in place and yet permit a slight movement thereof upon the cables.

The sides of the tank are preferably flared, as indicated at G, so as to prevent the dashing of water from the tank when the machine is in operation. Upon one end of the shaft B is secured a crank-arm H, and to the outer end of this arm, at I, is pivoted the connecting-rod J, which in turn is pivoted at its opposite end to the lever K. This lever is the operating-lever of the motor and serves to transmit power from said motor to the shaft. The motor consists of a cylinder L, in which is fitted a piston M, the latter having arranged therebetween a flexible diaphragm N, which is held in place by the flange O, by which the cylinder is bolted to the bed-plate P. A rod R connects the piston with the lever K by projecting through a suitable hole in the top of said cylinder and being pivoted at S to said lever. The lever K is pivoted at T, so that when the piston is moved up and down this motion will be imparted to said lever and multiplied by its outer end, from whence it will be transmitted to shaft B, as before described.

A port U leads from the compartment beneath the diaphragm to the valve-chest V, in which is provided a slide-valve W, having an opening X formed therethrough adapted to register with the port at all times and alternately register with the inlet Y and exhaust Z, from which it will be seen that when this valve is reciprocated water will be admitted to the compartment beneath the diaphragm and exhaust therefrom after the manner of a single-acting steam-engine.

The valve is connected by means of the stem a and link b to the valve-shaft d, which is journaled in the uprights e, and this last-named shaft has secured thereon an arm f, which is connected by the rod g to the lever K. From this it will be seen that when water is admitted to the compartment beneath the diaphragm the piston will be forced upward, thereby actuating the lever K, which will not only operate the machine, but through

the rod *g* will cause the shaft *d* to oscillate, which in turn will reverse the position of the valve and bring the opening therein into alignment with the exhaust *Z*, permitting the out-
 5 flow of the water from the compartment beneath the diaphragm, thereby permitting the piston to fall, and the parts attached thereto return to their normal position. This falling
 10 of the piston may be assisted by the weight *h*, which is adjustably secured upon the rod *i*, carried by the valve-shaft. By the downward movement of the piston the valve will be again reversed, closing the exhaust and opening the inlet, through which water will
 15 be again admitted beneath the diaphragm, and the operations will be repeated automatically.

A pipe *m* leads to the tank at one end thereof, so that water flowing therefrom will be
 20 precipitated upon the clothes supported by the rubbing-surface, and this pipe is connected with the injector *n*, into which the pipe *p* leads from the under side of the tank, and the pipe *q* is arranged for the admission
 25 of steam to the injector.

From this description the operations of my improved washing-machine will be obviously as follows: A proper amount of water is placed within the tank and the clothes to be
 30 washed placed upon the rubbing-surface, after which the motor is set in operation, which gives to the rubbing-surface an oscillating rolling movement, which in connection with the water will extract the dirt from
 35 said clothes, and in order to facilitate the cleansing of the clothes a stream of water is projected thereon by the pipe *m* by permitting the proper amount of steam to flow through the pipe *q*, which will draw the water
 40 from the lower portion of the tank and force it upward through the pipe *n*.

If desired, the rods *r*, which are carried by the arms *C* and to which the flexible rubbing-surface is attached, may be adjusted inward
 45 by reason of the slots in the arms in which said rods are secured, thus partly inclosing

the clothes which are placed upon the surface and further facilitating the cleansing thereof by the operations of the machine.

One of the advantages of my improvement 50 is that the rubbing-surfaces being composed of a series of lags secured upon flexible cables will so adapt themselves to the clothes placed thereon as to thoroughly rub the same, while at the same time the water projected upon 55 the clothes will be free to pass between the lags, with which will be carried the dirt previously removed from the clothes.

Having thus fully described my invention, what I claim as new and useful is— 60

1. In a device of the character described, a shaft, arms thereon, rods slidable on the arms and a flexible rubbing-surface on the rods, as and for the purpose described.

2. In a device of the character described, 65 a tank, a shaft journaled therein, arms on the shaft, rods slidable on the arms, cables connecting the rods and lags secured to the cables, as and for the purpose described.

3. In a device of the character described, 70 a tank, a shaft journaled therein, arms on the shaft having longitudinal slots therein, rods adjustably slidable in the slots, cables connecting the rods, rounded lags secured on the cables, spiral springs interposed between the 75 lags and arms and means for automatically rocking the shaft and circulating the water in the tank, substantially as described.

4. In a device of the character described, a tank, a shaft journaled therein, slotted 80 arms on the shaft adjustably slidable in the slots of the arms and a flexible rubbing-surface connecting the rods as and for the purpose described.

In testimony whereof I have hereunto af- 85 fixed my signature in the presence of two subscribing witnesses.

R. G. FERGUSON.

Witnesses:

S. S. WILLIAMSON,
 HENRY J. LITTLE.