

FRANCIS M. HARRIS

WASHING MACHINE

PATENTED
JAN 21 1868

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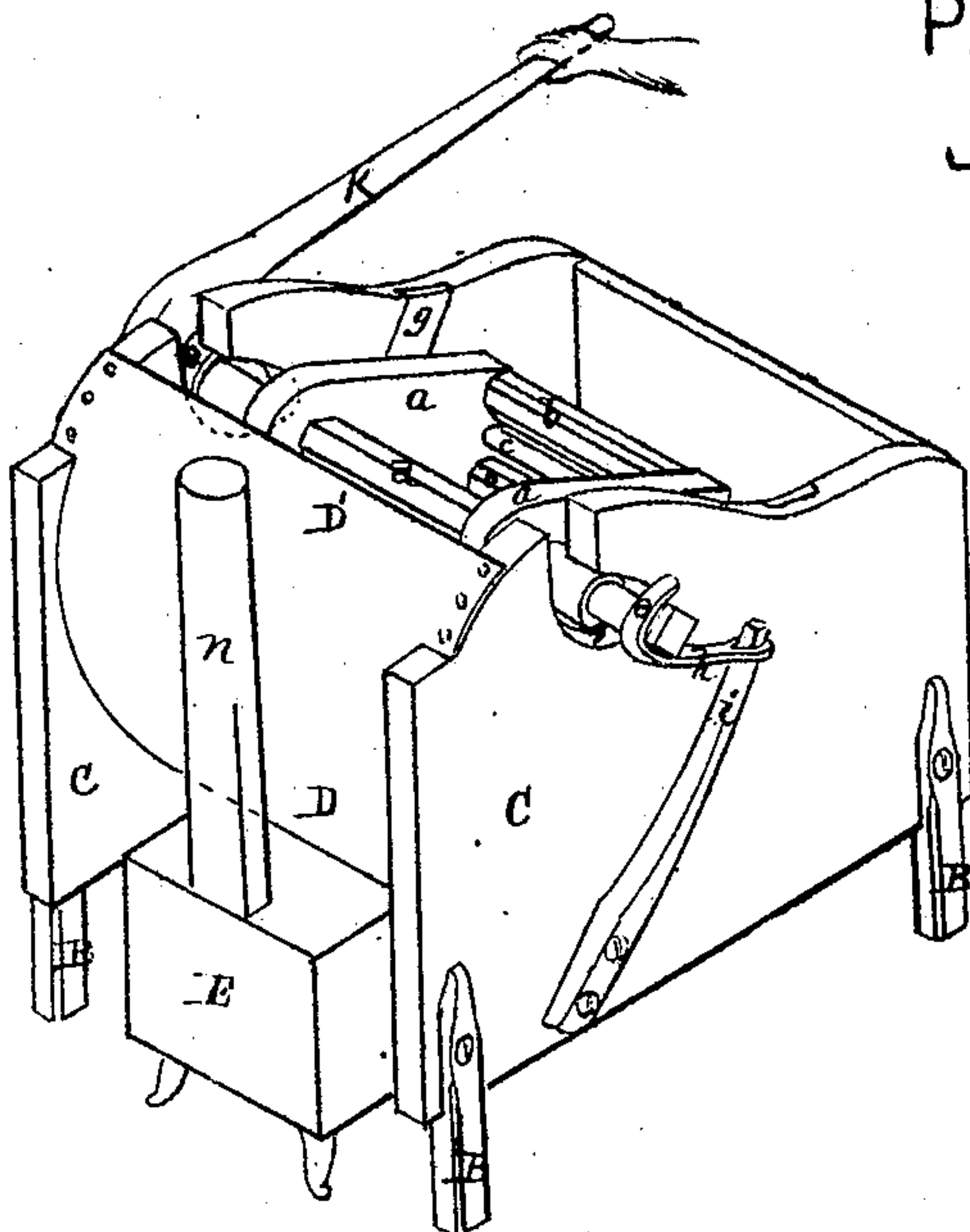


FIG. 1

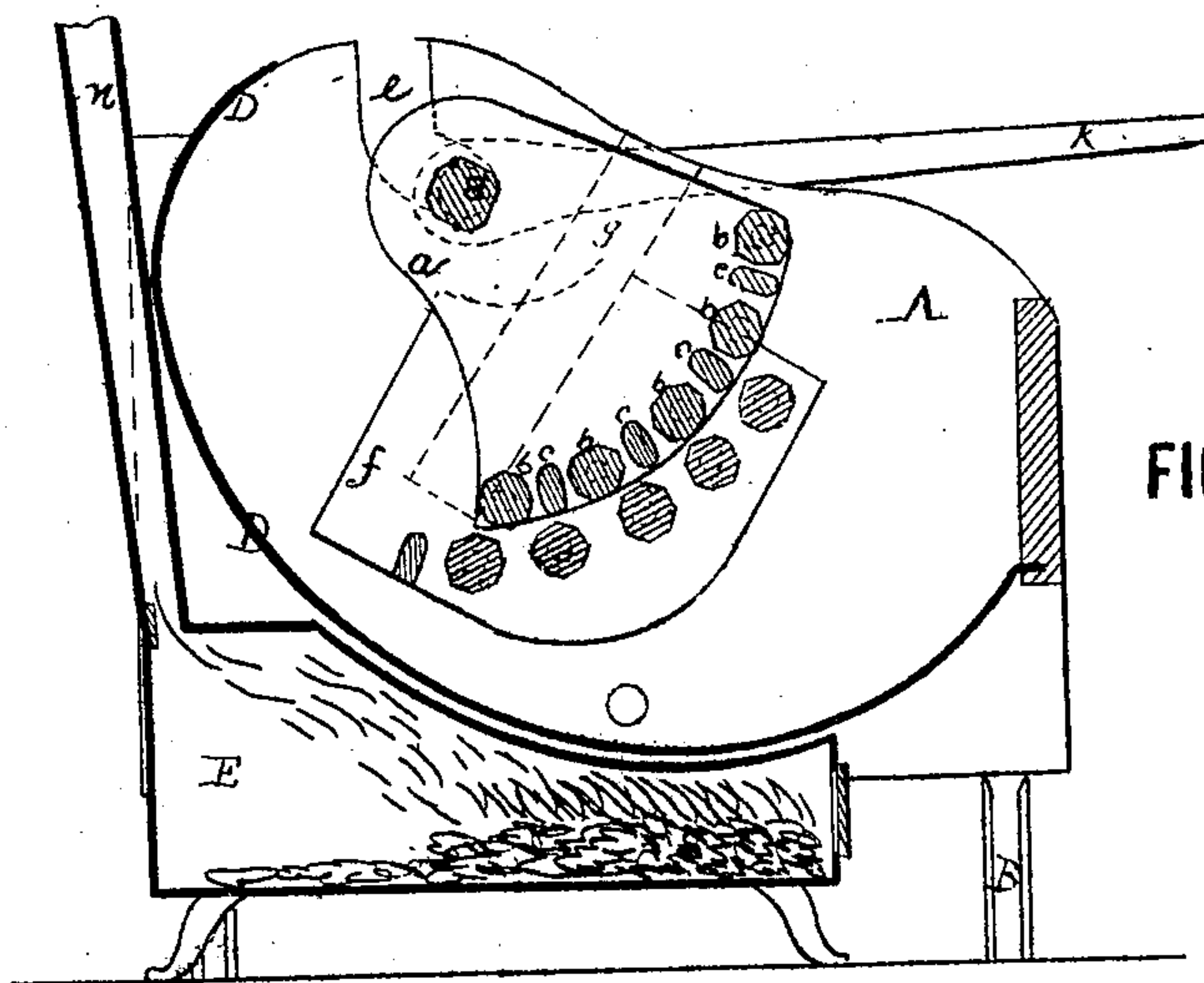


FIG. 2

F. M. Harris by
J. Pollock
att'y.

WITNESSES *W. Bailey*
W. Page Jr.

United States Patent Office.

FRANCIS M. HARRIS, OF WINNAMAC, INDIANA.

Letters Patent No. 73,445, dated January 21, 1868.

IMPROVED WASHING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO WHOM IT MAY CONCERN:

Be it known that I, FRANCIS M. HARRIS, of Winnamac, in the county of Pulaski, and State of Indiana, have invented certain new and useful Improvements in Washing-Machines; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a machine constructed in accordance with my invention, and

Figure 2 is a longitudinal vertical central section of the same.

My invention consists, first, in a wash-tub or receptacle for a washing-machine, of peculiar form and construction, as hereinafter described, so as to hold the water within the tub, and prevent it from splashing out when the machine is in operation; second, in the combination, with a stationary wash-board, of a swinging wash-board or "rubber," and spring applied to said rubber, under the arrangement hereinafter described, so that the pressure of the rubber upon the clothes shall increase in proportion as it moves in one direction, and decrease in a like proportion as it moves in the opposite direction; third, in the combination of the swinging wash-board, and spring for regulating the pressure of the same, with the frame of the machine, in the manner hereinafter described, whereby the said board may, at any time, be removed with facility from the tub; fourth, in the arrangement of the stationary and swinging wash-boards within the tub in such manner that the clothes, after passing between the said boards, will return under the lower or stationary board to the clothes-receptacle, formed in the front portion of the tub.

To enable others skilled in the art to understand and use my invention, I will now proceed to describe the manner in which the same is or may be carried into effect, by reference to the accompanying drawings.

The tub or receptacle A, for the water and clothes, is mounted upon the usual legs or supports, B. The sides of the tub C, to which the legs are connected, are made of wood, but the bottom, D, I prefer to make of sheet metal, such as galvanized iron, when the machine is used in connection with a heater, E. The form of the bottom is shown plainly in fig. 2. It has a curved shape, the lowest point being in front of the wash-boards, and extends some distance upward at the rear of the machine, above the wash-boards, so as to form on that end of the tub a hood or cover, D'. The object of this hood is to catch the water which is thrown up by the action of the wash-boards, and to prevent it from splashing over the floor. In ordinary machines, in which an open tub is employed, this frequently happens, and is a source of great annoyance. But, by giving the tub the form described, the water which is thrown up by the action of the wash-boards strikes against the under side of the hood, and returns to the lower part of the tub, within which it is confined. The upper or swinging wash-board is composed of two side pieces, *a*, between which are held rolls or slats *b c*, arranged parallel to each other. The rolls *b*, which have an octagonal or other suitable polygonal form, in cross-section, are mounted in the side pieces, so as to be capable of rotating. The slats *c*, on the contrary, are immovably secured to the said pieces. The rolls and slats are arranged alternately, so that while the former will roll over the stationary wash-board below, the latter will rub or drag over the same, so that the clothes between the two boards will be partly pressed and partly rubbed by their action. The side pieces *a* are mounted upon a shaft, *d*, which has its bearings in a curved slot or jaw, *e*, in each side of the tub. This slot is cut in from the top of the sides, so as to extend downward vertically for a little distance, and it then turns, so as to extend almost horizontally toward the front of the machine. The shaft *d* is held in the elongated bearings formed by these slots or jaws, and the slats and bars *b c*, which form the wash-board, are arranged upon the arc of a circle, having for its centre the axis of the shaft. Below the swinging board is a stationary wash-board, the slats of which are arranged upon the arc of a circle, corresponding to that of the upper board. This wash-board is formed of two side pieces, *f*, held by dovetailed pieces, *g*, to the respective sides of the tub. Between the pieces are held small rolls, similar to those of the swinging board, and capable, likewise, of a rotary movement. The ends of the shaft *d* project out beyond the sides of the machine, each end having attached to it a spring, composed of a band or strap, *h*, of vulcanized rubber, or equivalent elastic material, one end of which is stretched and secured to the side of the tub by any suitable means, such as illustrated in the drawings, where the strap has a hole formed in its end, which fits over and is held upon the end of a rod or catch, *i*. The arrangement of the spring-band is such that, when the shaft *d* is rotated by means of a lever or handle, *k*, on one of its ends, so as to force the swinging wash-board down

into the tub, the band will be stretched and wound upon the shaft, so as to hold the latter more firmly against the ends of its slotted or elongated bearings, and thus press the board more firmly upon the clothes.

The operation of the machine is as follows: After a sufficient quantity of hot water has been put in the tub, the clothes are placed in the front part of the tub, which is of sufficient size to allow of a considerable number being introduced at once, and left to soak, while one or two "pieces" are being operated on by the boards. The upper wash-board is turned up and back away from the lower board, and the clothes to be washed are placed upon the latter. The upper board is now turned down upon the clothes, and is vibrated by means of the handle *k*. The rollers and slats *b c* will both rub and press the clothes, as above mentioned. The water circulates freely through the openings between the slats and rolls of both boards, and the clothes are gradually carried down towards the lower end of the board.

It will be noticed that, owing to the peculiar arrangement of the springs upon the shafts *d*, the pressure of the upper board upon the clothes increases in proportion as it is depressed or forced downward, and that, on the other hand, the pressure decreases as the board is raised. This action of the board is similar to that of the hand upon the clothes, when the ordinary hand wash-board is employed, as the pressure is always greater in the downward than the upward motion. The clothes are finally carried down by the action of the rolls upon the boards, until they are discharged from the lower end of the board and fall into the tub. Owing to the downward inclination given the bottom of the tub from rear to front, the clothes gradually pass under the board, back into the clothes-receptacle, in the front of the tub, and are replaced by others, which are put in by the manner above explained, between the boards.

In order to keep the water hot, I combine with the tub a sheet-iron heater, *E*, which is placed underneath the bottom, *D*. The heater is shaped on top to conform to the curve of the bottom, and it has at one end a fire-door, *m*, and at the other a chimney or stove-pipe, *n*. A very small fire within the heater will be sufficient to maintain the water at the required temperature. Instead of the heater shown in the drawings, any other suitable form of heater or radiator, fitted to diffuse the heat over the surface of the bottom, *B*, may be employed.

In order to remove the swinging wash-board, the ends of the rubber spring-bands are slipped from the rods or catches upon which they are held, after which the shaft *d* may be lifted out from its slotted bearings, carrying with it the swinging board, and the stationary board below can then be used as an ordinary hand wash-board.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. The combination, in a washing-machine such as described, with the stationary wash-board, of the swinging boards, and spring bands of vulcanized rubber applied to the journals of said swinging boards, in the manner and for the purposes shown and specified.

2. The combination, with the stationary wash-board, swinging board, and springs for inducing the pressure of the latter, of the wash-tub, with its peculiarly-shaped bottom, arranged with relation to the said wash-boards, substantially as herein shown and set forth.

In testimony whereof, I have signed my name to this specification before two subscribing witnesses.

FRANCIS M. HARRIS.