2 Sheets—Sheet 1.

M. L. HAWKS.

Washing-Machine.

No. 220,714. Patented Oct. 21, 1879.

Fig. 1.

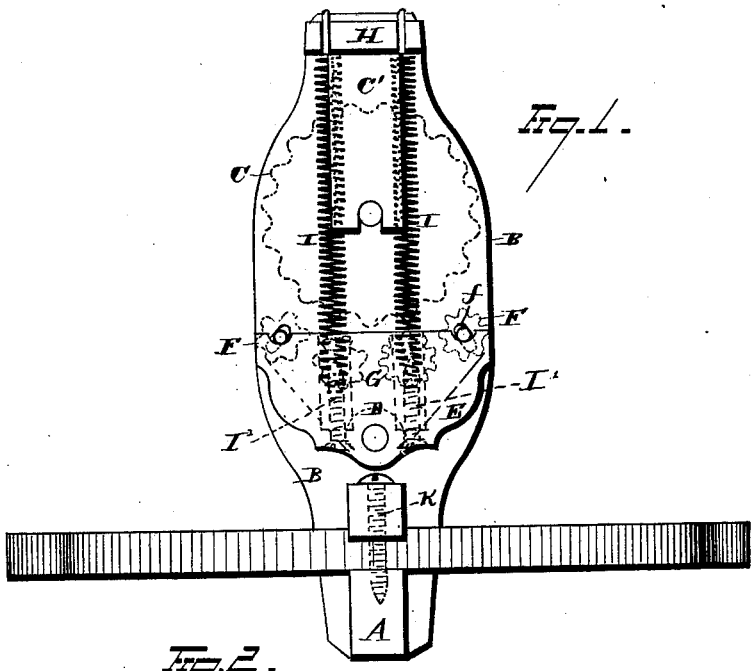
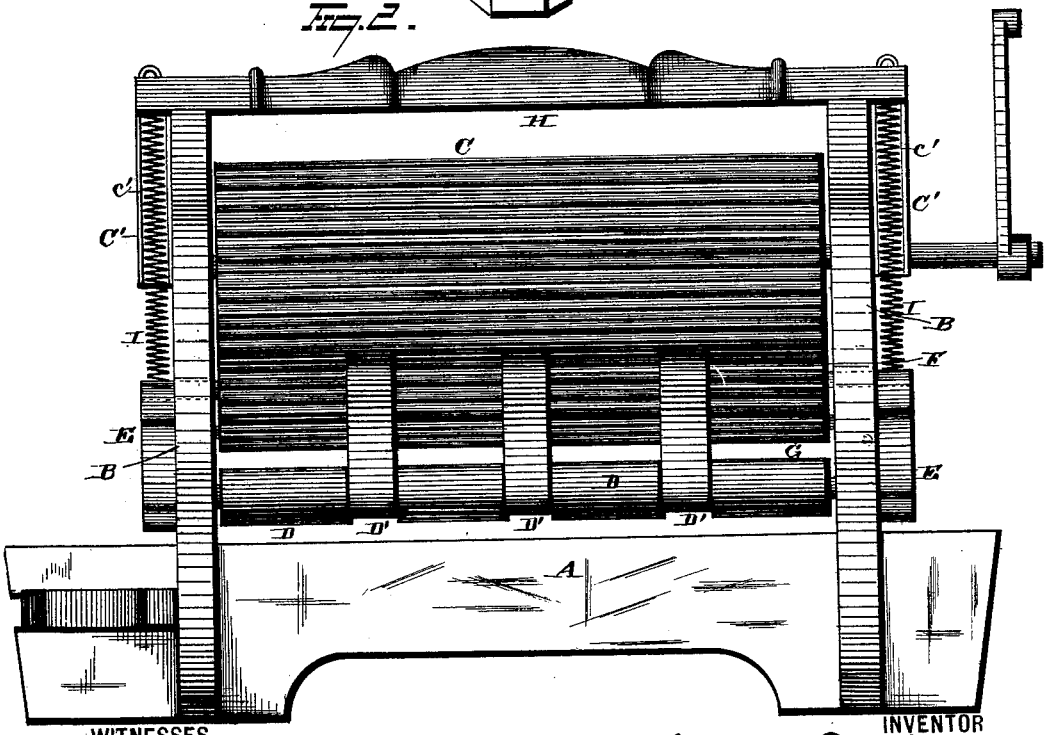


Fig. 2.



WITNESSES

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2 Sheets—Sheet 2.

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Fig 3.

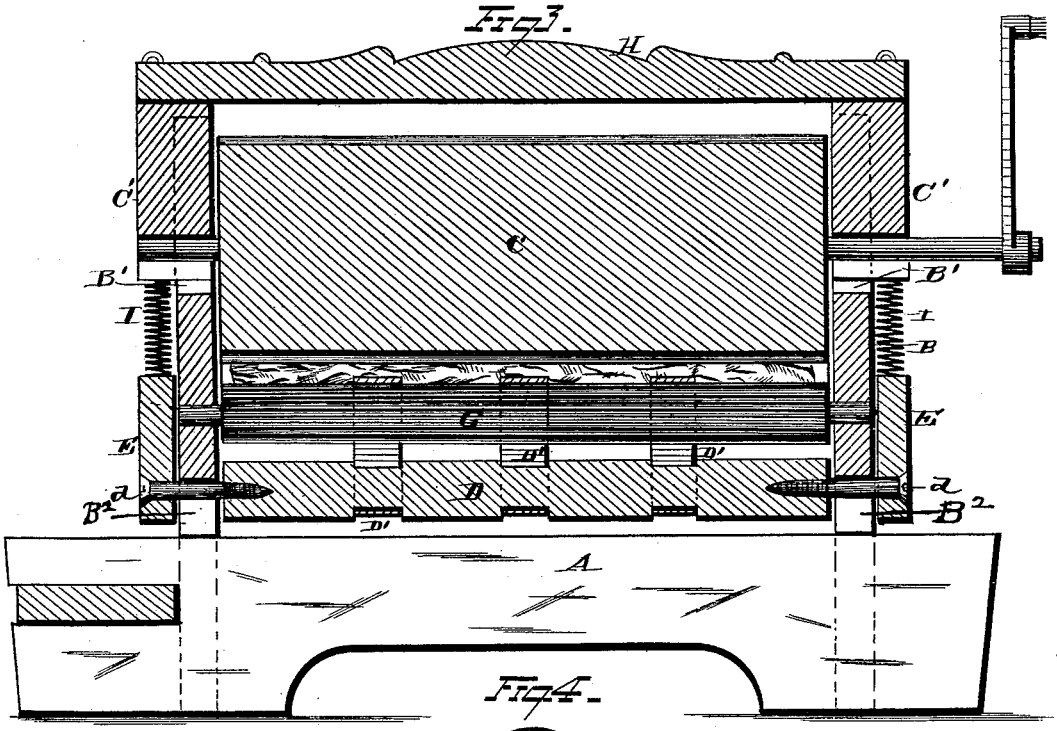


Fig 4.

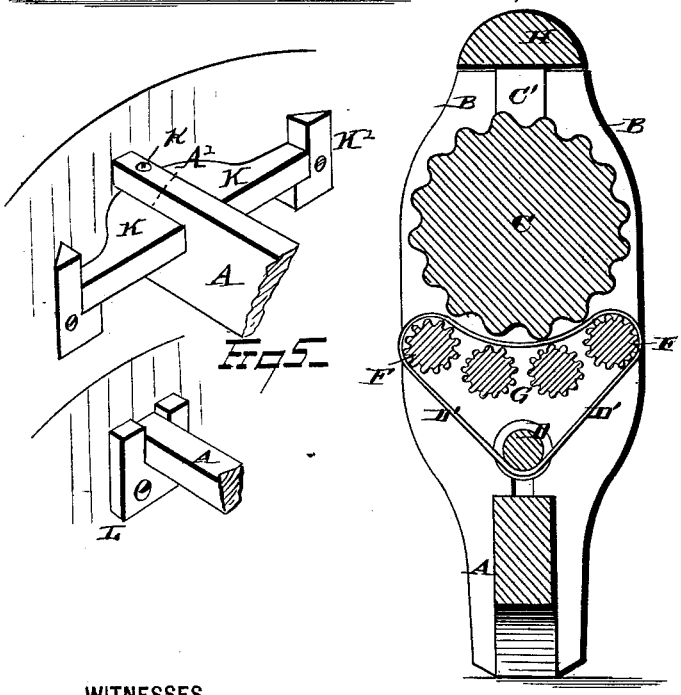


Fig 5.

Fig 6.

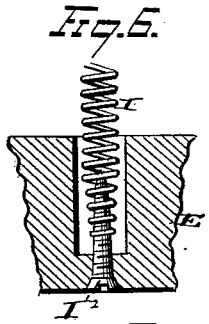
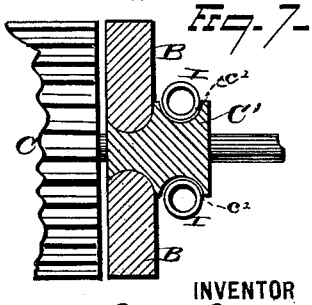


Fig 7.



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UNITED STATES PATENT OFFICE.

MOSES L. HAWKS, OF KINDERHOOK, MICHIGAN.

IMPROVEMENT IN WASHING-MACHINES.

Specification forming part of Letters Patent No. **220,714**, dated October 21, 1879; application filed June 26, 1879.

To all whom it may concern:

Be it known that I, MOSES L. HAWKS, of Kinderhook, in the county of Branch and State of Michigan, 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to washing-machines, and is designed as an improvement upon the devices patented by me July 8, 1873, No. 140,625, and December 23, 1873, No. 145,799.

In the drawings, Figure 1 represents an end view of a machine embodying my improvements, showing the rollers in dotted lines. Fig. 2 is a side elevation; Fig. 3, a longitudinal central section of the machine, representing the rollers partially separated by interposed clothes. Fig. 4 is a cross-section of the machine at right angles to its length, showing parts in elevation. Fig. 5 represents a variation in the means of attachment to the tub. Fig. 6 is a sectional view, illustrating the means employed for adjusting the tension of the springs. Fig. 7 is a cross-sectional view of one of the bearings for the upper roller, and showing how it engages with the upright and with the adjacent springs.

In the said drawings, A is a bed-piece, arranged preferably with its edge upward. To this is rigidly attached the uprights B. The uprights are slotted at B^1, to receive and engage with the blocks C′, in the lower ends of which are housed the journals of the main roller C. At B^2 the uprights are slotted for the passage of roller D, whose ends are housed in the cross-pieces E.

F represents the outside lower rollers, whose axes pass through inclined slots *f* in the uprights B, and are loosely journaled upon the cross-pieces E, as shown.

G represents the two stationary lower rollers, journaled at their ends in the uprights B. Around the rollers D and F are bands D′, which serve to prevent the clothes from working down or being caught between the lower rollers in their passage through the machine.

When the clothes are introduced into the machine the outside lower rollers, F, will yield and force the cross-pieces E downward. These cross-pieces, by carrying with them the roller D, serve to keep the bands D′ practically taut.

H is a bar extending across the machine from the top of one upright B to the top of the other; but it is not connected with the uprights, but rests loosely thereon. To this bar are secured the spiral springs I, the lower ends of which are attached to the cross-pieces E. In extending from the bar to the cross-pieces the springs are partially or entirely housed in the sides of the sliding blocks C′ in suitable holes or grooves *c′* adapted to receive them. In this way the bar H is held in its proper position above the machine, and in contact with the blocks C′.

When the clothes are introduced into the machine, the main roller being forced upward raises the blocks C′, and by lifting the bar H stretches the springs I, which react to exert the required pressure upon the clothes. If, however, the pressure is not sufficient, the operator, by pressing with his hand upon the bar H, may give any desired pressure to the clothes.

The spiral springs I are made adjustable in any suitable manner, so that in their normal condition they will exert a greater or less tension upon the clothes. This adjustment I prefer to effect by means of screws I′, which, turning loosely in their holes, engage with the coils or convolutions of the springs, so that by turning the screws the springs will be drawn out to any desired extent, in order to give them the required tension.

The operation of this device as a whole is briefly as follows: If the rollers F and G were rigid, it is apparent that if the clothes should be fed to the machine so as to raise the main roller C, the washing-surface would then be confined exclusively to the main roller and outside rollers, F, and the roller would be lifted entirely away from the rollers G; but when clothes are fed to my machine the effect is to force downward the outer rollers, F, until the upper roller presses the clothes equally, or practically so, against all four of the rollers, and in this way the washing-surface is main-

tained at all times over all four of the rollers F and G. Moreover, if the pressure exerted by the springs is not sufficient to properly rub the clothes, the requisite pressure can be at once exerted with the hand upon the bar H.

I will now describe the mechanism for fastening the machine to the tub. The bed-piece A is provided with a slot, A′, at its end. In this slot A′ may be slipped an adjustable cross-piece, K, which may be secured at any point by a set-screw, *k*, and, when once adjusted for any size of tub, this attachment remains permanent. Cleats K′ are then fastened upon the interior of the tub, so as to form supports for the ends of the bar K, adapted to prevent the bar from dropping down, or from moving laterally in the tub, the weight of the machine itself (assisted, if necessary, by the pressure of the hand on the bar H) serving to hold it down in the cleats. At the other end of the bed-piece A a suitable cleat, L, is fastened to the interior of the tub, and is adapted to receive that end of the bar A adjacent to the crank, and prevent the bar from moving in any direction.

In adjusting the washing-machine within the tub the crank end of the bar A is inserted in the cleat L, and the other end is then dropped down until the bar K rests in the cleats K′. By adjusting the bar K out or in upon the bed-piece A the machine may be made to fit tubs of different sizes, and this may be effected with the curved edge of the bar K toward the sides of the tub. In this position the bar may have a considerable range of adjustment, so as to bring its ends against the sides of the tub; but this adjustment may be still further enlarged, and the device be made to fit a larger tub, by turning the bar K so that its curved edge presents toward the center of the tub.

A washing-machine of this character is entirely devoid of gears and of castings, unless it should be desired to make the blocks C′ and E of metal. I prefer, however, that they shall be made entirely of wood.

It will be observed that pressure upon the bar H is communicated only to the central rollers, G, and not to the outside lower rollers, F, which rollers have an independent motion, and their pressure against the clothes is due solely to the tension of the springs.

The screws *d*, passing through the cross-pieces E, enter the ends of the roller D, and serve to hold the roller in place, and have journals in the same, while at the same time they hold the cross-pieces E in place against the side of the machine.

What I claim is—

1. The combination, with cross-pieces E and lower central roller, D, whose journals pass through slots B^2 and are housed in said cross-pieces, of the outer rollers, F, journaled in the latter, inner rollers, G, journaled in uprights B, and transverse bands D′, which pass about said rollers, substantially as set forth.

2. The combination, with cross-pieces E, springs I, which urge the latter upward, and outer rollers, F, journaled in said cross-pieces, of the inner rollers, G, journaled in uprights B, lower central roller, D, journaled in said cross-pieces, and transverse bands D′, passing about said rollers, substantially as set forth.

3. The combination, with uprights B, having slots B^2 and roller D, of cross-pieces E and devices *d*, the latter journaling said rollers, and also clamping said cross-pieces laterally against the uprights, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MOSES L. HAWKS.

Witnesses:

JNO. CROWELL, Jr.,

EMMA C. WRIGHT.