

(No Model.)

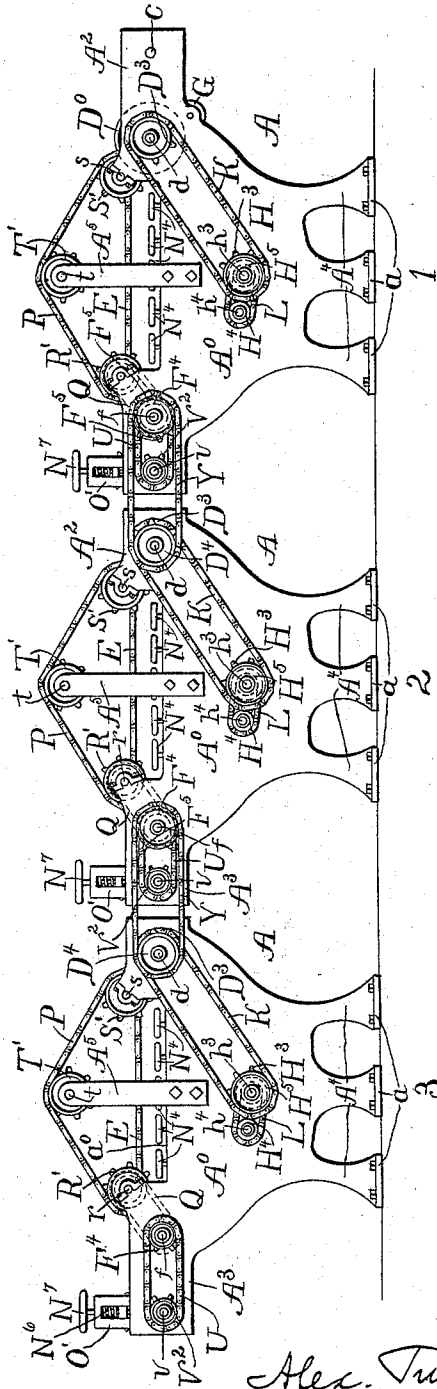
4 Sheets—Sheet 1.

A. TURKINGTON.
WASHING MACHINE FOR PIECE GOODS.

No. 573,936.

Patented Dec. 29, 1896.

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Witnesses

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(No Model.)

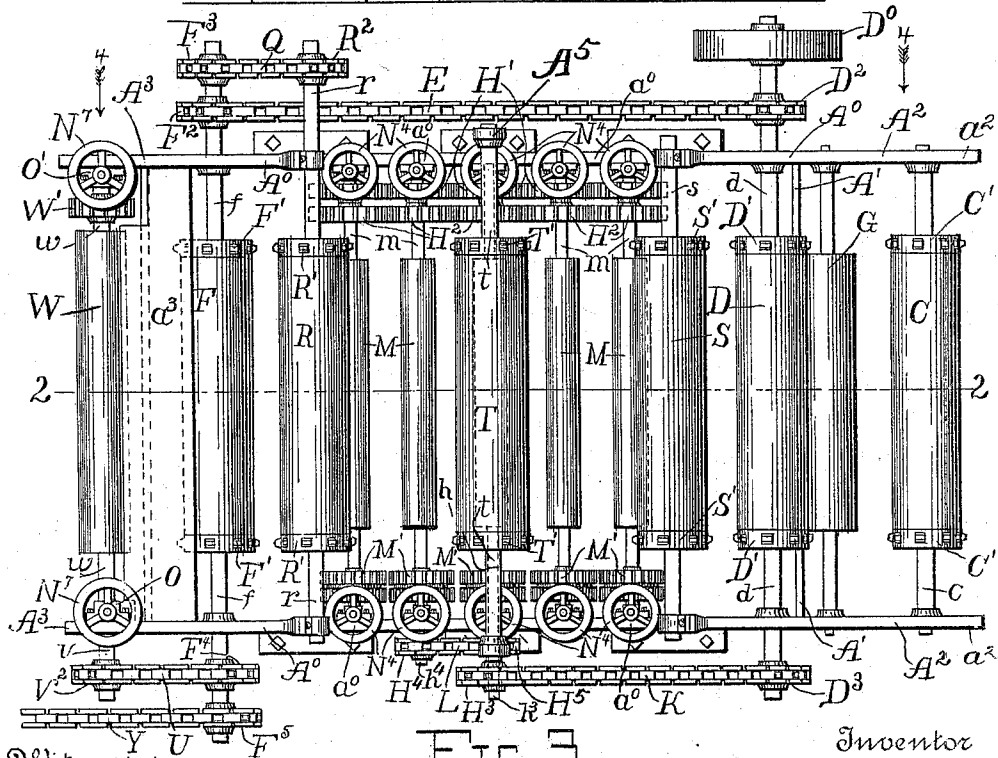
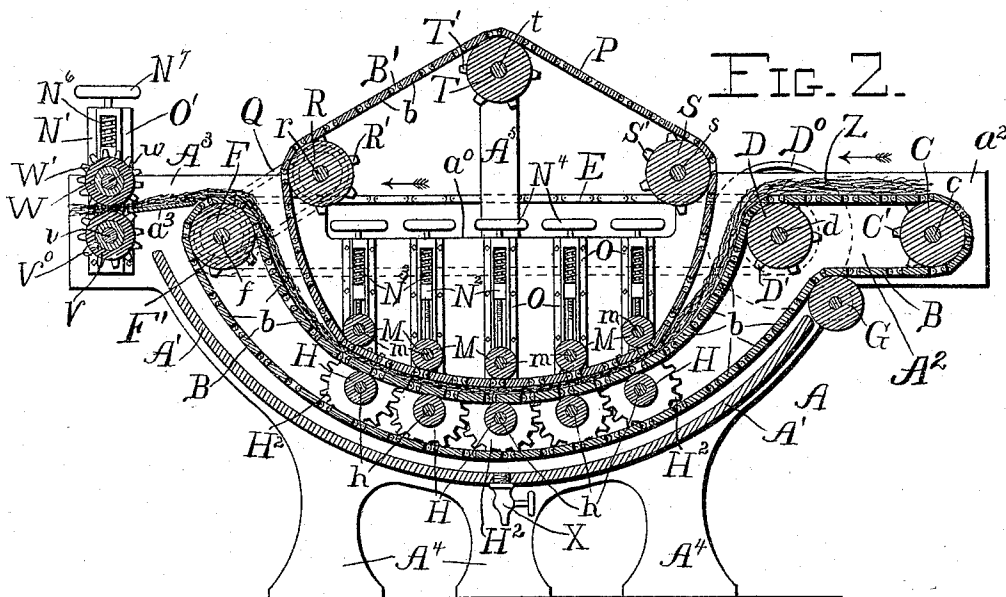
4 Sheets—Sheet 2.

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FIG. 4.

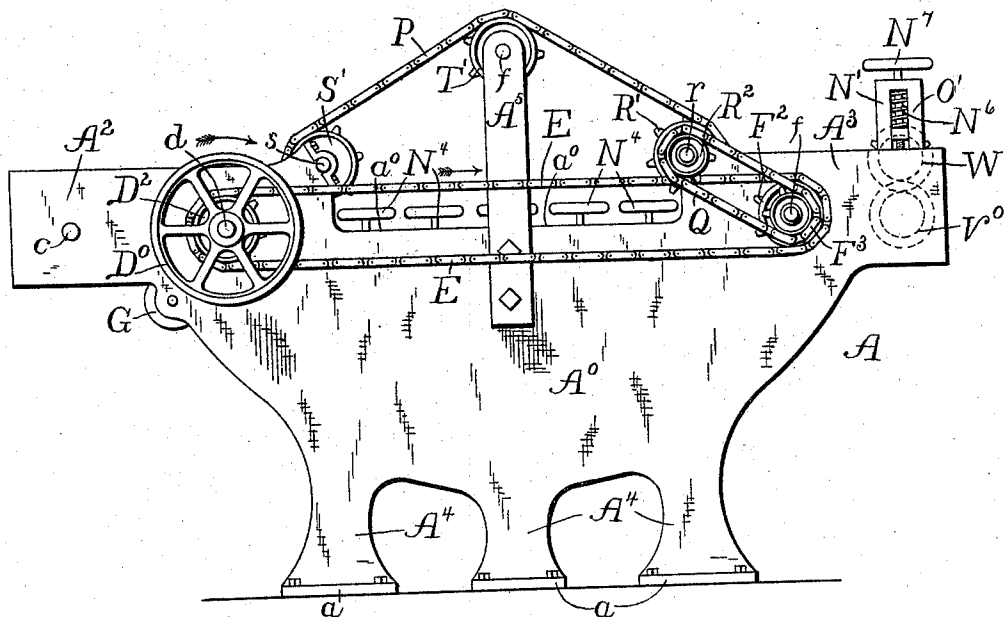


FIG. 5.

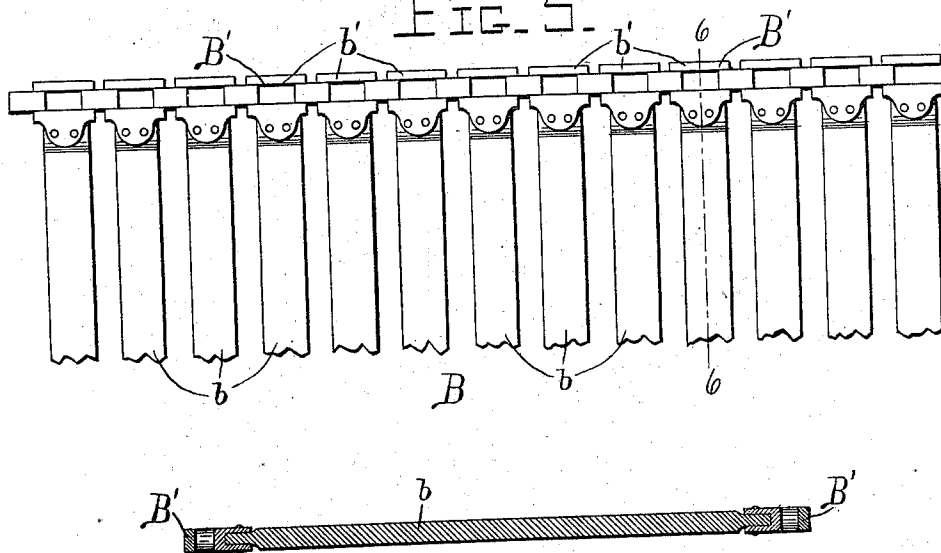


FIG. 6.

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FIG. 7.

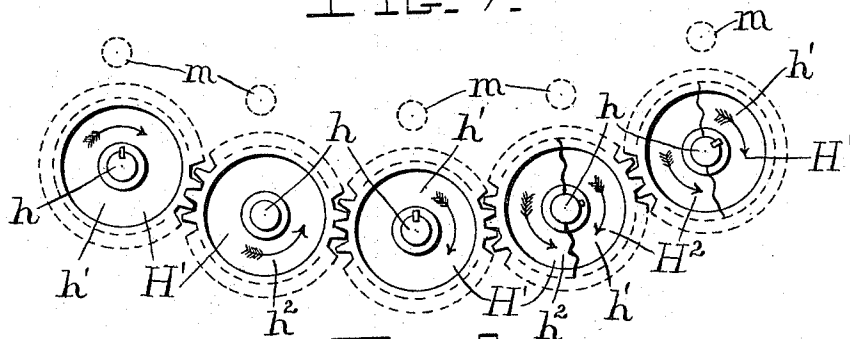


FIG. 8.

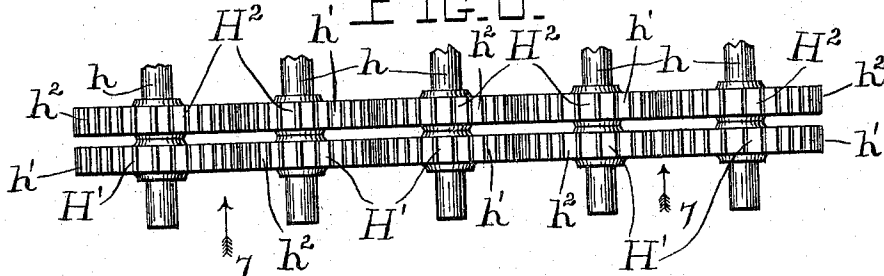


FIG. 11.

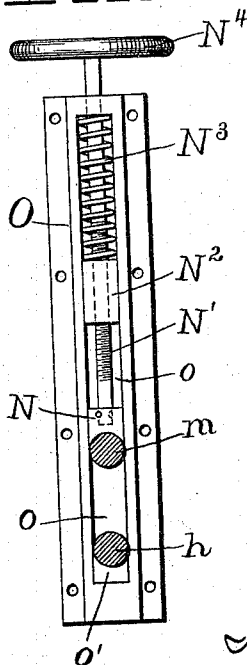


FIG. 9.

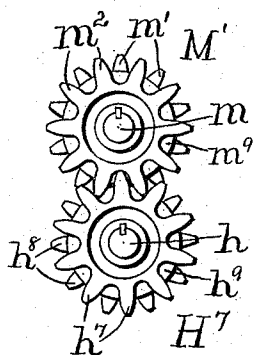
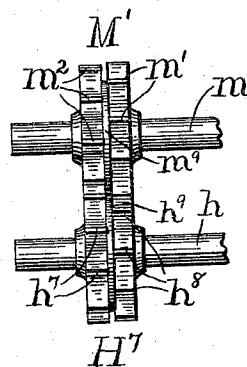


FIG. 10.



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UNITED STATES PATENT OFFICE.

ALEXANDER TURKINGTON, OF LAFAYETTE, INDIANA.

WASHING-MACHINE FOR PIECE GOODS.

SPECIFICATION forming part of Letters Patent No. 573,936, dated December 29, 1896.

Application filed April 17, 1896. Serial No. 588,011. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER TURKINGTON, a citizen of the United States, residing at Lafayette, in the county of Tippecanoe and State of Indiana, 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 appertains to make and use the same.

My invention relates to improvements in washing-machines, but more especially to that class of machines used for washing or scrubbing yarn; and it consists of certain novel features hereinafter described and claimed.

Referring to the accompanying drawings, in which like letters of reference indicate the same parts in the several views, Figure 1 represents a side elevation of three of my improved tanks arranged each to receive the yarn from the preceding tank. Fig. 2 represents a central vertical longitudinal section through one of the tanks. Fig. 3 represents a plan view of one of the tanks with the slat-aprons removed to show the rollers more clearly. Fig. 4 represents a side elevation of one of the tanks, showing the opposite side to that shown in Fig. 1. Fig. 5 represents a plan view in detail of a part of the slat-apron and chain. Fig. 6 represents a transverse section through the same, taken longitudinally through one of the slats. Fig. 7 represents a diagram of the gearing on the lower set of rollers. Fig. 8 represents a top edge view of the same. Fig. 9 represents an elevation in detail of the gearing connecting the upper and lower rollers, and Fig. 10 represents an edge view of the same. Fig. 11 represents a side elevation of one of the adjustable journal-boxes for the rollers.

My invention contemplates the use of several tanks arranged together so that each succeeding tank will receive the yarn or other material after it has passed through the washing fluid in the preceding tank, by which means the yarn or other material may be washed as many times as there are tanks in the series.

In Fig. 1 of the drawings I have shown three of the tanks A arranged as above described and geared together by a system of sprocket wheels and chains, but I do not wish

to limit myself to that number, as any desired number of tanks may be used.

The interior mechanism of all the tanks is the same, but the first tank has an arrangement to receive the yarn or other material from a suitable feeder or from the operator's hand which is omitted in the other tanks.

I will now describe in detail the first tank. (Shown in Figs. 2, 3, and 4 of the drawings.)

The tank A is composed of the two sides A⁰ and the curved bottom A', secured between the sides with a water-tight joint. The lower part of each of the sides is formed into feet A⁴, having flanges a to receive bolts or screws to secure the tank to the floor.

The sides A⁰ are extended at the ends, as at A² and A³, and have journaled in the said extensions rollers C, D, and F, around which passes the endless apron B. The apron B, as shown in Fig. 5, is composed of slats b, connected at their ends to the links b' of a sprocket-chain B', and the rollers C, D, and F are provided with sprocket-wheels C', D', and F' at their ends to receive the sprocket-chains B'. The chains and apron are made long enough to sag down and conform approximately to the curve of the bottom A'. The end A² of the first tank is extended, as at a², to receive the shaft c of the roller C, and a roller G is journaled in the end A² beneath the apron B to raise the latter clear of the bottom A'. Suitably journaled in the upper part of the frame on each side of the center are two rollers R and S, and a similar roller T is journaled in the uprights A⁵ above the center of the tanks, and these three rollers are each provided with sprocket-wheels on their ends to receive the sprocket-chains B' of a second apron P, similar in all respects to the first. This second apron is made long enough to sag down and follow the curve of the upper side of the first apron through the fluid in the tank. The parts of the two aprons where they come together and pass through the washing fluid pass between two sets of rollers H and M, journaled within the sides of the tank.

Secured to the inner sides of the tank are a series of rectangular frames O, (shown in Fig. 11,) within the central opening o of which are placed the bearing-blocks O' and N to receive the shafts h and m of the rollers H

and M. Each of these bearing-blocks has a semicircular bearing-surface for the said shafts, and the lower one, O', is rigidly secured in the bottom of the frame O. The block N has a similar bearing-surface and is inverted above the block O' and mounted so as to slide vertically in the opening o. The rollers H are placed below the aprons B, with their journals resting in the bearing-blocks O, which latter are arranged in an arc of a circle concentric with the curve of the bottom A' of the tank, and the rollers M are placed above the aprons B, one over each of the rollers H, and are held down upon the said aprons by the bearing-block N, which rests directly upon the journals of the rollershafts *m* and is held down by the screw-rod N', which passes through the screw-threaded block N² and is pressed down by the spring N³, interposed between the said block N² and the upper end of the frame O. The screw-rod N³ is provided with a hand-wheel N⁴, by turning which the block N² may be raised or lowered to increase or decrease the tension of the spring N³. The sides A⁰ of the tank are cut away, as at a⁰, to make room for the hand-wheels N³.

The shafts *h* of the lower set of rollers II are geared together by two sets of gear-wheels H¹ and H². Each alternate gear-wheel, as *h*¹, is keyed to its respective shaft, while the other gear-wheels, *h*², are mounted loosely on their shafts and act merely as idler-wheels to transmit motion to the keyed wheels *h*¹, causing all of the shafts to turn in the same direction. (See Figs. 7 and 8.)

At their opposite ends the shafts *h* of the rollers H are geared to the shafts *m* of the upper rollers M by means of the double interlocking spur-wheels H⁷ and M', each of which is provided with two sets of long spur-teeth *h*⁷ *h*⁸ and *m*⁷ *m*⁸, and the two sets of teeth on each wheel are separated by a ring or web *h*⁹ or *m*⁹. The teeth on the wheels H⁷ and M' are made long enough to allow the rollers to separate a little as the yarn passes through them without causing the teeth to become disengaged. Two of the shafts of the lower set of rollers H are extended through one of the sides A⁰ of the tanks A, as at *h*³ and *h*⁴, passing through suitable packing-boxes to prevent leakage, and the end *h*³ is provided with sprocket-wheels H³ and H⁵, and the shaft *h*⁴ is provided with the sprocket-wheel H⁴.

The shaft *d* of the roller D, Figs. 2 and 3, is the main driving-shaft of the machine and receives its motion through a pulley D⁰ from any suitable source of power. On the same end of the shaft *d* as the pulley D⁰ is a sprocket-wheel D², from which a sprocket-chain E transmits motion to a sprocket-wheel F² on the shaft *f* of the roller F at the opposite end of the machine. These two rollers drive the main apron B. The roller F is provided with another sprocket-wheel F³ on the same end as the wheel F², from which a sprocket-chain

Q drives a sprocket-wheel R² on the shaft *r* of the roller R, which drives the upper apron P. The shaft F carries on its opposite end the sprocket-wheels F⁴ and F⁵, for a purpose to be hereinafter explained.

On the end of the shaft *d*, opposite to the pulley D⁰, is a sprocket-wheel D³, from which a chain K transmits motion to the sprocket-wheel H³ on the end *h*³ of the shaft *h*, and the sprocket-wheel H³ on the same shaft is geared by a chain L and the sprocket-wheel H⁴ to the end *h*⁴ of the next shaft *h*. Thus the set of rollers H are all driven in the same direction, and the rollers M being geared to the shafts *h* are driven in the opposite direction.

The yarn is fed on the horizontal part of the main apron B between the rollers C and D and is carried along between the two aprons down in the tank, which is filled with washing fluid, between the sets of rollers H and M, up over the roller F, and is guided between the wringer-rolls V and W by the table a³.

The wringer-rolls V and W are geared together by the gear-wheels V⁰ and W', and are driven by the sprocket-chain U, passing around the sprocket-wheel V² on the shaft *v* and the sprocket-wheel F⁴ on the shaft F.

The wringer-rollers V and W are pressed together by springs N⁶ in a frame O', held and adjusted in the same manner as the springs N³ in the frames O for holding the rollers M down upon the aprons, which have been hereinbefore described.

From the wringing-rollers V and W the yarn passes the main apron B of the next succeeding machine, passing through the latter in the same manner as just described for the first machine, and so on through the whole of the series. Each succeeding machine is driven by a sprocket-chain Y from the sprocket-wheel F⁵ on the shaft *f* to a sprocket-wheel D⁴ on the main driving-shaft *d* of the next machine. By this means the yarn may be passed through as many washing-tanks, each containing a suitable washing fluid, as may be necessary to thoroughly cleanse the same.

A draw-cock X is provided at the lowest part of the bottom A' of each tank, through which the fluid may be readily drawn off from the tank.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a washing-machine, the combination with a tank, of rollers journaled in the said tank and sprocket-wheels on the same shaft with said rollers, an endless apron passing over the said rollers, sprocket-chains attached to the edges of the said apron to engage the said sprocket-wheels, a second endless apron of similar construction passing over similar rollers above the first apron, means for driving both aprons in the same direction, a set of rollers beneath the said aprons, two sets of alternate fast and loose pinions on the said rollers meshing together, a set of yielding

rollers above the said aprons geared to the lower rollers, and means for driving the said rollers, substantially as described.

2. In a washing-machine, the combination
5 with a tank, of rollers journaled in the said tank and sprocket-wheels on the same shaft with said rollers, an endless apron passing over the said rollers, sprocket-chains attached to the edges of the said apron to engage the
10 said sprocket-wheels, a second endless apron of similar construction passing over similar rollers above the first apron, means for driving both aprons in the same direction, a set of rollers beneath the said aprons, two sets
15 of alternate fast and loose pinions on the said rollers meshing together, a set of yielding rollers above the said aprons geared to the lower rollers, a roller V, and a yielding roller W, to receive the material from the aprons,
20 and means for driving the several rollers, substantially as described.

3. In a washing-machine, the combination with a tank, rollers journaled in the said tank, endless aprons passing over the said rollers, a set of rollers beneath the said aprons 25 and a set of rollers above the said aprons, frames carrying journal-blocks *o'* and *N* to receive the journals of the rollers of the two sets, a screw-rod *N'* in the said frames bearing on the upper journal-block, a follower *N*² 30 upon the said screw-rod, a spring within the said frame bearing upon the said follower, means for turning the said screw-rod to adjust the tension of the spring, and means for driving the rollers, substantially as described. 35

In testimony whereof I affix my signature in presence of three witnesses.

ALEXANDER TURKINGTON.

Witnesses:

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HENRY H. VINTON,
W. F. SEVERSON.