C. J. BARKER.

Machine for Washing Goods in the Piece.

No. 160,743 Patented March 16, 1875.

Fig: 1.

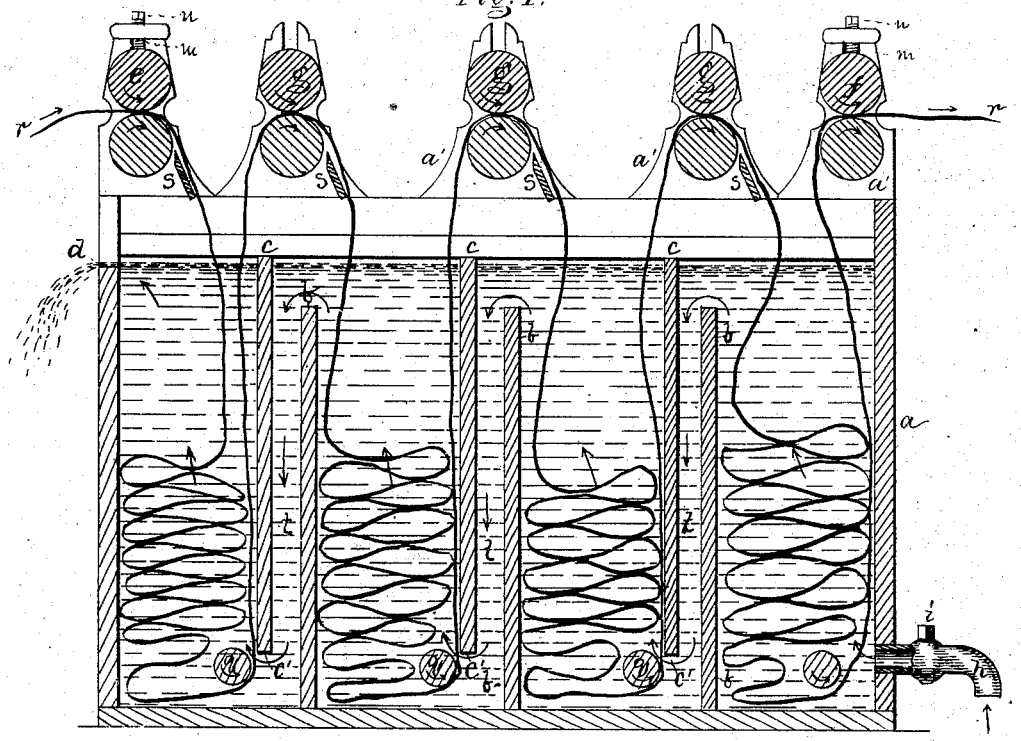


Fig: 2.

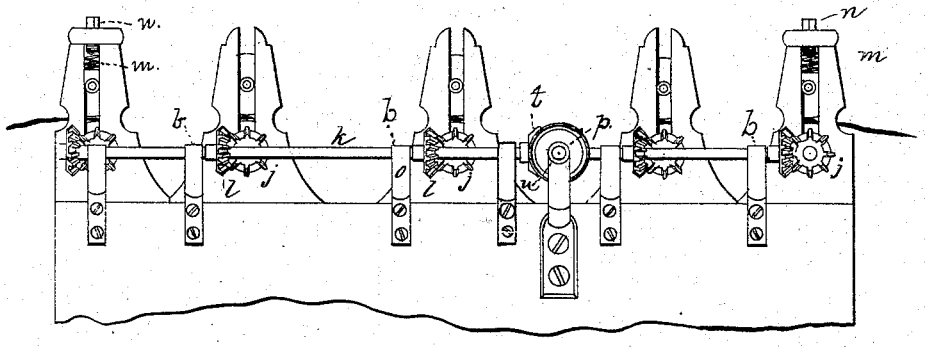
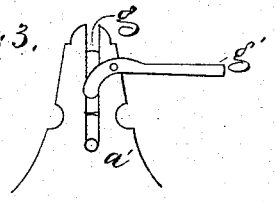


Fig: 3.



Witnesses
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UNITED STATES PATENT OFFICE.

CYRUS J. BARKER, OF LEWISTON, MAINE.

IMPROVEMENT IN MACHINES FOR WASHING GOODS IN THE PIECE.

Specification forming part of Letters Patent No. **160,743**, dated March 16, 1875; application filed December 28, 1874.

To all whom it may concern:

Be it known that I, CYRUS J. BARKER, of Lewiston, in the county of Androscoggin and State of Maine, have invented an Improved Machine for Washing Goods in the Piece, of which the following is a specification:

My invention relates to a machine for washing goods in the piece, and for use in factories; and my invention consists in the combination, with a tank for receiving and containing water, of partitions, arranged as hereinafter described, allowing the water to be discharged from one chamber into another; also, in the combination with such a tank of rollers arranged to move the fabric from that end of the tank at which the water is discharged to the end at which the water is received, and in other features described and set forth in the claims.

Referring to the drawing, Figure 1 is a longitudinal section of my machine for washing piece-goods. Fig. 2 is a side view of the gearing for moving the rollers, and Fig. 3 is a view of a device I employ for elevating the upper rollers.

It is necessary to wash cotton fabrics both before and after coming in contact with chemicals used for bleaching purposes. The machines commonly employed are those having dash-wheels, which are liable to injure the goods, and those having long rolls placed lengthwise of the tank at top and bottom, about which the fabric is wound, passing from one roller to the other in a spiral course, and is drawn tightly as the rollers are moved. This drawing action so stretches the fabric that the figures, as in counterpanes and honey-comb fabrics, are distorted, or the weft is pulled out of right-angular position with reference to the warp, thereby destroying the symmetry of the pattern, and lessening the value of the goods. This stretching and distorting of the figure and fabric is a serious evil.

By my invention the woven figures are not distorted during the process of washing, but are left as woven, and the goods are thoroughly cleansed from all dirt and chemicals.

I employ a water-tight tank, *a*, of wood, brick, or other material, and of suitable length and depth. This tank is divided into compartments (in the drawing four are shown) by means of partitions *b* and *c*, having between them a narrow space, *t*. The partitions *b* rise from the bottom of the tank, and terminate at some distance below the top of the tank, and the partitions *c* start from a point near the top of the tank, above the tops of partitions *b*, and descend not quite to the bottom of the tank. At the bottom of each compartment is a roller, *q*, and over each pair of partitions, and also at the ends of the tank, are pairs of rollers *g e f*. The rollers at the bottoms of the tanks are guiding-rollers. The rollers at top are supported in bearings or boxes *a'*, and are fabric-moving rollers. They also act to expunge the water from the fabric as it (the latter) moves between them. Back of each pair of rollers is a plate or inclined board, *s*, to prevent the fabric from clinging to the rollers. These rollers may be made of wood, metal, rubber, or other suitable substance, and may be supplied with suitable springs *m*, to hold them together with more or less force, and with screws *n*, to actuate the springs. A shaft, *u*, having usual fast and loose pulleys, and having a bevel-wheel, *p*, engages a bevel-wheel, *t*, on a shaft, *k*, supported in bearings *b*. This shaft *k* has a number of bevel-wheels, *l*, that engage bevel-wheels *j* on the shafts of the lower rollers of the pairs *e g f*, and these rollers are moved at substantially the same speed. Levers *g'* are pivoted to the bearings *a'*; their short ends are bent or hooked to pass under the journals of the upper rollers *g*, and by these levers or screws, or equivalent devices, these rollers may be elevated above the lower rollers, when it is desired to render one set inoperative as feeding-rollers, as is the case when the goods to be washed are introduced into and through the machine, and laid in folds.

The water is introduced at the bottom of the tank under considerable head, and at that end of the tank at which the fabric is delivered or discharged after it is washed, and the water flows from the tank at the cloth-receiving end, and over the end at *d*, it being a little lower than the top of the partitions *c*. The fabric *r*, preferably sewed into long pieces, is passed through the usual guiding-eye, and then between the receiving rollers *e*. It is then passed under the roller *q* at the bottom of the first

compartment, and up to and between the rollers *g*, which move the fabric or cloth through the machine; thence under the next roller *q*, and between rollers *g*, until finally it is passed between the delivery or wringing rollers *f*, and through the usual round eye.

The fabric is allowed to accumulate in folds in each compartment, substantially as shown in the drawing; and in doing this it is found quite necessary, for quick action, that the upper rollers *g* be lifted from the lower rollers *g*, and this is done by means of the levers *g'*. The water passes into the tank through the inlet-pipe *h*, provided with a cock, *i*, flows over the top of partitions *b*, falling between partitions *b* and *c* into the next compartment, and so on throughout the tank, until it is finally discharged at *d*.

The fabric, in its unclean condition, is first immersed in the water in the left-hand or rear-most compartment, and is acted on, when it passes about the roller *q*, by the water rushing in a current down through the opening between the partitions. The fabric is acted on by the water rushing through each of these partitions in turn, and in each compartment it passes through cleaner water; and when it passes the roller *q*, in the compartment where the water is first received, it is acted on by the water just issuing from the supply-pipe *h*. In passing from one compartment to the other the water is squeezed or wrung from the fabric by the rollers *g*, the fabric entering the adjacent compartment comparatively free from water; and as the water is kept flowing through the tank at a considerable current, the water in the several compartments is not affected by that in the compartment next it toward the fabric-receiving end of the tank, and in which the water is more soiled.

By placing the fabric in the compartments in folds, as shown, the rollers at the top of the tank have only to lift the fabric from one compartment to another, and the fabric is not drawn and stretched out of shape, as would be the case if the fabric passed directly about the upper and lower rollers and was under strain while passing through the tank.

Loosely-woven, figured, or thin fabrics should not be stretched when being washed by drawing them from one holding-point over another.

Each compartment receives water at the bottom cleaner than is the water which passes over and out at the top.

I call the sets of rollers *g* squeezing-rollers, and the pair of rollers *f* wringing-rollers, while those *e* are feeding-rollers, and all together act as moving-rollers for the fabric being washed.

The force of the current of the water may be regulated to correspond with the class of fabric being washed, whether thin or thick, and whether much or little soiled.

Having described my invention, I claim—

1. The combination, with the tank, of the partitions *b*, which do not extend to the top of the tank, and partitions *c*, which do not extend to the bottom of the tank, and arranged with relation to each other substantially as shown and described, whereby the water passes from the top of one compartment into the bottom of the other compartment, as described.

2. The combination, with a tank provided with the partitions *b c*, having alternate top and bottom passages, arranged with relation to each other as shown, of the squeezing-rollers, one set for each pair of intermediate partitions, *b c*, and moving at substantially the same velocity, as and for the purpose set forth.

3. The combination, with the tank-compartments, divided by partitions *b c*, having alternate top and bottom passages, to control the passage of the water, and the fabric-moving rollers, of a water-supply pipe, *h*, at or near the bottom of the fabric-delivering end of the machine, adapted to maintain a current of water from that end of the tank to the fabric-receiving end of the tank, and over and under the partitions, substantially as described.

4. The combination, with the upper rollers *g*, of the lifting-levers, to permit the introduction of the fabric in folds, as and for the purpose set forth.

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

CYRUS J. BARKER.

Witnesses:
JOHN B. COTTEN,
GEO. E. SMITH.