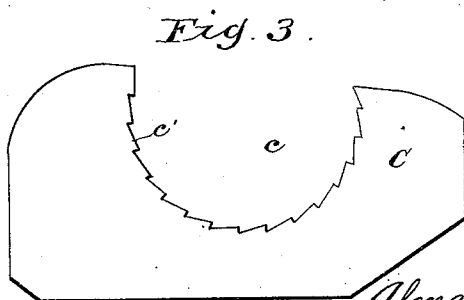
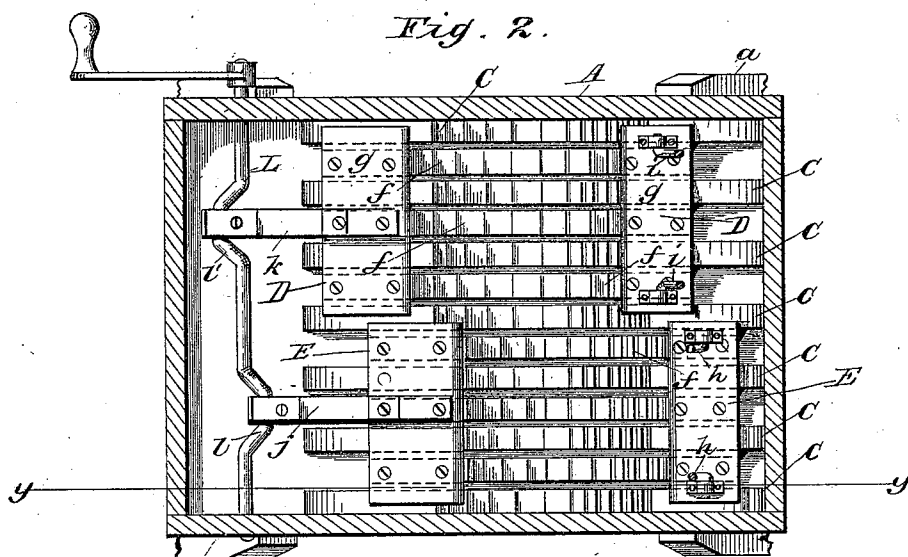
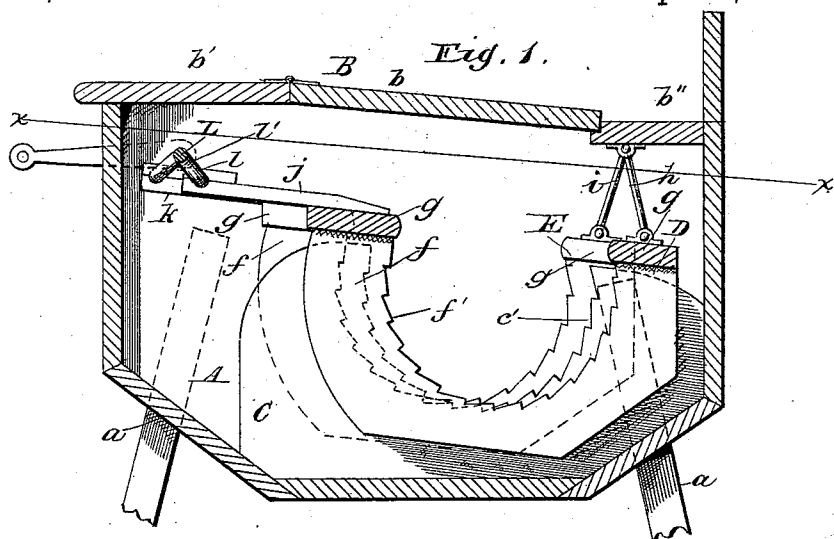


(No Model.)

A. HARRIS.
WASHING MACHINE.

No. 536,722.

Patented Apr. 2, 1895.



Witnesses:

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UNITED STATES PATENT OFFICE.

ALMA HARRIS, OF LOGAN, UTAH TERRITORY.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 536,722, dated April 2, 1895.

Application filed January 2, 1894. Serial No. 495,403. (No model.)

To all whom it may concern:

Be it known that I, ALMA HARRIS, a citizen of the United States, residing at Logan, in the county of Cache and Territory of Utah, have
5 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
10 it appertains to make and use the same.

My invention relates to improvements in washing machines of that class which employ a stationary bed and a reciprocating rubber, but my invention is distinguished from prior
15 devices by the novel form of the co-acting bed and rubber by which I am able to give to the fabrics to be washed a pressing, rubbing and turning motion, whereby the clothes can be thoroughly and quickly cleansed without injury to the fabrics.

My improvements consist, first, in the rubbing bed comprising a series of bars fixed within the suds-box or receptacle at suitable intervals from each other and each bar rising
25 above the bottom within the receptacle, and provided with an arc-shaped or curved opening through it, which openings of the series of bars are in line transversely across the box; second, in a sectional rubber actuated from a
30 common, duplex-crank shaft and each section consisting of a series of connected bars which are arranged between the fixed horizontal bars of the bed to swing longitudinally with respect to said fixed bars, the crank shaft being
35 connected to one end of each section of the rubber while the opposite ends of the rubber sections are hung or suspended by links or stirrups within the suds-box.

The invention further consists in the peculiar construction and combination of devices, which will be hereinafter more fully described and pointed out in the claim.

I have illustrated the preferred embodiment of my invention in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a longitudinal vertical sectional view on the plane indicated by the dotted line *yy* of Fig. 2. Fig. 2 is a horizontal cross sectional view on the plane indicated by the dotted line *xx* of Fig. 1, showing the bed, the sectional rubber, and the crank-shaft in plan.

Fig. 3 is a side elevation of one of the rubber-bars.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A designates the studs box or receptacle which may be of the usual or any preferred construction and form. I prefer to use a suds-box having the supporting legs, *a*, and a sectional cover, B, the section, *b*, of the cover being hinged at one edge to a fixed section, *b'*, and, when said hinged section *b* is closed down, it rests upon the other fixed section or ledge, *b''*, the latter serving also as the support to which the links or stirrups for one end of the swinging rubber sections. The interior of my suds-box or receptacle is lined with a suitable sheet metal, such as zinc, and protected by
60 boards forming the bottom of the suds-box; but the detailed construction of the suds-box herein shown and described as an embodiment of the invention can be made by a skilled mechanic without departing from the spirit of my
75 invention. Within this suds-box is longitudinally arranged a series of bars, C, C, which lie horizontally in the box and are fixed to the bottom, and to one end wall thereof, in any suitable secure manner. These longitudinal fixed
80 bars rise vertically within the suds-box, from the bottom thereof, to within a suitable distance from the top, and said bars are spaced apart or arranged at short distances from each other, to accommodate between them the series of bars which form the movable rubber.
85 Each of the fixed longitudinal bars is provided with a transverse opening, *c*, which is arc-shaped or segmental, as shown by full lines in Fig. 3, and by dotted lines in Fig. 1, and this
90 opening extends clear through both sides of each bar and through the upper edge of the bar, the walls of the opening being serrated, corrugated or roughened, as at *c'* in Fig. 3. These longitudinal fixed bars are arranged
95 parallel to each other so that the openings, *c*, thereof are all in line with each other transversely across the suds box, whereby a peculiar form of rubbing bed is formed within the suds-box, as the clothes to be washed are
100 designed to be placed within the serrated or roughened openings in the bars C and upon the corresponding rubber-bars, presently referred to.

The rubber consists of the two (or more) swinging sections D, E, each of which is independent from the other, but the two are actuated from a common shaft, as clearly shown by Fig. 2 of the drawings. Each rubber section consists of a series of bars, *f*, the connecting plates, *g*, the links for suspending one end of the section in the suds-box, and a connecting bar between the other end of the section and the crank-shaft.

The bars, *f*, of the rubber section, D, are arranged between one half of the bars, C, and the bars, *f*, of the other rubber section, E, are disposed between the remaining half of the bars, C, so that the bars *f* of the two rubber sections coact with all the longitudinal fixed bars, C, forming the rubber-bed. The bars, *f*, of the rubber-sections are similar in construction to the bed-bars, C, that is to say, each bar *f* has the opening, *f'*, extended therethrough and provided with serrations, corrugations, or roughened edges similar to the serrations, *c'*; but the upper edges of the bars, *f*, extend somewhat above the upper edges of the bed-bars in order to receive the plates, *g*, which are securely fastened to the bars *f* and by which the bars *f* are rigidly and securely fastened or coupled together. One end of the rubber section, D, is suspended within the suds-box by the links or stirrups, *h*, which are pivotally connected to one plate, *g*, and to the section, *b''* of the cover, while the corresponding end of the rubber section E is likewise suspended by the links or stirrups, *i*, which are respectively connected in like manner to the plate *g* of the rubber section, E and the cover section, *b''*. To the other plates *g* of the rubber sections, D, E, are fastened the connecting bars *j*, *k*, and these bars extend beyond the rubber sections and connected to the cranks, *l*, *l'*, of the crank-shaft, L. This crank-shaft extends transversely of the suds-box and is journaled in suitable bearings therein; and said shaft may have an operating handle at one end and a balance wheel. The cranks, *l*, *l'*, of the shaft are set at right angles to each other, and as the shaft is rotated, the rubber sections, D, E, are reciprocated between the longitudinal serrated bars of the rubber-bed.

This being the construction of my improved washing machine, the operation may be described as follows: Water and soap suds are poured into the suds-box and the fabrics are placed in the openings *c*, *f'*, of the bars forming the bed and rubber, after which the crank shaft is rotated to reciprocate the rubber sections, D, E. As the rubber section D swings in one direction, its bars *f* act to press the fabrics against one side of certain of the rubber-bars, C, and the rubber section, E, swinging in

substantially the same direction, its bars *f* operate to press other fabrics against the same side of certain other bars, C; but as the shaft completes its rotation, the action of these rubber sections are reversed because they are moved past one another and operate against the opposite sides of their respective bed-bars, C. By the peculiar action of the bars *f* forming the rubber sections, the fabrics are pressed and rubbed between the bars *f* and the bars, C, and by the arc-shaped openings in the bars *f*, C, the fabrics are turned or rotated so that they will be thoroughly and expeditiously cleansed.

I am aware that changes in the form and proportion of parts and in the details of construction of the mechanism herein shown and described as an embodiment of the invention can be made without departing from the spirit or sacrificing the advantages of my invention, and I therefore reserve the right to make such changes and alterations as fairly fall within the scope of my invention.

By having the cranks of the shaft at right angles to each other as shown by Fig. 1, the sections of the rubber are caused to follow one another in pressing and rubbing the fabrics against one side of the bars, C. Thus, when one section is forced against one side of the bars, C, the other section follows it and operates to press the fabrics against the same side of other bars of the series of bars, C, and as the shaft rotates, the first named section is drawn back and then the other section is similarly moved to press the fabrics against the opposite sides of the bars C.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a washing machine, the rubbing bed comprising a series of parallel spaced bars C fixed longitudinally within the suds box and provided with aligned openings *c* which form a trough, in combination with the rubber sections D, E, each hung at one end within the suds box and having its connected bars arranged between the bed bars and provided with transverse openings to receive the fabrics, and a crank shaft provided with right angle cranks connected by pitman with the respective rubber sections to impart reciprocating motion thereto between the bed bars, substantially as and for the purposes described.

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

ALMA HARRIS.

Witnesses:

J. A. WAHLEN,
J. H. ENGLAND.