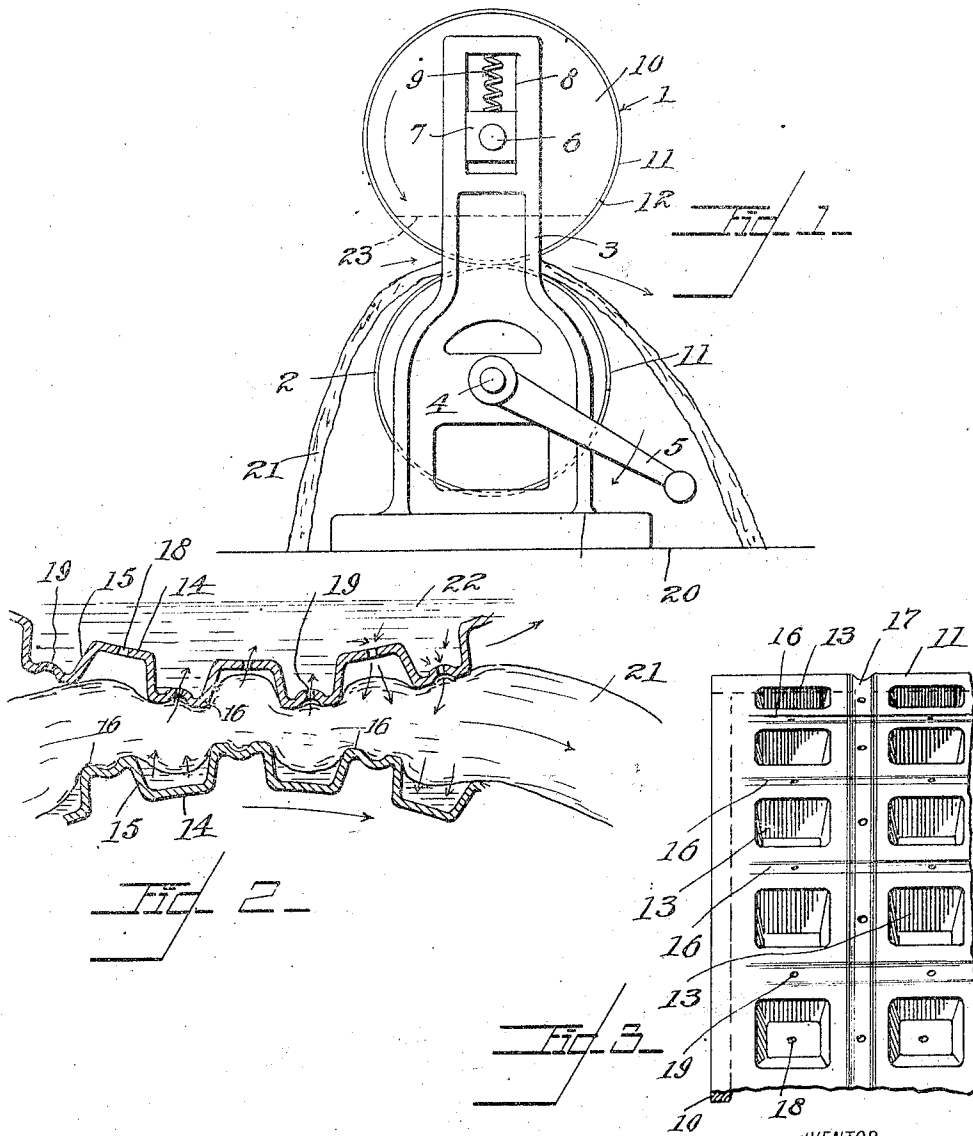


M. STONEBRIDGE.
WASHING MACHINE.
APPLICATION FILED JULY 11, 1913.

1,101,667.

Patented June 30, 1914.



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MARGARET STONEBRIDGE, OF GARRISON, NEW YORK.

WASHING-MACHINE.

1,101,667.

Specification of Letters Patent.

Patented June 30, 1914.

Application filed July 11, 1913. Serial No. 773,478.

To all whom it may concern:

Be it known that I, MARGARET STONEBRIDGE, a citizen of the United States, residing at Garrison, State of New York, have invented certain new and useful Improvements in Washing-Machines, of which the following is a clear, full, and exact description.

This invention relates to washing machines, and particularly to washing machines which are employed for washing textile fabrics, such as cloth or clothing or other fabrics.

A principal object of the invention is to produce a machine of this class in which a washing member is employed having a special construction which will bring about a repeated passage of the washing water through the fibers of the fabric.

A special object of the invention is to accomplish this effect without necessitating the employment of a resilient material for the washing faces or rubbing faces of the washing members.

One of the objects of the present invention is to produce a washing machine of this type having a roller or washing member which is very light and inexpensive and having pockets formed in such a way as to give a good washing effect.

Other objects of the invention will appear more fully from a clear understanding of the invention.

The invention consists in the general combination of parts and in the features hereinafter described, all of which contribute to produce an efficient washing machine.

The preferred embodiment of my invention will be particularly described in the following specification, while the broad scope of my invention will be pointed out in the appended claims.

In the drawings, Figure 1 is an end elevation of a washing machine embodying my invention; Fig. 2 is a vertical section taken through the machine and showing the co-operating surfaces which produce the washing effect; and Fig. 3 is a fragmentary view showing a small portion of one of the shells of the roller.

Referring more particularly to the parts, I shall now describe a small hand-operated machine embodying the invention, although it must be understood that the invention is equally well applicable to power-driven washing machines.

In the drawings, 1 represents an upper roller which coöperates with a lower roller 2, to wash articles passed between the rollers said rollers being mounted in a suitable frame 3. The lower roller 2 may have a fixed shaft 4 carrying a crank 5 by means of which the roller may be rotated. The upper roller 1 is preferably provided with a shaft 6, the ends of which are mounted in boxes 7 which may move up and down in guides 8 formed in the frame 3; and this upper roller is normally pressed downwardly resiliently by means of springs such as the spring 9, which exert their pressure upon the boxes 7. The rollers 1 and 2 have circular heads 10 which are attached in the ends of cylindrical shells 11. These shells 11 may be formed of any suitable sheet metal, such as zinc or other pliable metal. The shells 11 are preferably formed originally as flat sheets and are then secured to the heads 10 with the ends of the sheets coming together to form a butt joint 12. By means of dies while each shell is in the form of a sheet, I produce a plurality of pockets or cups 13 which are formed by pressing or offsetting the material inwardly so as to form cups with bottoms 14 and slightly converging side walls 15. These cups or pockets are preferably formed in longitudinal and circumferential rows, and the material between the rows is preferably offset so as to form corrugations 16 extending longitudinally of the rollers, and other corrugations 17 extending circumferentially around the rollers in such a manner as that indicated in Fig. 3. In the bottoms 14 of the cups or pockets of the upper roller I prefer to form perforations 18, and similar perforations 19 may be formed in the corrugations 16 of the upper roller. The lower roller is preferably entirely without such perforations.

In using the machine the frame 3 may be supported on the upper edge 20 of a tub or on a shelf, and the textile fabric or cloth 21 which is to be washed passes up from the tub where it becomes soaked with water and passes between the rollers in the direction indicated by the arrows in Fig. 1. The lower roller 2 is rotated meanwhile by means of the crank 5 and the pressure of the cloth on the upper roller rotates the upper roller in the opposite direction, that is, so that the adjacent surfaces of the rollers move in the same direction. The

action of the rollers on the cloth 21 is indicated most clearly in Fig. 2. As the cloth passes between the rollers, it forces the upper roller upwardly compressing the springs 9 so that the rollers press the material with considerable force. As the material passes toward the line which joins the axes of the roller, it becomes compressed into the cups or pockets and the quantity of water in the material which is compressed in the pockets of the upper roller becomes expressed and passes up through the perforations 18 into the interior of the upper roller. A similar action takes place at the perforations 19, due to the pressure exerted on the material. For this reason the perforations of the upper roller which are approaching the center line will pass water upwardly as indicated by the arrows. As the cloth passes out of the space between the rollers, the compression exerted on the cloth becomes less and less, and as the cloth withdraws itself from the unperforated cups 13 of the lower roller, a partial vacuum is formed within these cups. This tends to draw the water from the fibers of the material into the cups of the lower roller and also tends to draw water inwardly through the adjacent perforations of the upper roller, as indicated by the arrows in Fig. 2. In this way the water is made to circulate with considerable force through the fibers of the material and thereby produces a very efficient washing effect. On account of the fact that water is constantly flowing upward in the perforations of the upper roller by pressure, the upper roller in operation will accumulate a quantity of water so as to form a bath 22 and the water of this bath is constantly trickling out through some of the perforations onto the cloth 21. The line 23 indicates the level of this bath in Fig. 1. Obviously this level will depend upon the speed of rotation of the rollers, and if the speed is sufficient the bath will have a high level and will have considerable weight, which materially increases the pressure of the upper roller on the lower roller. In this way the hollow cylindrical form of the roller is utilized to give lightness to the roller when the machine is being transported, and gives weight to the roller when it is in operation.

The machine operates most effectively on a cloth of considerable thickness such as a blanket. Where thin cloths are to be washed, they are preferably folded into considerable thickness before being passed between the rollers. Where very small or dainty articles are to be washed, they can be folded up within the folds of a towel or cloth and the cloth then passed through the machine. The washing effect is sufficient to wash all the articles in the interior of the

folded cloth. The lower roller is preferably of somewhat smaller diameter than the upper roller as the thickness of the cloth being washed virtually increases the diameter of the lower roller. The corrugations 16 and 17 assist in giving the rollers a grip on the cloth. The walls of the pockets preferably converge slightly. This form is most easily produced by the forming die and also gives a better compression of the wet cloth in the pockets. If desired both the rollers may be positively driven in any well known manner.

It is understood that the embodiment of the invention described above is only one form or embodiment the invention may take, and I do not wish to be limited in the practice of my invention, nor in my claims, to the particular embodiment set forth above.

What I claim as new is:—

1. A machine for washing textile fabrics comprising a washing member having a surface with a plurality of circumferential rows of cup-shaped pockets, and a second washing member cooperating therewith to compress the wet fabrics into said pockets, said pockets having perforations to permit the escape of the water expressed from the fabric in said pockets.

2. A machine for washing textile fabrics comprising a washing member having a surface with a plurality of cup-shaped pockets, and a second washing member having a surface with pockets into which the fabric is compressed and which exert a suction on the fabric as it withdraws therefrom, cooperating with said first member to compress the wet fabric into a plurality of said pockets, said pockets having perforations to permit the escape of the water expressed from the fabric.

3. A machine for washing textile fabrics comprising a washing member having a surface with a plurality of circumferential rows of cup-shaped pockets, and a second washing member cooperating therewith to compress the wet fabric into said pockets, said pockets having perforations to permit the escape of the water expressed from the fabric in said pockets, and means for resiliently pressing one of said members toward the other.

4. A machine for washing textile fabrics comprising a roller having a cylindrical shell with an inwardly offset wall forming pockets therein, and a washing member cooperating therewith to compress the wet fabric into the pockets, said pockets having perforations in the wall thereof permitting the expressed water to pass into the interior of said shell.

5. A machine for washing textile fabrics having a roller comprising a cylindrical shell having inwardly offset pockets in the wall thereof and means opposite said roller and

coöperating with said roller to exert a washing effect on a fabric passed between said means and said roller.

6. A machine for washing textile fabrics having a roller comprising a cylindrical shell having pockets offset inwardly in the wall thereof, said pockets being arranged in longitudinal rows, the wall of said shell between said rows having means for engaging the fabric to advance it, and means opposite said roller and coöperating with said roller to exert a washing effect on a fabric passed between said means and said roller.

7. A machine for washing textile fabrics having a roller comprising a cylindrical shell having pockets offset inwardly in the wall thereof, said pockets being arranged in longitudinal and circumferential rows, the wall of said shell having longitudinal and circumferential corrugations between said rows, and means opposite said roller and coöperating therewith to wash a fabric passed between said means and said roller.

8. A machine for washing textile fabrics

comprising an upper roller having a cylindrical shell with pockets formed therein and a lower roller having a cylindrical shell with pockets therein, and coöperating with said upper roller to compress the wet fabric into the pockets of said upper roller when the fabric is passed between said rollers thereby expressing the water from the fabric, said upper roller having perforations in the pockets thereof permitting the expressed water to pass into the interior of the said upper roller and accumulate therein, and resilient means for pressing the said upper roller downwardly upon the said lower roller, the pockets of said lower roller being unperforated and exerting a suction effect upon the fabric as the fabric passes from between the rollers.

Signed at Peekskill, N. Y., this 9th day of July 1913.

MARGARET STONEBRIDGE.

Witnesses:

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