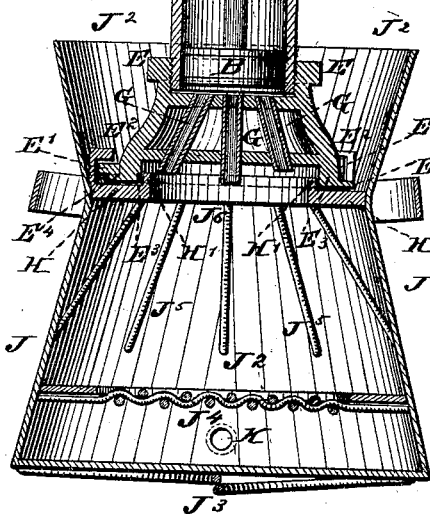
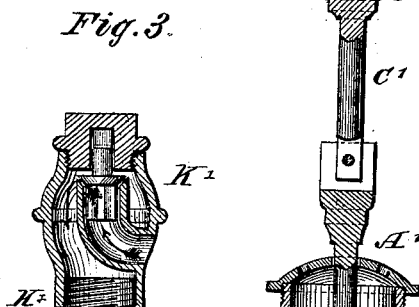
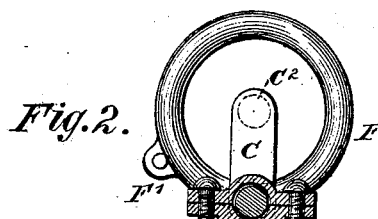
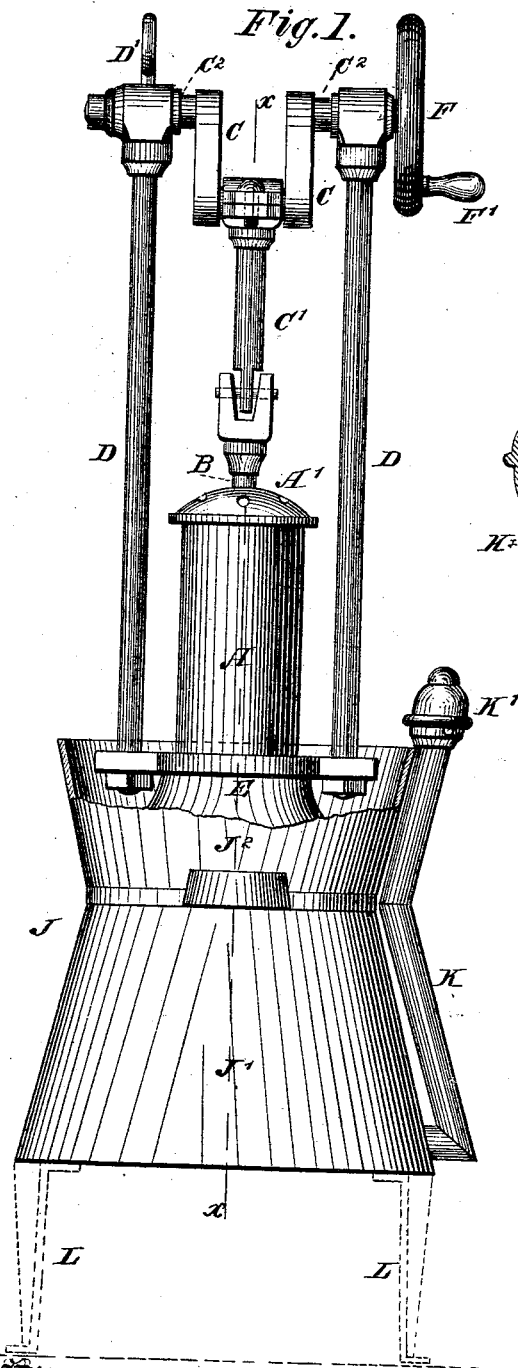


C. PERKES.  
Washing-Machine

No. 217,900.

Patented July 29, 1879.



Witnesses:

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# UNITED STATES PATENT OFFICE.

CHARLES PERKES, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN WASHING-MACHINES.

Specification forming part of Letters Patent No. **217,900**, dated July 29, 1879; application filed March 19, 1879.

*To all whom it may concern:*

Be it known that I, CHARLES PERKES, of the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Washing Clothing or other Textile or Looped Fabrics; and do hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable persons skilled in the art to make and use the said invention.

My invention relates to that class of machines in which jets of water, either pure or combined with soap or other detergent agents, are squirted upon and through the clothes or fabric and drawn or sucked through them.

This invention has for its object the more convenient mode of holding the apparatus and propelling it, the avoidance of risk of clogging or choking of the jet-tubes, the more effective direction of the jets upon the clothing or fabrics, and the more convenient holding of the clothing or fabrics during cleansing, so that the jets of fluid may be most effectively circulated through them; and may be briefly stated to consist of a single-acting pump, operated by a crank and pitman, combined with a series of diverging jet-tubes of unequal length and a vessel holding the base of the pump, so that it can be readily detached and replaced and the washing-fluid retained without wasting or wetting the operator, and the clothing or fabrics presented in favorable position to the action of the jets. A tube or channel-way for relieving the exhaustion in the vessel without waste of fluid is also combined with the vessel and pump, and forms an important feature of this invention.

I will now proceed to more particularly describe the mode of making and operating this invention, referring in so doing to the drawings annexed and forming part of this specification, and the letters of reference marked thereon.

The figures shown in the drawings are a side elevation, numbered 1, and a vertical section, numbered 2, made in the plane indicated by the dotted line *x x* in Fig. 1. Fig. 3 is an enlarged view, in section, of the valve for relieving the partial vacuum in the vessel J due to the rising motion of the pump-piston.

A represents a vertical cylinder or pump,

provided with an accurately-fitted piston, B, having a piston-rod, B', guided in the cover A', which cover is perforated to permit free ingress and egress of air during the motion of the piston B in the upper part of the cylinder A.

The piston B is reciprocated vertically by the crank C and pitman C'. The crank-shaft C<sup>2</sup> is supported in bearings D D, securely supported upon the base E, and in small-size or hand machines is turned by a fly-wheel, F, and crank-handle F', and in large machines may be driven by a band-wheel or gearing. In hand machines a handle, D', is formed upon one of the bearings D, affording a support to the operator and serving to steady the machine.

The base E of the pump-cylinder A is expanded into the form of the frustum of a cone, into which, projecting downward, are inserted a series of jet-tubes, G, of unequal lengths, diverging at their lower ends.

Upon the lower rim of the pump-base E are formed segmental screw-threads or cams E<sup>1</sup>, which, engaging in similar cams E<sup>2</sup>, formed upon a throat-plate or neck-piece, H, of the vessel J, serve by a slight torsional movement in one direction to hold the pump by its base E securely to the neck H of the vessel J, where it is made fluid-tight by a gasket, E<sup>3</sup>, compressed between the shoulder E<sup>4</sup> in the pump-base E and the rim or shoulder H' in the neck-piece H. By a similar movement in opposite direction it may be detached.

The vessel J is formed in the shape of the frustum J<sup>1</sup> of a cone, having a neck, H, already described, and surmounted by a conical hopper, J<sup>2</sup>, which serves to facilitate the introduction of fluid and clothing or fabrics, and to catch and retain any water that may be splashed or leak into it.

The bottom of the vessel J is provided with braces J<sup>3</sup>, so as to prevent it buckling and cause it to remain fluid-tight at its joints and seams.

Legs L may be used to raise it to convenient height to suit the operator and afford a space for applying heating apparatus under it.

A grating or sieve, J<sup>4</sup>, placed a short distance above the bottom, serves to support the clothes or fabrics and present them to the action of the jets, leaving a space for fluid under

them. A grating, J<sup>5</sup>, performs a like function in guiding the clothes toward the center of the vessel, beneath the jet-tubes, and leaves an annular space for fluid in the shoulder J<sup>6</sup> of the vessel J.

A tube, K, reaches from the lower portion of the vessel J to the level of the hopper J<sup>2</sup>, terminating in a valve, K', opening inward, and, closing against any outward flow, admits air and relieves any partial vacuum in the vessel J during the rising stroke of the piston.

In using this apparatus the articles to be washed are packed closely, but not tightly, in the vessel J, resting on the grate J<sup>4</sup>; water and the detergent agent are introduced, the pump attached by its base E to the neck-piece H, as already described, and the shaft rotated, causing the piston to squirt and suck, alternately, jets of fluid through the tubes G. The tubes G, being of unequal length, do not choke or close with the clothing, so as to retard the working of the pump, and the jets turn the clothes and present them in different directions to the currents.

In practice a slight leakage of air takes place around the pump-piston in its descending stroke, and a return of air through the same leaks cannot readily occur, from the position of the piston in the vertical cylinder retaining a seal of water or fluid upon its upper side. The valve K' and tube K serve to let a supply of air into the vessel J.

The agitation of the water and air thus introduced penetrates the mass of clothing under treatment and effectually cleanses them, soap or other detergent agents being introduced to accelerate the operation.

Another advantage of the valve K' and tube K is, that air entering the valve K' and tube K relieves the resistance that rarefying the air by upward stroke of the piston would otherwise make.

An active operation of the pump for about ten minutes is found to effectually cleanse clothing.

Having described my invention and the mode of operating the same, what I claim as new therein and original with myself is—

1. The combination of the pump A and series of jet-tubes G, projecting unequal distances below the pump bottom or diaphragm, with the vessel J, as and for the purpose set forth.

2. In a washing apparatus for clothing, the combination of an alternately sucking and injecting syringe or pump, A, with the vessel J, for containing clothing, and attached thereto by projections upon the base of the pump A engaging in corresponding projections on the upper part of the vessel J, as and for the purpose set forth.

3. The combination of the tube K, provided with the valve K', with the vessel J and pump A, as and for the purpose set forth.

4. The vessel J, provided with the bars or grating J<sup>5</sup>, in combination with the pump A, having jet-tubes G, as and for the purpose set forth.

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Witnesses:

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