

(No Model.)

C. BOPP.  
WASHING MACHINE.

No. 421,898.

Patented Feb. 25, 1890.

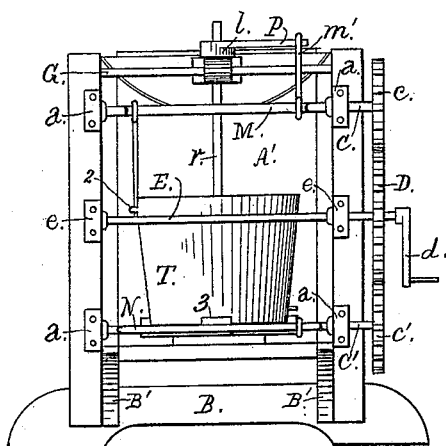


Fig. 2.

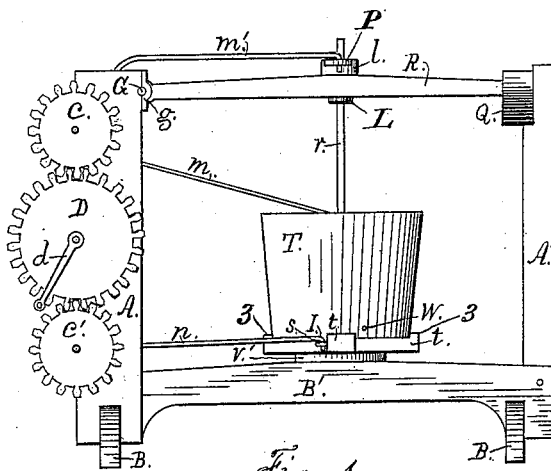


Fig. 1.

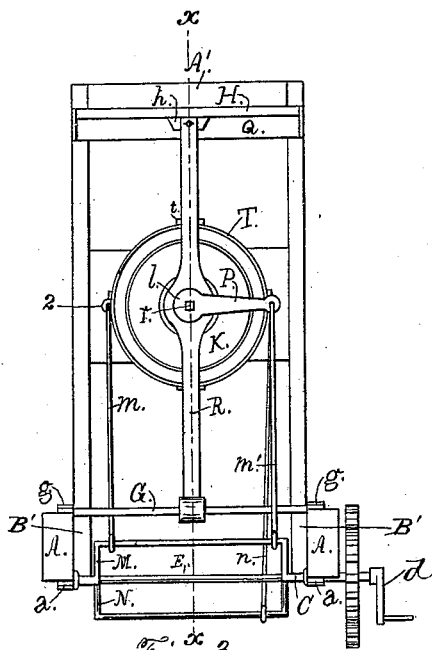


Fig. 3.

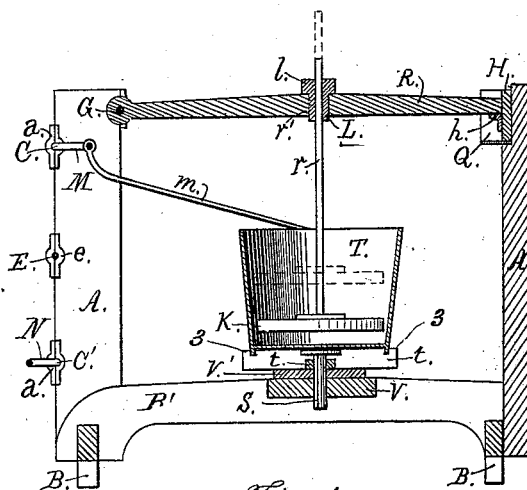


Fig. 4.

Witnesses  
Geo. A. Lane  
Ella L. Gerhart

Inventor  
Charles Bopp  
By his Attorney Wm. R. Gerhart

# UNITED STATES PATENT OFFICE.

CHARLES BOPP, OF MOUNT JOY, PENNSYLVANIA.

## WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 421,898, dated February 25, 1890.

Application filed March 18, 1887. Serial No. 231,373. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES BOPP, a citizen of the United States, residing at Mount Joy, in the county of Lancaster and State of Pennsylvania, have invented certain Improvements in Washing-Machines, of which the following is a specification.

My invention relates to improvements in machines in which the clothes are washed by the vibration in opposite directions of the tub and a disk resting upon them, the object being to produce a simple, cheap, and durable machine, the construction and operation of which will be fully hereinafter set forth, and pointed out in the claim.

The mechanism of my invention is fully illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation showing the gearing for giving motion to the parts; Fig. 2, an end elevation showing the manner in which the gearing operates the cranks; Fig. 3, a top view of the machine, and Fig. 4 a longitudinal vertical section through Fig. 1. Similar letters and figures indicate like parts throughout the several views.

The washing-machine is supported by the posts A at one end and the standard or post A' at the other, the three resting upon bases B B, connected by the lateral braces B' B'. The actuating mechanism is attached to the posts A, and consists of two shafts C C', journaled on the outer edges of the posts A at a, and each having a cog-wheel c c', attached to one end on the same side of the washer. Between these cog-wheels there is a pinion D, attached to the shaft E, said shaft being journaled at e. This pinion meshes with the cog-wheels c c', and is actuated by the usual crank d.

The tub T, in which the clothes are placed, rests upon a frame composed of two cross-pieces t t, which are pivoted below their point of intersection on a spindle s, stepped in a circular and transverse bearing V and V', respectively, resting the one upon the other, the transverse bearing being supported by the braces B' B'. The purpose in using the double bearings V V' is to obtain a greater bearing-surface for the spindle, in order to keep the tub properly centered during its vibratory movements, to be hereinafter described. The

ends of the cross-pieces t t have upwardly-extending projections 3, which embrace and rest against the outer surface of the tub to hold it more firmly in place and prevent it from being displaced by the vibratory movements just mentioned, while the circular shape given the bearing V' affords a uniform bearing for the cross-pieces while making those movements.

A hinge-rod G is supported in boxes g, located on the inner edges of the posts A near the top. This rod supports one extremity of the bearing-piece R, which extends to the other end of the frame, where it is detachably secured to a bracket h, attached to the back of the drip-pan Q by a pin having a cross-head 1, by which it can be removed. The bearing-piece R passes over the center of the tub and serves to guide and uphold the spindle r, to the lower end of which the disk K is secured. This disk is vertically self-adjusting in the tub, the spindle passing through a flanged sleeve L, which rests loosely in the opening r' in the bearing R, the flange l supporting the sleeve in place. The spindle r is angular in cross-section, and the shape of the opening through the sleeve L corresponds therewith, as shown in Fig. 1, the spindle being movable vertically through the opening in the sleeve, as illustrated by dotted lines in Fig. 4. If it is at any time desirable to remove the disk K from over the tub or disconnect it from the bearing-piece R, the pin securing the bearing-piece to the bracket h is withdrawn and the bearing-piece turned upward on its hinge-rod G.

The shafts C C' serve to impart motion to the tub and disk through the medium of suitable connecting mechanism, and for this purpose each is formed with a crank M and N, respectively, the former being connected with a staple 2 in one side of the tub near its upper edge by means of the connecting-rod m, and the latter with a staple s in one of the cross-pieces on the other side of the tub by a rod n, constructed with a hook i on the inner end to engage the staple. The vibratory movement of the disk is obtained by means of a connecting-rod m' between the crank M and the lever P, formed integral with the flange l of the sleeve L, and extending outward in a direction opposite to the point at

which the rod *m* is connected with the tub. By connecting one of the rods by which the tub is vibrated to the tub and the other to the frame upon which it rests the tub is prevented from being twisted out of its relative position on that frame and undue straining of the tub is prevented, as the force which acts directly on the tub and that which acts in the same direction on the frame supporting it are equal.

The application of the force by which the tub is vibrated to both sides of the same gives steadiness to its movement, reduces the friction of the spindle against the sides of the socket in which it rests, and causes the sleeve to revolve more easily in its socket than if that force were applied at only one point. In addition to this the directing of the operating force to the points of application of the same from the cranks revolving as nearly opposite those points as possible economizes power and avoids unnecessary strain upon the parts of the structure.

In framing the machine the cranks *M* and *N* are set so that their arms project in opposite directions, so that in acting upon the tub one rod pushes and the other pulls, alternately.

The surfaces of both the bottom of the tub and the under side of the disk may be formed with a series of corrugations arranged either radially or otherwise, as is usual with washing-machines of this class.

In placing clothes in the tub the disk *K* and spindle *r* are raised sufficiently for the

purpose, and then the disk is lowered until it rests upon the clothes. As the clothing becomes saturated with water and settles in the bottom of the tub the disk settles with them while vibrating.

There is an opening in the side of the tub near the bottom for drawing off the suds and water when no longer needed, and a stop-cock or a plug *W* is provided for the purpose of closing the said opening as required.

I am aware that prior to my invention the washing of clothes between surfaces vibrating in opposite directions has been effected in various ways. I therefore do not claim such a combination, broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

The combination, with the frame, of cross-pieces *t t*, resting upon and pivoted at their point of intersection in a bearing, the tub resting upon the cross-pieces, two crank-shafts *C C'*, placed one above the other and provided with cog-wheels *c c'*, a pinion *D*, located between the cog-wheels and meshing with the same, a rod *m*, connecting the crank of the upper shaft with one side of the tub, and another rod *n*, connecting the crank of the lower shaft and one of the cross-pieces *t t* on the opposite side of the tub, all constructed and operating substantially as and for the purpose specified.

CHARLES BOPP.

Witnesses:

M. N. BRUBAKER,  
WM. R. GERHART.