

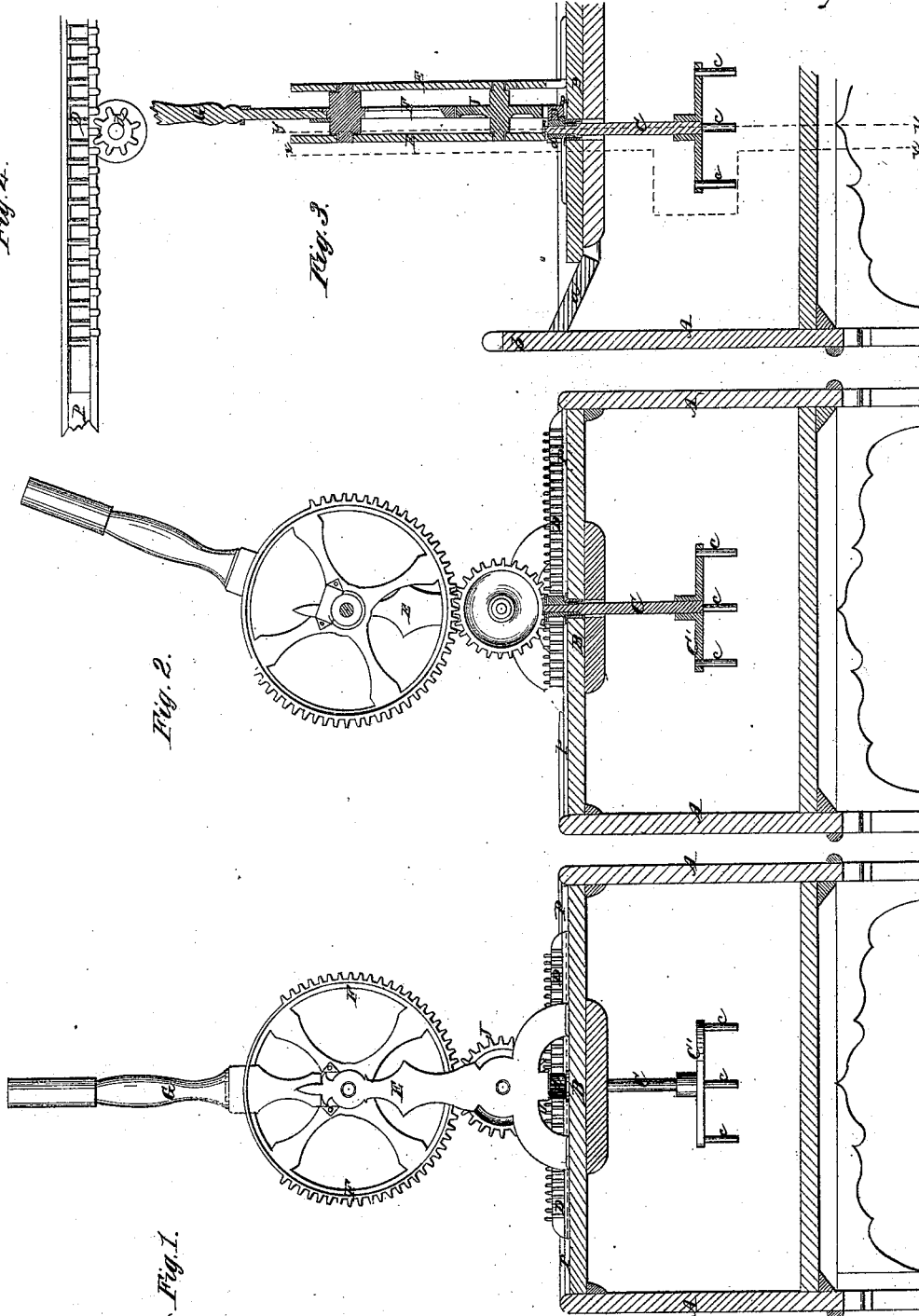
*E. A. Lucas,*

*Washing Machine,*

*N<sup>o</sup> 54,378.*

*Patented May 1, 1866.*

*Fig. 1.*



*Fig. 2.*

*Fig. 3.*

*Fig. 1.*

*Witnesses:*  
*R. Thompson*  
*Edw. Schaffer*

*Inventor*  
*E. A. Lucas*  
*By*  
*Mason*

# UNITED STATES PATENT OFFICE.

ELIJAH A. LUCAS, OF BLOOMINGTON, ILLINOIS.

## IMPROVED WASHING-MACHINE.

Specification forming part of Letters Patent No. 54,378, dated May 1, 1866.

*To all whom it may concern:*

Be it known that I, ELIJAH A. LUCAS, of Bloomington, in the county of McLean and State of Illinois, have invented a novel Mode of Operating Washing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a transverse section through the machine, taken in the vertical plane indicated by red line *x x* in Fig. 3. Fig. 2 is a transverse section taken in the vertical plane indicated by red line *y y*, Fig. 3. Fig. 3 is a longitudinal section taken in a vertical plane through the center of the machine. Fig. 4 is a view of the sliding-rack, its guide and pinion.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to communicate a rapid alternate rotary motion to the contrivance, which washes the articles by means of a rectilinear reciprocating rack and a vibrating toothed segment, having a hand-lever applied to it, said rack being so applied that it can be adjusted for working the hand-lever on either side of the wash-box, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the wash-box, which may be made circular or rectangular, and which is provided with a hinged cover, B, that closes a portion of the top of the box, the other portion being covered by an inclined board, *a*, which will conduct the water that may be wrung out of the clothes by a wringer applied to the elevation *b* back into the box.

A vertical shaft, C, passes through the hinged cover B, and carries on its lower end a contrivance for moving the articles about in the tub, and thus washing them. This contrivance may consist of a wheel, C', having a number of arms or pins, *c c c*, projecting from its bottom side, or any other device may be employed instead of said wheel which will answer as good a purpose.

On top of the cover B a pinion-wheel, *d*, is keyed to the shaft C, which pinion engages with teeth which project from one side of the reciprocating rack-bar D, as shown in the drawings. This rack-bar D is guided in its reciprocating movements by a grooved plate which is secured upon the cover B. By recip-

rocating the bar D the shaft C will receive an alternate rotary motion.

A frame, E, consisting of two perpendicular standards, is erected upon the cover B, and serves as a bearing for a large wheel, F, which is constructed with teeth nearly around its circumference, and which is also constructed so as to receive a radial lever, G, by means of which this wheel is vibrated.

Between the wheel F and the rack-bar D a pinion-wheel, J, is interposed, which engages with teeth that are formed on top of the rack-bar D; thus by vibrating the handle or lever G the rack-bar D will receive an alternate rectilinear movement, and by means of the teeth on the vertical side of this rack-bar, engaging with the horizontal pinion *d*, the shaft C will receive an alternate rotary movement. The relative speed of the parts can be regulated by varying the diameters of the pinion-wheels.

The ends of the slotted guide-plate P, in which the double rack-bar slides, are left open for the purpose of removing this rack when it is desired to operate the machine from different sides of the box A. This is done by adjusting the lever G to the position required when it is depressed, and then introducing the rack-bar. Upon raising the lever the rack-bar will be drawn beneath the wheel J by this wheel and caused to engage with the pinion *d* on the vertical shaft C.

It will be seen from this description that by the use of the rack-bar having two rows of teeth which will engage with wheels that are in planes at right angles to each other I am enabled to operate the lever G on either side of the wash-box or across the vertical center of the box, and in each case obtain a full stroke.

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

1. Communicating a rotary motion to the shaft C of a washing-machine from a vibrating segment, F, by means of a double rack-bar, D, substantially as described.

2. The combination of the pinion *d* on shaft C, the pinion J on frame E, and the wheel or segment F, with a bar, D, having teeth on two of its sides, in the construction of a washing-machine, substantially as described.

E. A. LUCAS.

Witnesses:

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