

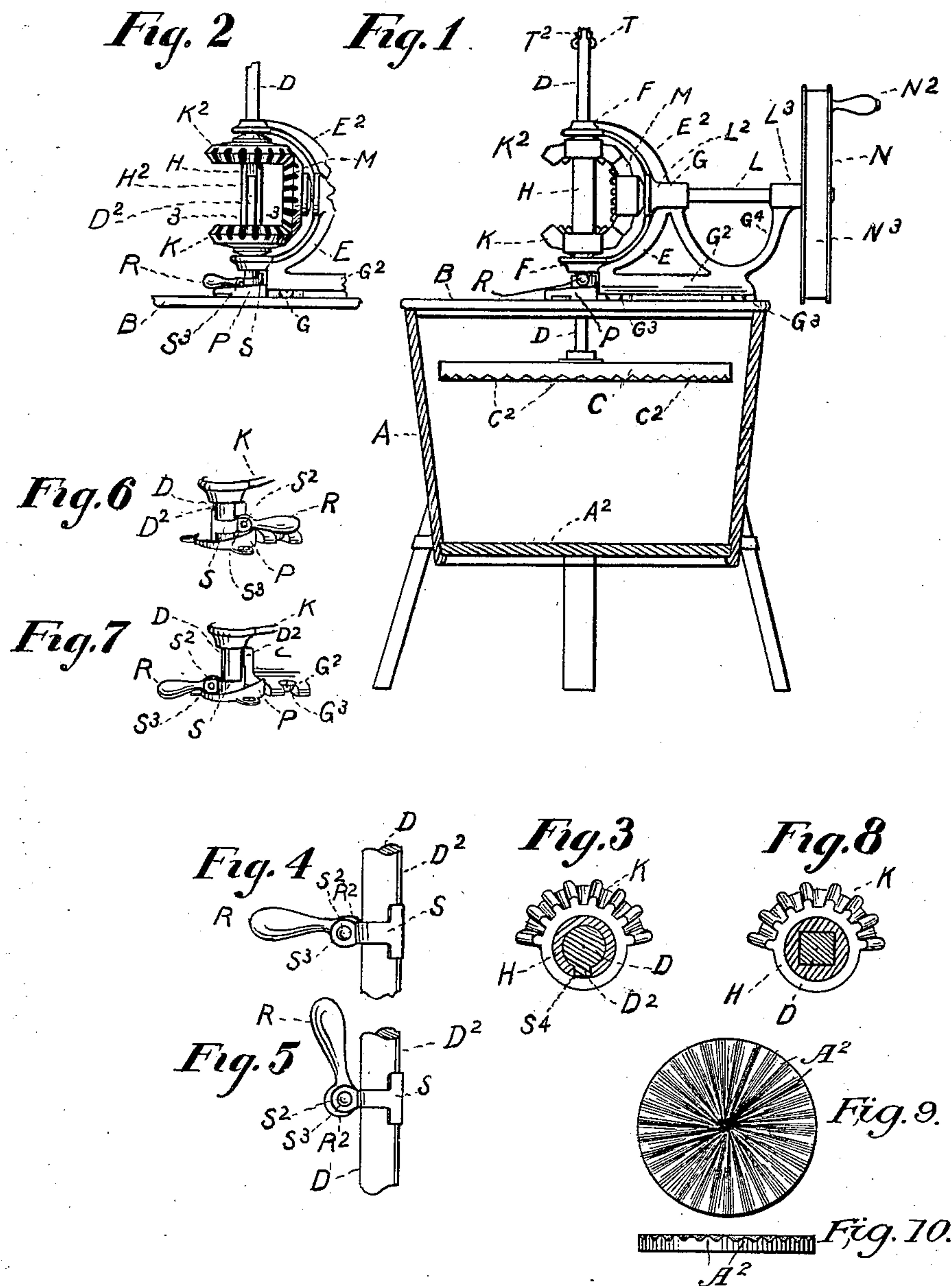
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Patented Dec. 24, 1901.

J. M. COOK.
WASHING MACHINE.

(Application filed Oct. 25, 1900.)

(No Model.)



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WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 689,462, dated December 24, 1901.

Application filed October 25, 1900. Serial No. 34,317. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. COOK, a citizen of the United States, and a resident of the village of Madisonville, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification.

One feature of my invention relates to a novel combination of mechanism for imparting an intermittent reciprocatory rotary movement to the dasher of the machine.

Another feature of my invention relates to new mechanism whereby the dasher may be held at a desired height relative to the dasher-rod and at the same time be alternately elevated and depressed during its reciprocatory rotary movement.

Other features of my invention will be hereinafter specified.

The various advantages resulting from these features conjointly or alone will be apparent from the following description and claims.

I will now proceed to describe my invention.

In the accompanying drawings, making a part of this application, Figure 1 represents a side elevation of a washing-machine, illustrating my invention; but the lower part of the machine is shown in central vertical section. Fig. 2 represents in elevation a detail of the operating-gear and mechanism for imparting a vertical movement to the dasher-shaft. Fig. 3 is a horizontal section in the plane of the dotted line 3 3 of Fig. 2 and showing in plan the construction of the operating-shaft and sleeve at and in the neighborhood of the sector bevel-gear. Fig. 4 is a detail figure in elevation to indicate how the clamp is locked to the vertical dasher-shaft. Fig. 5 is a detail figure similar to Fig. 4, but representing the clamp disengaged from the vertical dasher-shaft. Fig. 6 is a view in perspective of a detail, showing the position of the clamp-lever in relation to the incline when the dasher-shaft is elevated. Fig. 7 is a view similar to that of Fig. 6, but showing the position of the clamp-lever on the incline when the dasher-shaft is at the lowest point of its vertical stroke. Fig. 8 is a section similar to Fig. 3, but illustrating a different form in cross-section of shaft and sleeve. Fig. 9 is a

top view of the bottom of a churn-tub, showing radial projections upon said bottom on a diminished scale. Fig. 10 is an edge view of the bottom shown in Fig. 9 on a diminished scale.

A indicates the washtub which receives the clothes, and B the lid thereof. The latter when in place on the tub fits securely thereto. The bottom portion of this tub A may and usually will be provided with some projections, radial or otherwise, for preventing the clothes from being too readily rotated as a bunch while subjected to the operation of washing.

C indicates the dasher or holder, which from above presses down upon the bunch of clothes previously located in the tub. The under portion of this dasher C is also preferably provided with suitable projections for engaging the upper surface of the mass of clothes in the tub. In the present illustrative instance the projections A² of the tub (see Figs. 9 and 10) and the projections C² of the dasher are radial and extend out horizontally from the vertical axis of the tub and of the dasher.

Upon the lid B are located the upper arm E² and the lower arm E. Each arm is provided at its free end with an eye or bearing F, the vertical axis of these bearings being coincident. These arms E E² are suitably supported, and in the present illustrative instance a preferred construction is shown—namely, these arms are connected together at G and also to a base-plate G², secured by screws G³ or the like to the top of the lid B.

That structure and those parts which I have thus far described are all well known and in common use. In connection with parts substantially such as these I construct my invention as follows:

I provide a shaft D, whose lower end I connect with the dasher C, so that the latter will rotate in the plane of its radii with the shaft D. This shaft I provide with a longitudinal rib or feather D². On the shaft, between the bearings F F, is located a sleeve H, having a longitudinal slot or recess H², which receives the feather D² of the shaft D. On the upper end of this sleeve is located a bevel gear-wheel K², and on the lower end of this sleeve is located a bevel gear-wheel K. These beveled gear-wheels face each other.

At the junction G of the arms E E² is a horizontal bearing L², through which extends a shaft L. The latter is provided at its inner end with a sector M of a bevel gear-wheel, the latter turning with the shaft L. The rear end of this shaft L is steadied by a bearing L³. In the present instance the support G⁴ of this bearing springs from the plate G and is a part thereof. Of course the bearings L² L³ of this shaft may be otherwise supported and connected; but the mode specified is the preferable one. The shaft L may be rotated by power or by hand through the interposition of suitable means. A fly-wheel N, having a crank-handle N² and having a peripheral groove N³ for the application of a belt, are convenient and well-known means for rotating the shaft L. The crank-arm N² enables this shaft to be rotated by hand, and the belt-track N³ provides for the rotation of the shaft by power. Rotation of the shaft L turns the sector M. During one half of the rotation of this sector M it engages the upper segment bevel gear-wheel K², and during the other half of its rotation it engages the lower beveled segmental gear-wheel K. While engaging the upper gear K² it turns the shaft D in one direction, and while engaging the lower gear K it turns this shaft D in an opposite direction. Thus by the rotation of shaft L continuously in one direction rotary movement is imparted to the shaft D alternately in one direction and then in the opposite direction. This alternating rotary movement is imparted to the dasher C. I confer another movement upon the shaft D—to wit, a vertical one—as follows: Upon the top of the lid B and near the shaft D, I locate a metallic incline P, preferably of a semicircular configuration in plan view. Upon this I locate a lever R, and I connect the latter to a clamp-ring S by a pivotal connection S², the preferred mode of connection being, as shown, by locating the adjacent end of the lever between the angulated ends S³ of the clamp-ring and then connecting them by the pivot S². The lever has an eccentric end R² adjacent to the shaft D. Then when the free and outer end of this lever R is elevated the eccentric will be retracted from the shaft D, and when the outer end of the lever R is depressed the eccentric will be advanced against the shaft D. The opposite side of the clamp S has a recess S⁴, which receives the feather D² whenever that part of the shaft where the feather is is embraced by the ring S. It will be observed that the feather compels the shaft D to turn with the sleeve H, but allows the shaft to move vertically within the sleeve.

The operation of my invention is as follows: Clothes to be washed and the liquid for washing them having been placed in the tub A, the lid is replaced and securely fixed in position thereon. The clamp R R² S is now unlocked. Then the shaft D is free to descend. The weight of the dasher C will lower it until the dasher rests upon and presses down the clothes upon the bottom of the tub. The

clamp is now locked. It is to be understood that the clamp is to be locked when the lever R of it is at the lowest point on the incline. Then as the shaft D is rotated it moves the lever R upon the incline, and the latter elevates this lever R, and with it the shaft D, and the latter lifts dasher C. Thus the latter while rotating in one direction is moving up away from the clothes. As the lever R reaches the terminus of the incline the shaft D, through the action of the segment-gear aforementioned, stops rotating and then begins to rotate in the opposite direction. As it thus moves the lever R moves down the incline, and the shaft D descends, and the dasher likewise descends until the lever has reached the lower end of the incline. During this latter movement the dasher has been rotating and descending. By the continuous rotation of the shaft L these movements of the dasher are repeated. Thus we find the dasher rotating in one direction as it rises and allows the bunch of clothes to expand and take more washing liquid therein, and next we find the dasher rotating in the other direction and compressing the mass of clothes, squeezing them, forcing the liquid out of them, and at the same time giving them a rotary movement within the tub. Then the dasher rises and repeats its first-described movement, and then it again descends, as before. These operations it continues to make while the shaft D is being rotated at the will of the operator. When the clothes are fully washed, further rotation of the shaft D is discontinued. The clamp R R² S is now unlocked and the shaft D drawn up until the dasher is close to the under side of the lid B. Then the clamp R R² S may be locked and the shaft D and the dasher thus be prevented from slipping down while the lid is removed. The clothes are now removed from the machine, and the latter is in readiness to receive another batch of clothes to be washed in a like manner.

For convenience in elevating the shaft D, I provide its upper end with a pull or handle T, the connection between the shaft and handle being preferably a pivotal one T².

Instead of the feather D², located on the shaft D, other devices for compelling the sleeve H to rotate with the shaft D may be employed. For example, the shaft itself may be angulated. One form of such angulation is shown in Fig. 8.

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

1. In a washing-machine, the combination of the tub, dasher, shaft rigid therewith, means for imparting thereto an alternating rotation, an incline by the shaft, a clamp for holding the shaft, and a lever therefrom adapted to rest on the incline and move vertically the shaft, and dasher, as the shaft is rotated, the lever being pivoted to the clamp and provided with means between the lever and clamp for locking the shaft to the clamp by

means of the lever, substantially as and for the purposes specified.

2. In a washing-machine, the combination of a tub, an incline upon said tub, dasher, 5 shaft rigid therewith, a sleeve adapted for engagement with the shaft, yet allowing a vertical movement of the shaft, and means for imparting an alternating rotation to the sleeve, and through the latter to the shaft, 10 the clamp adapted to engage the shaft at one point while the sleeve engages the shaft at another, a lever from the clamp adapted to

rest on the incline and move the shaft vertically independently of the sleeve, said shaft being dependent upon the sleeve for its rotary movement, and means between the lever and clamp for locking the shaft to the clamp, by means of the lever, substantially as and for the purposes specified. 15

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Attest:

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