G. W. BREWER & J. K. GIBSON.

MECHANICAL MOVEMENT FOR WASHING MACHINES.

APPLICATION FILED JAN. 30, 1908.

899,025. Patented Sept. 22, 1908.

Fig. 1.

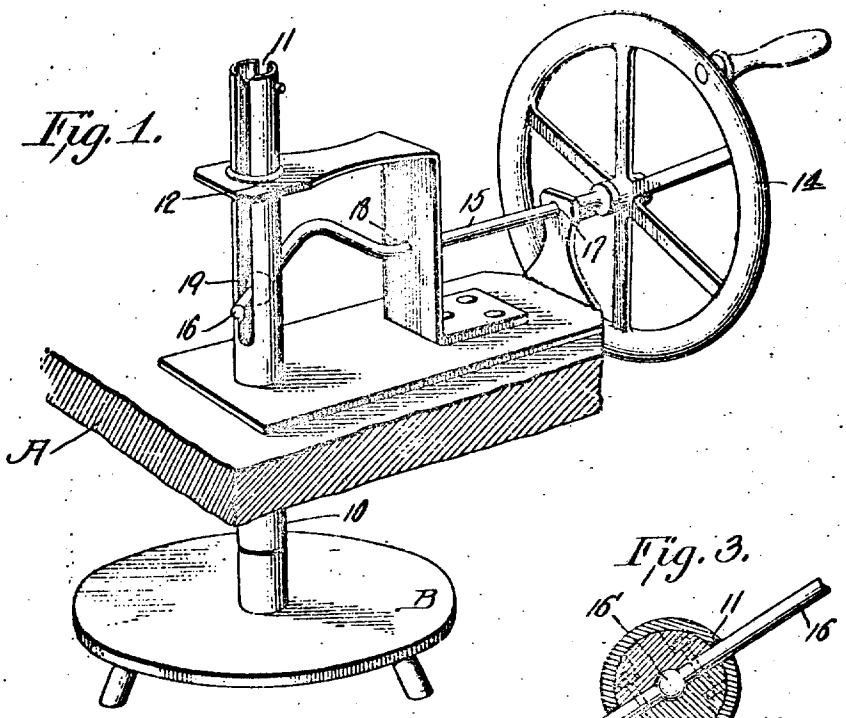


Fig. 3.

Fig. 2.

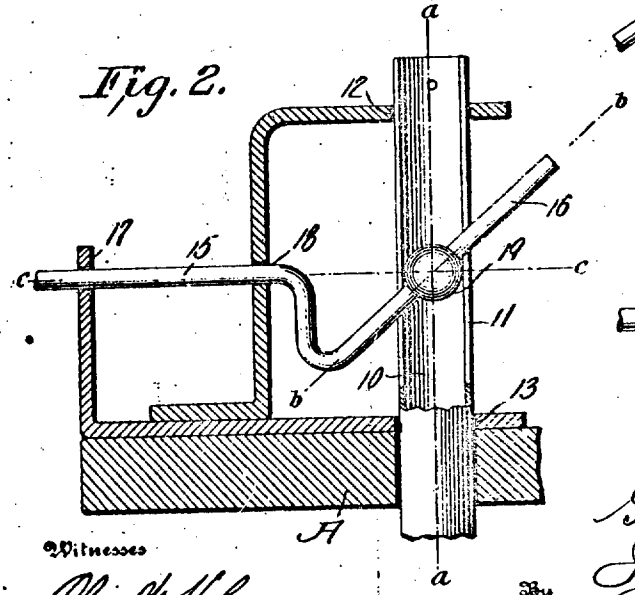
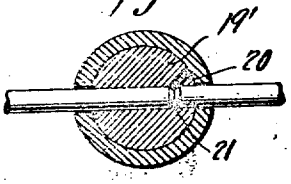


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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MECHANICAL MOVEMENT FOR WASHING-MACHINES.

No. 899,025. Specification of Letters Patent. Patented Sept. 22, 1908.

Application filed January 30, 1908. Serial No. 413,438.

To all whom it may concern:

Be it known that we, GEORGE W. BREWER and JOHN K. GIBSON, both citizens of the United States, residing at Clay Center, in the county of Clay and State of Nebraska, have invented certain new and useful Improvements in Mechanical Movements for Washing-Machines, of which the following is a specification.

This invention relates to that type of mechanical movements whereby a continuous rotary motion is converted into an alternating rotary motion.

While the present invention is designed primarily for the operation of washing machines, it will be understood that it is not restricted to such use.

For a full understanding of the invention, including its advantages and mode of operation, reference is to be had to the following detail description and the accompanying drawings in which,

Figure 1 is a general perspective view of the invention in its preferred embodiment, showing fragments of an ordinary type of washing machines; Fig. 2 is a vertical sectional view of the main portions of the invention; Fig. 3 is a cross sectional detail illustrating one specific form, and Fig. 4 is a like view of another specific form of the bearing portion of the invention.

Throughout the following description and on the several views of the drawings, similar parts are referred to by similar reference characters.

With particular reference to the illustrations, A indicates a fragment of any suitable form of washing machine through which extending vertically is a shaft 10, and to the lower end of which shaft is secured by any suitable means a beater B. As is common in this class of machinery the vertical shaft and beater are designed to be given an alternating rotary motion for the purpose of thoroughly stirring the contents of the tub. As herein indicated, the shaft 10 is in the nature of a hollow cylinder, and at its upper end the same is slitted as at 11, the slit extending centrally therethrough and from the upper end downwardly to a considerable extent. Said shaft 10 is guided for vertical reciprocation in guides 12 and 13, or by any other suitable means. Said guides also serve to prevent lateral displacement of the shaft and the beater attached thereto.

Any suitable operating means such as a hand wheel 14 secured to the horizontal shaft 15 may be employed for operating the vertical shaft. In the construction illustrated the shaft 15 is provided with an angularly disposed straight portion 16, preferably formed of the same element as the shaft 15 by bending the same as indicated. The angular portion of said shaft may for convenience be termed a goose neck. The straight portion of the goose neck lies within the slit 11 aforesaid, and upon rotation of the shaft 15 the goose neck 16 will bear against opposite margins of the slit 11, one portion of the goose neck bearing against the slit on one side of the axis of the shaft 10 and another portion of the goose neck bearing against that margin of the slit diametrically opposite from the portion before mentioned, causing the shaft 10 to rotate about its axis to a degree from the normal equal to the amount of angularity between the axis of the goose neck and the axis of the shaft 15. In this connection it may be stated that the angle between the axes of the goose neck and the main shaft 15 may be anything less than 90 degrees, that indicated herein being substantially 45 degrees. The entire amount of rotation therefore of the shaft 10 in such instance would be substantially 90 degrees. The shaft 15 is journaled for rotation in any suitable bearings or guides herein indicated as 17 and 18, the bracket for the bearing 18 being extended upwardly and bent to form the guide 12 before mentioned. The shaft 10 thus mounted is susceptible of being given a vertical reciprocatory motion, or in other words it may be moved upwardly or downwardly depending upon the bulk of material within the vessel being operated upon by the beater B. It will thus be observed that the beater will automatically adjust itself under all conditions of service, in accordance with the amount of work to be done, and that without any variation in the mounting of the driving means.

In order to increase the effectiveness of the connection between the goose neck and the shaft 10 it has been found essential to provide an antifriction means, consisting of a

ball journaled for rotation upon the goose neck but being held by any suitable means from longitudinal movement thereon. As indicated in the drawings the ball 19 substantially conforms to the inner surface of the cylindrical shaft 10, and under certain conditions or positions of the goose neck said ball will constitute an antifriction bearing for the vertical shaft. It is further to be observed that inasmuch as the ball 19 is fixed from longitudinal movement upon the goose neck and fitting substantially snugly within the shaft 10, it constitutes an effective means whereby the entire shaft 15 is prevented from longitudinal movement in either direction. As illustrated in Fig. 2, the axis *a*—*a* of the shaft 10, the axis *b*—*b* of the goose neck, and the axis *c*—*c* of the shaft 15 all intersect or coincide in the center of the ball. It will be plainly observed therefore that the shaft 10 being effectively guided for all of its movements in the guides 12 and 13 will with the ball constitute a sufficient thrust bearing for the shaft 15 under all conditions of use. The ball 19 therefore takes the place of all thrust bearings for the shaft 15.

As indicated in Fig. 3 the ball 19 is made in two parts secured together by any suitable means and embracing an enlargement 16′ on the goose neck. In Fig. 4 there is illustrated another of the various means which might be employed for journaling the ball upon the goose neck but preventing movement thereof longitudinally. In this figure the ball 19′ is made solid but for its central hole through which the goose neck passes and tapped into one side thereof adjacent to said hole is a set screw 20 projecting into a groove 21 in the goose neck.

While there is set forth herein the best construction of the invention now known to us, it is to be understood that we are not to be limited in the adaptation thereof except as may be required by the state of the art, and where there have been used the terms vertical and horizontal as applied to certain elements of the invention, it is to be understood that these terms are to be considered in their relative sense only.

Having thus described the invention, what is claimed as new, is,

1. In a mechanical movement of the class specified, the combination of a driving shaft having an angularly disposed portion, a driven shaft disposed at an angle to the aforesaid shaft and guided for longitudinal and rotary motions, the said driven shaft being hollow and slitted, the slit of the said shaft receiving therein the angular portion of the driving shaft, and means mounted upon the said angular portion of the driving shaft to prevent longitudinal movement of the driving shaft.

2. In a mechanical movement of the class specified, the combination of a driving shaft having an angularly disposed portion, a driven shaft disposed at an angle to the driving shaft, guides for supporting said driven shaft for reciprocation and rotation, the said vertical shaft receiving the angularly disposed portion of the driving shaft therethrough, and means journaled on the driving shaft and coöperating with the driven shaft whereby the driving shaft is prevented from longitudinal movement.

3. In combination, a hollow vertical beater shaft diametrically slitted at its upper end, guides for supporting said shaft for rotation and vertical reciprocation, a horizontally disposed driving shaft having an angularly disposed goose neck received in the aforesaid slit, a ball mounted for rotation on the goose neck and substantially fitting the interior of said hollow shaft, and means to prevent longitudinal movement of the ball on the goose neck, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE W. BREWER.
JOHN K. GIBSON.

Witnesses:
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