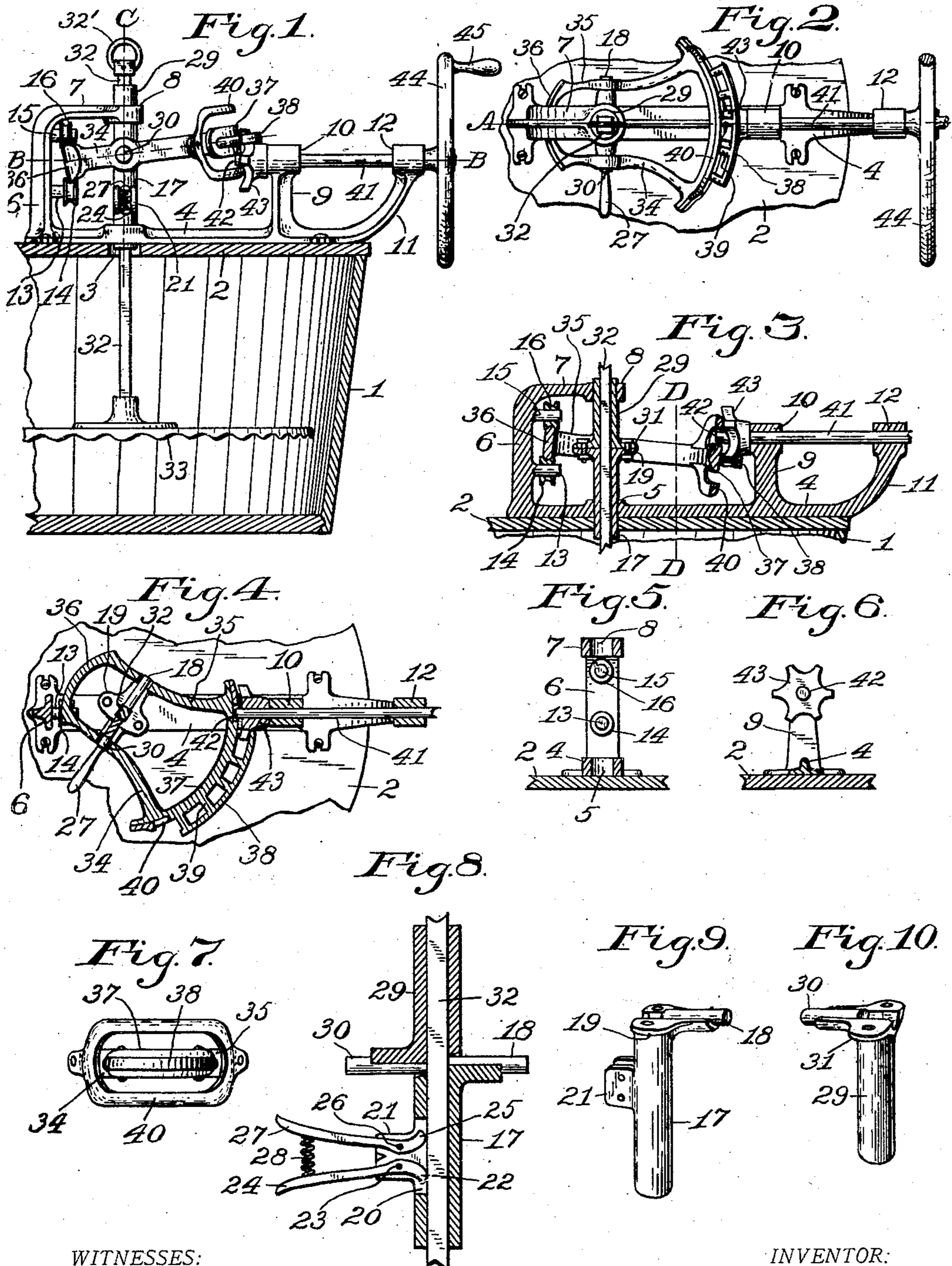


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H. L. STALEY.
GEARING FOR WASHING MACHINES.

APPLICATION FILED AUG. 3, 1907.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HARRISON L. STALEY, OF MARTINSVILLE, INDIANA.

GEARING FOR WASHING-MACHINES.

No. 880,250.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRISON L. STALEY, a citizen of the United States, residing at Martinsville, in the county of Morgan and State of Indiana, have invented certain new and useful Improvements in Gearing for Washing-Machines; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to gearing for operating combined rubbers and pounders of washing machines, and it has reference to dual reciprocating gearing of the type illustrated in Letters Patent No. 695,244, granted to me on March 11, 1902, said gearing being designed to operate the combined rubber and pounder of the washing machine rotatively and also vertically in the tub of the machine.

The objects of the invention are to provide a dual reciprocating motion gearing for washing machines which may be adapted to be applied to various types of tubs and rubbers and pounders and be constructed in a simple manner at the minimum cost, and to provide gearing of this character that may be operated smoothly and with relatively little noise, and which may be operated with the minimum amount of power and be reliable and economical in use.

With the above-mentioned and minor objects in view, the invention consists in dual reciprocating motion gearing having certain novel features of construction, and in the combinations and arrangements of parts, as hereinafter particularly described and referred to in the appended claims.

Referring to the drawings Figure 1 is a side elevation of gearing constructed substantially in accordance with the invention and mounted on a tub which is shown in fragmentary vertical central section; Fig. 2, a top plan thereof; Fig. 3, a vertical sectional view on the line A in Fig. 2 with the mechanism shifted; Fig. 4, a sectional view approximately on the line B B in Fig. 1 but with the mechanism shown in different positions; Fig. 5, a transverse sectional view on the line C in Fig. 1 showing a portion of the gearing frame; Fig. 6, a fragmentary transverse sectional view on the line D D in Fig. 3; Fig. 7, a front elevation of the oscillator; Fig. 8, a fragmentary sectional view on the line C in Fig.

1; Fig. 9, a perspective view of the lower portion of the hollow main shaft; and, Fig. 10, a perspective view of the upper portion of the hollow main shaft.

Similar reference characters throughout the various figures of the drawings designate like elements or features.

As illustrating the purposes of the invention, a tub 1 is shown which may be variously constructed and provided with a cover 2 having an aperture 3 therein, and the gearing is mounted upon the top of the cover and suitably secured thereto.

The improved gearing has a frame comprising a base 4 which rests on the cover 2 and having a journal bearing 5 opposite to the aperture 3. The frame comprises also a standard 6 on one end of the base and provided with a lateral arm 7 having a journal bearing 8 in alinement with the bearing 5. Also the frame comprises a standard 9 near the opposite end of the base, and this standard has less height than the standard 6, and is provided on its top with a journal bearing 10, said opposite end of the base having an integral arm 11 provided on its top with a journal bearing 12.

The standard 6 is provided with a stub axle 13 on which a grooved roller 14 is mounted rotatively and also free to move longitudinally on the axle, the standard being provided also with a stub axle 15 on which is mounted a grooved roller 16 so as to rotate and move longitudinally on the axle, one axle being above the other and both projecting towards the axis of the journal bearings 5 and 8.

A hollow shaft is mounted vertically in the bearings 5 and 8 so as to move both rotatively and longitudinally therein, and the shaft preferably comprises a lower member 17 having a lateral trunnion 18 and lateral ears 19, the shaft having also a slot 20 in the side thereof and ears 21 at opposite sides of the slot. A cam 22 is mounted in the slot on a pivot 23 and has an operating handle 24. A cam 25 is mounted also in the slot in reverse order on a pivot 26 and has an operating handle 27, the pivots 23 and 26 being connected to the ears 21, and a spring 28 is interposed between the handles 24 and 27 to normally force them apart, the cams being adapted to project slightly through the slot 20 into the interior of the lower member. And the hollow shaft further comprises a member 29 having a trunnion 30 and lateral

ears 31, the ears 19 and 31 being placed together and securely secured so that the members 17 and 20 are in alinement, and the trunnions 18 and 30 also in alinement with their axes transverse to the axis of the hollow shaft. Therefore the interiors of the two members of the shaft are continuous, one with the other, and are adapted to receive a plunger 32 which is square in cross-section and extends through the hollow shaft, the top of the plunger being provided with a handle 32', the plunger extending through the aperture 3, and having a combined rubber and pounder 33 suitably secured to the lower end thereof.

An oscillator comprises two reversely curved-arms 34 and 35 and an integral curved guide bar 36, the latter engaging the grooved rollers 14 and 16 for guiding the oscillator, the arms thereof being mounted on the trunnions 18 and 30, one end of each arm being connected to the guide bar, and the opposite ends of the arms having a relatively longer guide bar 37 connected thereto, to which is connected a curved guard bar 38, there being radially arranged pins 39 extending from the guide bar 37 to the guard bar 38, and an outer guide 40 extends entirely about the guide bar 37 at a suitable distance therefrom, being mounted on the ends of the arms 34 and 35 or permissibly formed integral therewith.

A drive shaft 41 is journaled in the bearings 10 and 12 and has a guide pin 42 formed on one end thereof and adapted to enter the space between the guide bar 37 and the guide 40 for engagement therewith, a pinion 43 being suitably secured to the shaft so as to engage the pins 39 for actuating the oscillator, said guide pin 42 projecting through the pinion, and the opposite end of the shaft has an operating wheel 44 secured thereto that is provided with a crank handle 45 for operating the gearing.

Referring particularly to Fig. 8, it will be seen that the plunger 32 is engaged by the cams 22 and 25 so as to be securely held in the hollow shaft against longitudinal movement, the cam 22 preventing upward movement of the plunger and the cam 25 preventing downward movement, and it will be clear that if the handles 24 and 27 are pressed together the cams will release the plunger so that it may be re-adjusted to any desired position vertically, so as to accommodate whatever bulk of articles may be placed in the tub to be operated on.

In practical use the wheel 44 may be turned in either direction, and the pinion 43 will act on the pins 39 and cause oscillation of the arms 34 and 35 which will move the plunger 32 rotatively and therefore cause rotative movement of the combined rubber and pounder 33. When the oscillator has moved to the position shown in Fig. 4, the

guide bar 37 will either rise or fall, depending upon which direction the wheel 44 is moving, therefore the hollow shaft and the plunger will be moved longitudinally by reason of the guide bar 36 being in engagement with the guide rollers 14 and 16, which prevents vertical movement of the ends of the arms 34 and 35 to which the guide bar is connected; and by continuing the motion of the wheel 44 in one direction, the oscillator will alternately rise and fall at its front end and also move laterally, as will be understood, thereby producing alternate reciprocatory movements of the mechanism so as to alternately pound and rub the articles in the tub.

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

1. Dual reciprocating motion gearing including a frame having a guide thereon, a shaft mounted movably in the frame, an oscillator having an arm pivoted to the shaft and having also a guide-bar on one end thereof and movable longitudinally on the guide, and means cooperating with the opposite end of the oscillator for imparting to the oscillator reciprocatory motion in horizontal and vertical directions alternately.

2. Dual reciprocating motion gearing including a frame comprising a standard having a pair of axles projecting horizontally therefrom, rollers mounted on the axles, a shaft journaled in the frame and movable longitudinally, an oscillator having an arm pivoted to the shaft and having also a curved guide-bar on one end thereof movable longitudinally between the rollers in contact therewith, and means cooperating with the opposite end of the arm for moving it vertically and horizontally alternately and in opposite directions.

3. Dual reciprocating motion gearing including a frame comprising a standard having a pair of axles projecting therefrom, grooved rollers movable rotatively on and longitudinally of the axles, one on either axle, a shaft journaled in the frame and movable longitudinally, an oscillator having two arms pivoted to the shaft and having also a curved guide-bar connected to one end of each one of the arms and movable longitudinally thereby in the grooves of the rollers, the rollers being guided on the axles by the guide-bar, and means cooperating with the opposite ends of the arms for movement thereof vertically and horizontally alternately and in opposite directions.

4. Dual reciprocating motion gearing including a frame having a standard provided with a guide, a shaft journaled in the frame and movable longitudinally, an oscillator having an arm pivoted to the shaft and having also a guide-bar on one end of the arm and movable longitudinally in engagement with the guide, the opposite end of the arm having a relatively long curved guide-bar

thereon and an outer guide extending about the guide-bar, pin-teeth on the guide-bar, a drive shaft journaled on the frame and having a guide-pin thereon extending between
5 the long guide-bar and the outer guide in engagement therewith, and a pinion on the shaft engaging the pin-teeth.

5. Dual reciprocating motion gearing including a frame having a guide, a shaft jour-
10 naled in the frame and movable longitudinally, an oscillator comprising two oppositely-curved arms that are pivoted to the shaft and a curved guide-bar on the ends of the arms and engaging the guide of the
15 frame, the opposite ends of the arms having a relatively long curved guide-bar thereon about which extends an outer guide, the long guide-bar having pin-teeth thereon, and the pin-teeth having a guard-bar connected
20 thereto, a drive shaft on the frame and having a guide-pin in engagement with the long guide-bar and the outer guide, and a pinion on the shaft to engage the pin-teeth.

6. Dual reciprocating motion gearing including a frame having a guide, a hollow
25 shaft comprising two members each having a trunnion and ears thereon, the ears of the two members being secured together and the members journaled in the frame, a plunger
30 extending through the shaft, means for ad-

justably binding the plunger in the shaft, an oscillator mounted on the trunnions and having a guide-bar on an end thereof that is movable longitudinally in engagement with
the guide of the frame, and means coöperat- 35 ing with the opposite end of the oscillator for movement thereof vertically and horizontally alternately and in opposite directions.

7. Dual reciprocating motion gearing including a frame, a hollow shaft comprising
40 two members having each a trunnion and also ears, the two members being journaled in the frame and the ears of the two members secured together, one of the members
45 having a slot therein and two ears at the sides of the slot, a plunger adjustable longitudinally in the hollow shaft, a pair of cams pivoted between the two ears and projecting through the slot against the plunger, the
cams having each a handle, a spring seated 50 between the handles, an oscillator mounted on the trunnions, and means for operating the oscillator to move the shaft rotatively and longitudinally alternately.

In testimony whereof, I affix my signature 55 in presence of two witnesses.

HARRISON L. STALEY.

Witnesses:

MAX SHIREMAN,
HENRY S. LEWIS.