W. H. GEORGE.

OPERATING MECHANISM FOR WASHING MACHINES.

APPLICATION FILED DEC. 10, 1914.

1,154,008.

Patented Sept. 21, 1915.

2 SHEETS—SHEET 1.

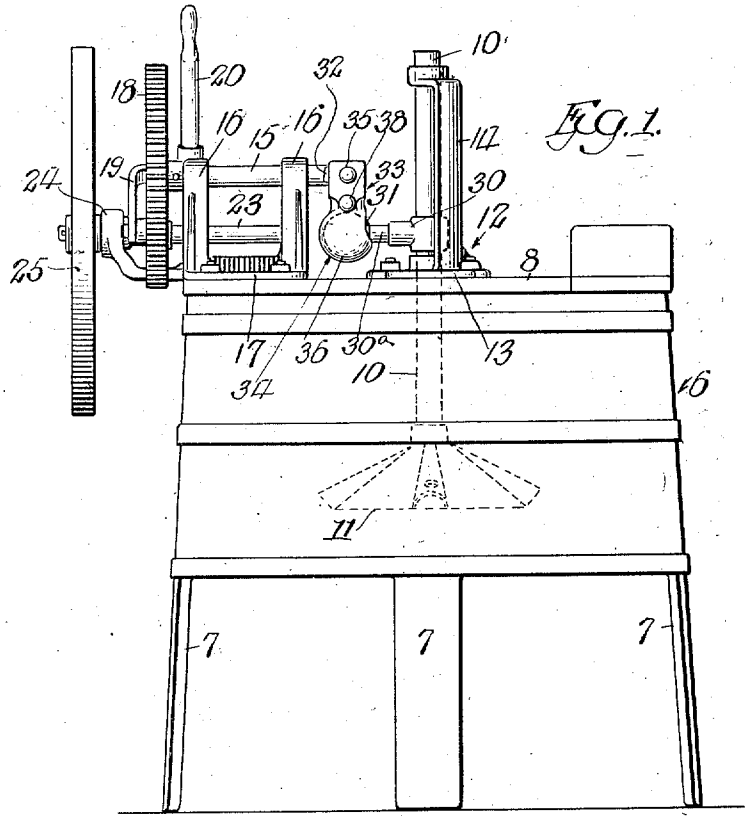


FIG. 1.

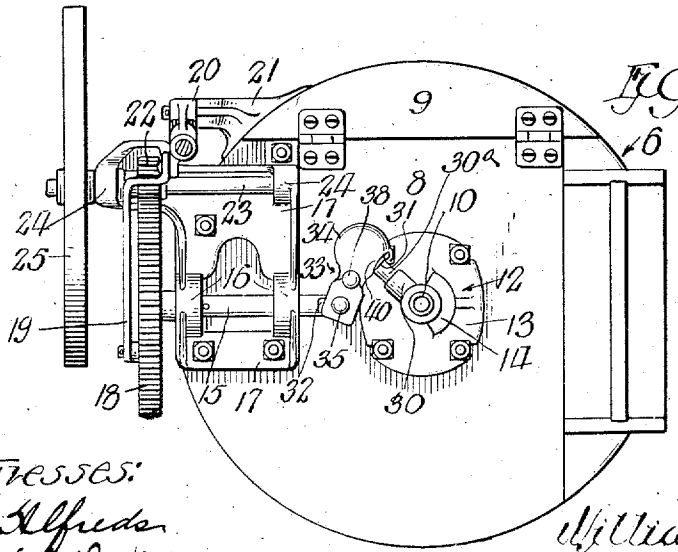


FIG. 2.

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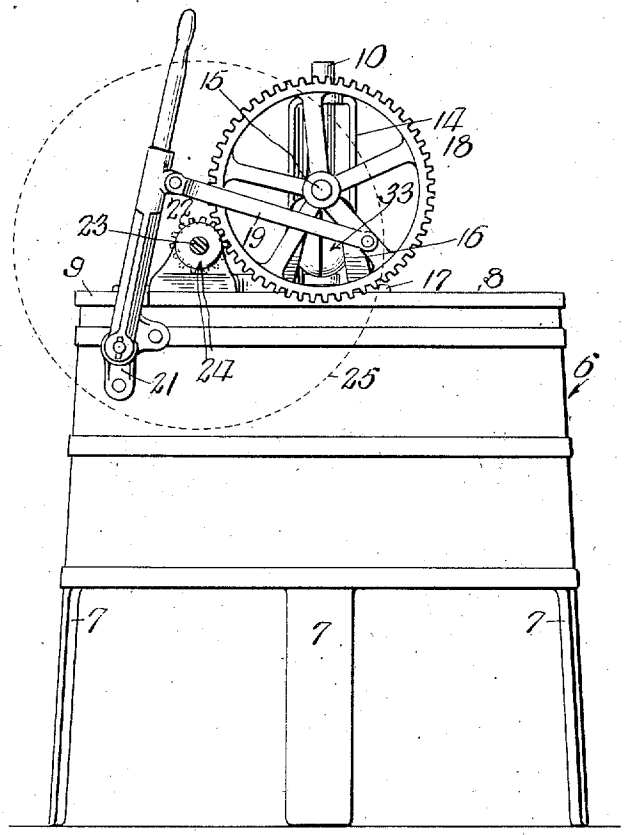


FIG. 3.

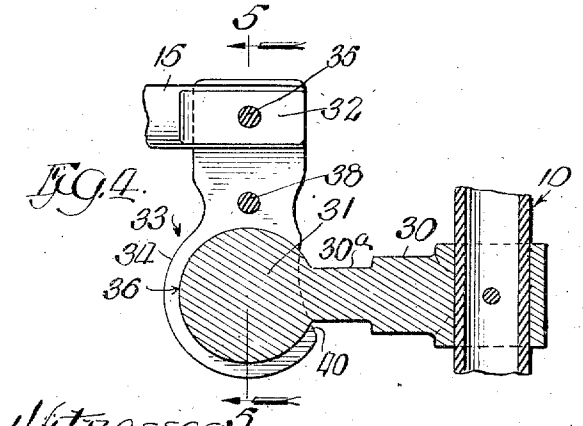


FIG. 4.

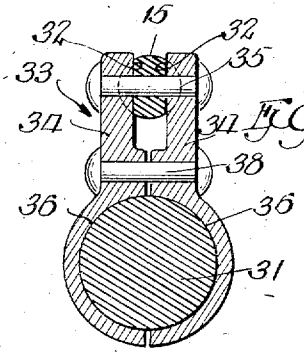


FIG. 5.

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UNITED STATES PATENT OFFICE.

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OPERATING MECHANISM FOR WASHING-MACHINES.

1,154,008. Specification of Letters Patent. Patented Sept. 21, 1915.

Application filed December 10, 1914. Serial No. 876,430.

To all whom it may concern:

Be it known that I, WILLIAM H. GEORGE, a citizen of the United States, and a resident of Fairfield, in the county of Jefferson and State of Iowa, have invented certain new and useful Improvements in Operating Mechanism for 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, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in operating mechanism for washing machines and the like and consists of the matters hereinafter described and more particularly pointed out in the appended claim.

The invention is shown applied herein to a washing machine of the vacuum pounder type in which the operating shaft is given an up and down reciprocating movement and at the same time an alternating rotary movement.

The object of the invention is to provide a gearing of the kind described of simple and economical construction and which may be easily and at the same time efficiently operated to produce the required movement of the operating shaft.

The advantages of my construction will appear more clearly as I proceed with my specification.

In the drawings: Figure 1 is a view representing a front elevation of a washing machine of the type described, provided with my improved operating mechanism. Fig. 2 is a top plan view of the same. Fig. 3 is a view in side elevation thereof as looked at toward the face of the fly wheel which is shown in dotted lines. Fig. 4 is a view on an enlarged scale of a vertical section through a part of the mechanism taken in the plane of the operating shaft. Fig. 5 is a view representing a vertical section through Fig. 4 in the plane indicated by line 5—5 thereof.

Referring more in detail to that embodiment of my invention illustrated in the accompanying drawings, 6 indicates a support which in this case is an ordinary washing machine tub having the usual supporting legs 7. Said tub is provided with a lid 8 which is hinged to the stationary top wall 9 of the tub body.

10 indicates an upright operating shaft, capable of both a longitudinal and of a rotary reciprocation. Said shaft depends vertically through the hinged lid 8 into the interior of the tub body 6 and then has fixed to its lower end a pounder 11 of familiar construction. (See Fig. 1.) Said shaft is centrally located with respect to the tub body and is suitably mounted in a bracket 12 consisting of a base plate 13 fixed to the tub lid 8 and of an upright overhanging standard 14. The overhanging part of the standard 14 and that part of the base plate vertically below it have suitable alined bearing apertures through which the shaft 10 extends, so as to be capable of both vertical and rotary reciprocating movement therein.

In the plane of the upright shaft 13 and extending at right angles thereto is located a horizontal shaft 15, the inner end of which terminates adjacent the upright shaft 10. Said shaft 15 is rotatively mounted intermediate its ends in bearings formed in the upper ends of spaced apart arms or standards 16 in a manner preventing endwise movement therethrough, said arms being made integral with the base plate 17 fixed to the hinged lid 8.

Fixed to the outer end of said shaft 15 is a spur gear 18 to which is imparted a continuous rotary movement by means of a link 19 and a rocking hand lever 20 fulcrumed on a bracket 21 fixed to the side of the tub body 10. The gear 18 meshes with a smaller gear 22 fixed to the shaft 23 which extends parallel with the shaft 15 but in a plane below and to one side of said shaft. Said shaft 18 is rotatively mounted in bearings 24—24 made integral with the base plate 17 before mentioned adjacent the stationary top 9 of the tub. 25 indicates a fly wheel fixed to the outer end of the shaft 23. It is apparent that oscillation of the rocking hand lever 20 will impart a continuous rotary movement to the gear 18 and to the fly wheel 25 which will acquire momentum thus facilitating the operation of the mechanism.

A means is interposed between the continuously rotating horizontal shaft 15, and the upright rotary and vertical reciprocating operating shaft 10 whereby the movement of

the first mentioned shaft is transposed into the movement of the second mentioned shaft. Such means is as follows: 30 indicates an arm which is fixed to the upright operating shaft 10 intermediate the bearing apertures in the overhanging part of the standard 14 and the base plate 13. Said arm 30 moves with the shaft 10 and extends radially thereof into the vicinity of the inner end of the horizontal shaft 15, where it is provided with a spherical head 31. A part of the inner end of said shaft 15 is provided with diametrically opposite flattened sides 32. To the flattened sides of said shaft is pivotally attached a crank arm indicated as a whole by the numeral 33. Said crank arm is made in two parts or sections 34—34 and the upper end of each section is arranged to engage against each of the flattened sides 32—32 of the shaft 15. A pivot pin or rivet 35 extends through suitable apertures formed in the flattened end of said shaft and the upper ends of said sections 34—34. It is thus apparent that the crank arm 33 rotates with the shaft 15 but is capable of an oscillating movement thereon in the plane of the longitudinal axis of said shaft. The lower end of each part or section 34 of the crank arm 33 is provided with spherical bearing sockets 36—36 which when the parts are in assembled position embrace and confine the spherical head 31 of the arm 30 before mentioned. To maintain the two sections 34—34 of the crank arm in proper relative position after the parts have been assembled, said sections are riveted together at a point intermediate their ends as indicated at 38. That part of each section 34 in which is located the spherical bearing sockets 36 is cut away on their adjoining edges as at 40, toward the shaft 10 so as to provide for the movement of the reduced part 30ª of the arm 30 adjacent the spheric head 31.

It is apparent that as the shaft 15 is rotated the crank arm 33 will rotate therewith and impart an up and down movement to the arm 30 fixed to the upright operating shaft and also a rotary reciprocatory movement thereto and said arm in turn will impart such movement to the operating shaft. The diameter of the circular path through which the axis of the spheric bearing sockets 36 at the free end of the crank arm 33 rotates represents the amount of vertical reciprocation of said upright shaft and also determines the length of the arc through which said shaft 10 is rotated.

During the rotation of the shaft 15 the crank arm 33 will oscillate toward and away from the operating shaft in such manner as to accommodate the swinging movement of the arm 30 due to the alternating rotary or rotary reciprocating movement of the operating shaft 10.

It is manifest that in my improved gearing the binding in the connection between the crank arm and the operating shaft which is inherent in many of the prior gearings of the general type of that disclosed herein is entirely eliminated, as the ball and socket connection between the arm 30 and the crank arm prevents all possibility of such binding. In addition the connections between the continuously rotating shaft and the operating shaft comprise few parts of simple construction which makes for economy in the manufacture of the gearing.

I claim as my invention:

A gearing of the kind described, comprising the combination of an operating shaft capable of both vertical reciprocating movement and alternating rotary movement, a continuously rotatable horizonal shaft in the plane of said operating shaft, the end of said horizontal shaft adjacent the operating shaft being flattened at diametrically opposite sides, a crank arm pivoted to the flattened end of said horizontal shaft and capable of oscillating movement toward and from said operating shaft, said crank arm comprising two sections adapted to be attached together in a plane parallel to the planes of the flattened sides of said shaft, said sections being constructed to form, when so attached, a spherical socket at one end of said arm and a fork at the other end thereof, and a horizontal radial arm fixed to said operating shaft, said arm having at its free end a spherical head bearing in the spherical socket of said crank arm.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this twenty-first day of October, A. D. 1914.

WILLIAM H. GEORGE.

Witnesses:
L. O. GAINES,
CARL DANIELSON.