G. N. MEVES.

OPERATING MECHANISM FOR WASHING MACHINES.

APPLICATION FILED MAY 9, 1910.

987,389. **Patented Mar. 21, 1911.**

2 SHEETS—SHEET 1.

Fig. 1.

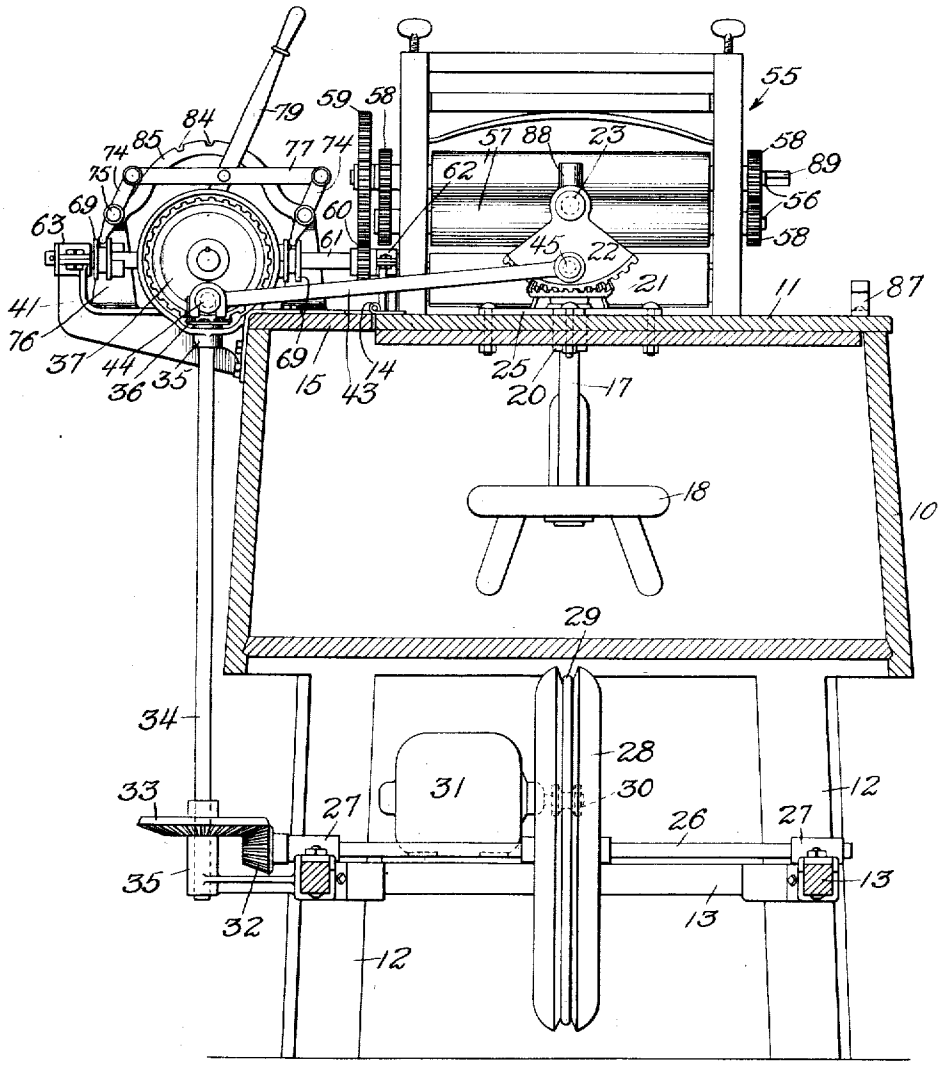
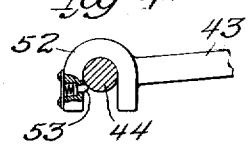


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 2.

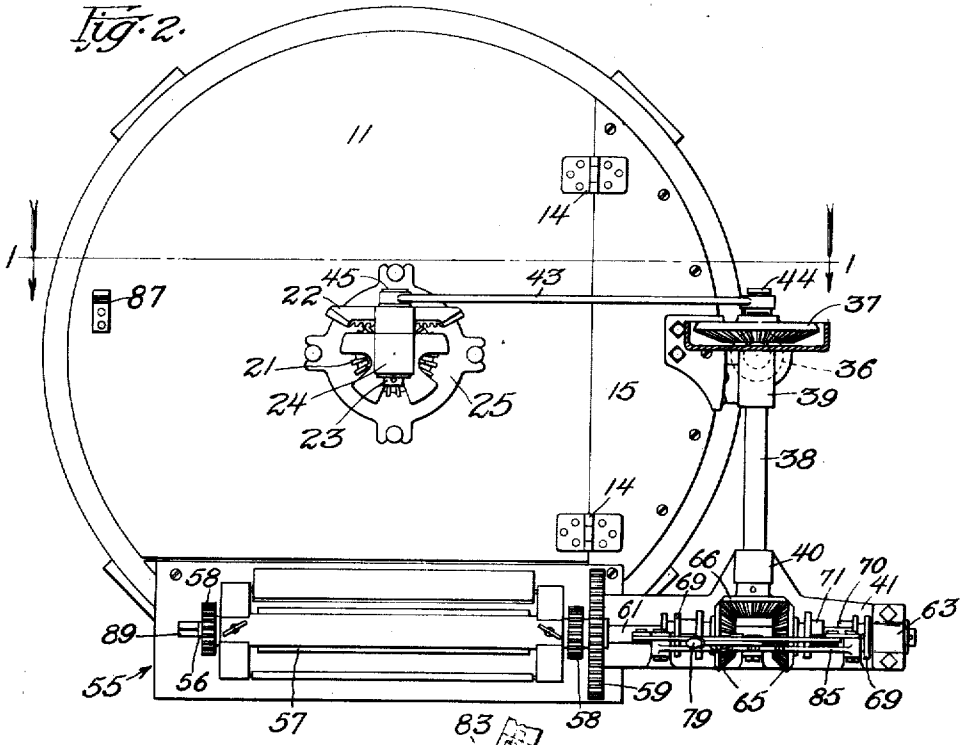
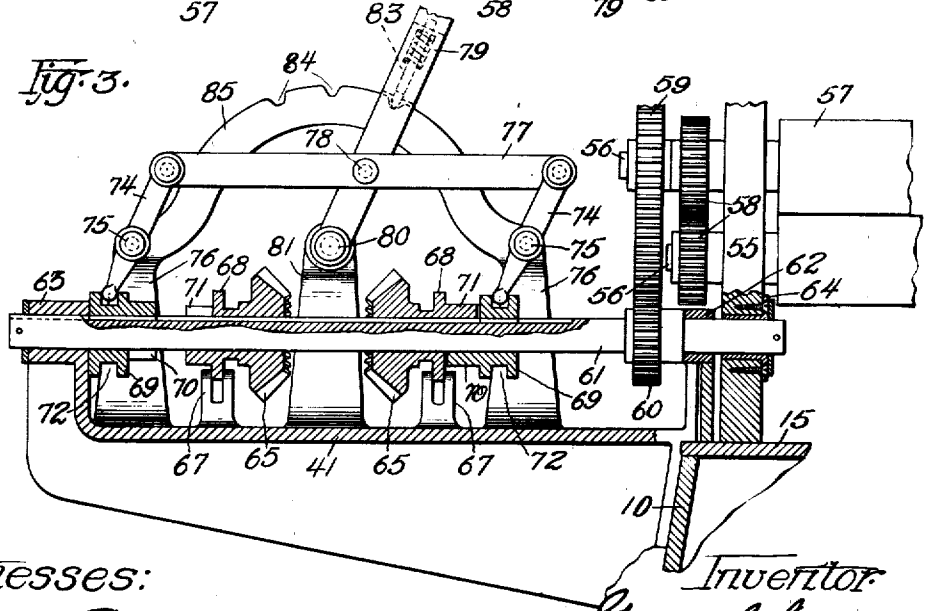


Fig. 3.



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UNITED STATES PATENT OFFICE.

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OPERATING MECHANISM FOR WASHING-MACHINES.

987,389. Specification of Letters Patent. Patented Mar. 21, 1911.

Application filed May 9, 1910. Serial No. 560,276.

To all whom it may concern:

Be it known that I, GUSTAV N. MEVES, a citizen of the United States, and a resident of Davenport, in the county of Scott 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 characters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in motor driven operating mechanisms for washing and like machines of that class embodying a main operating or stirrer head shaft to which is imparted a rotary reciprocatory motion, and relates also to mechanism associated with the operating mechanism for the main operating shaft or element for operating a secondary operating shaft or element, such as the roller shaft or shafts of a wringer mounted on or associated with the washing machine.

The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a vertical sectional view of a washing machine and its operating mechanism, taken on line 1—1 of Fig. 2. Fig. 2 is a plan view thereof, with parts shown in section. Fig. 3 is an enlarged sectional view of the driving and reversing gear mechanism for the wringer or other secondary operating element. Fig. 4 is a detail of the means for connecting the rocker actuating pitman with the gear wheel which gives motion to the same.

As shown in the drawings, the tub 10 is provided with the usual swinging lid 11 and is supported on the legs 12, which latter are connected by the horizontal frame members 13, 13. The swinging lid is hinged by hinges 14 to the fixed or non-rising portion 15 of the tub top. Extending downwardly through the swinging lid is an operating shaft 17 carrying at its lower end, within the tub, a stirrer head 18. Said shaft is mounted in a suitable bearing sleeve or bushing 20, carried by the swinging lid, and the shaft carries at its upper end a pinion 21 which meshes with a rocking, toothed element or sector 22 that is pivotally mounted on a stud 23 which is fixed to the upper end of a standard 24 that rises from, and may be made integral with, the attaching plate 25 of the bearing sleeve 20.

26 designates a horizontal driving shaft beneath the tub that is mounted in bearings 27, 27 carried by two opposite frame members 13. Fixed to said driving shaft is a peripherally grooved fly wheel 28 that is connected by a belt 29 with the grooved pinion 30 on the shaft of an electric motor 31 mounted on the frame members 13, whereby the driving shaft is driven. A beveled pinion 32 fixed to one end of said driving shaft meshes with a beveled gear wheel 33 that is fixed to the lower end of an upright shaft 34 located at one side of the tub and mounted in upper and lower bearings 35, 35 fixed to the side of the tub and to the adjacent underframe member 13.

36 designates a beveled pinion which is fixed to the upper end of the shaft 34 and which meshes with a beveled gear wheel 37 that is fixed to one end of a horizontally arranged shaft 38. The latter shaft is rotatively mounted at one end in a bearing 39 which, as shown, is made integral with the bearing 35 of the shaft 34, and is mounted at its other end in a bearing 40 carried by or made integral with a supporting frame 41 which is attached to the upper side of the tub at the rear side of the machine and extends laterally therefrom. The gear wheel 37 is connected to the rocking sector 22 by a pitman 43 which is pivotally connected at its outer end with a stud 44 fixed eccentrically to the gear wheel 37, and is pivotally connected at its inner end with a stud 45 fixed eccentrically to the rocking sector.

The motor rotates the driving shaft and the shaft 34 continuously in the same direction, thereby giving continuous rotation to the gear wheel 37. The continuous rotation of said gear wheel is translated, through the medium of the pitman 43 and the rocking sector 22, into rotary reciprocatory motion of the operating or dasher shaft 17 and the dasher carried by said shaft. The momentum of the fly wheel 28 serves to assist the actuation of the operating mechanism after the mechanism is started in motion, and to relieve the reversible parts of shocks and jars at their points of reversal.

In order that the lid may be thrown backwardly to open the tub, the pitman 43 is shown as detachably connected to the stud 44 of the gear wheel 37. For this purpose,

as shown in Fig. 4, the said pitman may be formed at its outer end with a downwardly opening hook 52 which is adapted to engage over the stud 44, and in one leg or member of said hook is mounted a spring pressed stud 53 which yieldingly holds the pitman engaged with said stud, but permits it to be readily detached therefrom.

Referring now to the driving connections by which the wringer 55, or other auxiliary device, may be driven from the main operating mechanism, the same are shown as made as follows: Said wringer is mounted in any suitable manner on a fixed or non-rising part of the tub top at one side of the machine. The shafts 56, 56 of the wringer rollers 57, 57 are geared together by intermeshing pinions 58, 58 mounted on the shaft ends. The upper shaft is provided at one end just outside of its adjacent pinion 58 with a large gear wheel 59 that meshes with a pinion 60 fixed to a horizontal intermediate shaft 61 that is mounted in bearings 62, 63 extending upwardly from the supporting frame 41, before referred to. The inner end of said shaft 61 may also be mounted in a bearing sleeve 64 carried by the adjacent portion of the wringer frame. Said shaft 61 carries near its middle portion a pair of opposing, loosely mounted, beveled pinions 65 which mesh with a pinion 66 carried by the rear end of the shaft 38. The pinions 65 are held from endwise displacement on the shaft 61 by means of notched lugs 67, 67 on the frame 41 which engage annular flanges 68, 68 on the hubs of said pinions. The said pinion 66 remains in constant mesh with the pinions 65, 66 and rotate the latter continuously during the operation of the operating mechanism. Said latter pinions 65, 65 are normally loose on the shaft 61 so that normally no motion is communicated to the wringer rollers. Means are provided, as follows, for separately clutching said pinions 65 to the shaft 61, whereby the wringer rollers may be rotated either forwardly or backwardly;—69, 69 designate clutch collars or spools that are splined to and slide longitudinally of the shaft 61, one collar at each side of the pair of pinions 65. Said collars are provided at their inner ends with angularly separated clutch teeth 70 that are adapted to interlock with like arranged clutch teeth 71 on the outer ends of the hubs of the pinions 65. The collars 65 are also provided with annular grooves 72, 72 which are engaged by the lower rounded ends of swinging levers 74, 74 that are pivoted at 75 to arms 76, 76 which rise upwardly from the supporting frame 41 at one side of the shaft 61 and are turned inwardly at their upper ends over said shaft. The upper ends of the levers are pivoted to a horizontally arranged link 77, which latter is pivotally connected at 78 to a shipping lever 79. Said shipping lever 79 is mounted to swing on a pivot 80 carried by the upper end of a supporting arm 81 which rises upwardly from the frame 41 at one side thereof, the upper end of said arm being turned inwardly over the shaft 61. The lever is locked in adjusted positions by means of a spring pressed locking pawl 83 carried thereby adapted for engagement with the notches 84 of a notched sector 85 which extends between the lever supporting arms 76. The said arms 76, 76 and the arm 81, as well as the notched sector 85, may be made integral parts of the supporting frame 41, and are herein shown as so made.

By swinging the shipping lever 79 to one or the other limits of its movement, one of the clutch collars 69 is shifted into clutching engagement with the hub of the adjacent pinion 65 to lock said pinion to the shaft to rotate the wringer rollers in one direction, and the other clutch collar is shifted away from its associated pinion 65. By swinging the shipping lever 79 to one or the other limits of its movement, the wringer rollers may be rotated in either a forward or backward direction, as desired. When the shipping lever 79 occupies its central or neutral position, both clutch collars are disengaged from the hubs of the pinions 65, and at this time no motion is communicated to the wringer rollers. The latter position is the position occupied by the clutch collars when the operating or dasher shaft is being actuated through the medium of the driving mechanism described and when the wringer is not in use. When it is desired to operate the wringer independently of the operating or dasher shaft, the pitman 43 is disconnected from the gear wheel 37, at which time the pitman may be thrown backwardly away from the rocking sector on the side thereof opposite to the gear wheel 37. The pitman may be held in the inoperative position described by means of a spring latch 87 of any suitable arrangement at one side of the lid.

The dasher shaft 17 constitutes the primary operating shaft or element and the shafts 56, 56 of the wringer rollers constitute secondary operating shafts or elements which are adapted to be operated either independently of the primary operating shaft or element or together therewith. While I have shown my invention as embodied in a combined washing machine and wringer operating mechanism it may, obviously, be applied to other machines where a similar combination of main and secondary elements are to be driven in the general manner herein set forth.

The gear sector 22 may be provided with a socket member 88 adapted to receive a hand lever by which to operate the machine in case the motor 31 should for any reason fail or in case electrical current or other

source of energy should not be available. In the event of thus operating the machine by hand power, the wringer would be disconnected therefrom. The wringer may be separately operated by hand by the use of a hand crank (not shown) arranged to be engaged with the squared end 89 of one of the shafts of the wringer rollers, as shown in Figs. 1 and 2.

It will be observed that the reversing gear mechanism for the wringer is located in convenient access to the usual or normal position of a person using the machine and the wringer, so that the same may be adjusted without the necessity of the operator moving from her usual position. It will also be observed that the motor driven operating mechanism is an exceedingly simple and efficient one and is economical to adapt to the machine and occupies but little space thereon.

It is to be understood that the structural details of the mechanism may be somewhat varied within the scope of the invention, and will be so varied in adapting the same to different kinds of machines. The invention is not limited to such details, therefore, except as hereinafter made the subject of specific claims.

I claim as my invention:—

1. Operating mechanism for washing machines and the like comprising, in combination with a body, an operating shaft capable of rotary reciprocatory motion, an upright shaft at the side of the body, a motor arranged beneath the body and operatively connected to the upright shaft to drive the latter in one direction and a reversing gear mechanism operatively connecting the upper end of said upright shaft with the operating shaft at a point above said body for imparting rotary reciprocatory motion to said operating shaft.

2. Operating mechanism for washing machines and the like comprising, in combination with a body, an operating shaft capable of rotary reciprocatory motion, a motor driven shaft beneath the body, a fly wheel on said latter shaft, an upright shaft at the side of the body, gears connecting the lower end of the upright shaft with the motor driven shaft to drive the upright shaft in one direction, and a reversing gear mechanism operatively connecting the upper end of said upright shaft with the operating shaft at a point above said body for imparting rotary reciprocatory motion to said operating shaft.

3. Operating mechanism for washing machines and the like comprising, in combination with a body, an operating shaft capable of rotary reciprocatory motion, a horizontal motor driven shaft mounted beneath said body, a fly wheel on said latter shaft, an upright shaft at the side of said body operatively geared at its lower end to the motor driven shaft, a pinion on the operating shaft above said body, a rocking gear sector meshing with said pinion and operative connections between said rocking sector and the upper end of the upright shaft, arranged to impart rotary reciprocatory motion to the operating shaft.

4. Operating mechanism for washing machines and the like comprising, in combination with a body, an operating shaft capable of rotary reciprocatory motion, a horizontal motor driven shaft mounted beneath said body, a fly wheel mounted on said latter shaft, an upright shaft at the side of said body operatively geared at its lower end to the motor driven shaft, a pinion on the operating shaft above said body, a rocking gear sector meshing with said pinion, a pinion fixed to the upper end of said upright shaft, a gear wheel meshing therewith and a pitman operatively connecting said gear wheel with said gear sector.

5. Operating mechanism for washing machines and the like comprising, in combination with a body, an operating shaft capable of rotary reciprocatory motion, a horizontally arranged driving shaft beneath the body, a fly wheel on said shaft, a motor beneath the body operatively connected to the fly wheel to drive said shaft, an upright shaft at one side of the body, gears connecting the lower end of said upright shaft with the motor driven shaft to drive the upright shaft in one direction, and a reversing gear mechanism operatively connecting the upper end of said upright shaft with the operating shaft at a point above said body for imparting rotary reciprocatory motion to said operating shaft.

6. Operating mechanism for washing and like machines comprising, in combination with a body, a primary operating shaft mounted therein, an upright shaft at the side of the body, a motor mounted beneath the body for rotating said shaft, a secondary operating shaft, and means for connecting the upper end of said upright shaft with said primary and secondary shafts, arranged to impart simultaneous or independent driving motion to said primary and secondary shafts.

7. Operating mechanism for washing and like machines comprising, in combination with a body, a primary operating shaft mounted therein, an upright shaft at the side of the body, a motor mounted beneath the body for rotating said shaft, a secondary operating shaft and means for connecting the upper end of said upright shaft with said primary and secondary shafts arranged to impart simultaneous or independent motion to said primary and secondary shafts, embodying means to rotate the secondary shaft in opposite directions.

8. Operating mechanism for washing and like machines comprising, in combination with a body, a primary operating shaft mounted therein, an upright shaft at the side of the body, a motor mounted beneath the body for rotating said shaft, a secondary operating shaft mounted above said body, an intermediate shaft geared to the secondary operating shaft, a pair of opposing pinions loosely mounted on said intermediate shaft and provided with means for separately locking them to their shaft, a third pinion meshing with said pair of pinions, and means for operatively connecting the upper end of said upright shaft with said third pinion and the primary operating shaft.

9. Operating mechanism for washing and like machines comprising, in combination with a body, a primary operating shaft mounted therein, an upright shaft at the side of the body, a motor mounted beneath the body for rotating said shaft, a secondary operating shaft mounted above said body, an intermediate shaft geared to the secondary operating shaft, a pair of opposing pinions loosely mounted on said intermediate shaft, connected clutches on the intermediate shaft for separately locking said pinions to their shaft, and arranged when in a neutral position to disconnect both of said pinions, means for operating said clutches, a third pinion meshing with said pair of pinions, and means for operatively connecting the upper end of the upright shaft with said third pinion and said primary operating shaft.

10. Operating mechanism for washing and like machines comprising, in combination with a body, a primary operating shaft mounted therein, an upright shaft at the side of the body, a motor mounted beneath the body for rotating said shaft, a secondary operating shaft mounted above said body, an intermediate shaft geared to the secondary operating shaft, a pair of opposing pinions loosely mounted on said intermediate shaft and provided with means for separately locking them to their shaft, a pinion on the upper end of the upright shaft, a gear wheel meshing therewith and operatively connected to said primary operating shaft, a horizontal shaft, a pinion on the horizontal shaft meshing with said latter gear wheel and a second pinion on said horizontal shaft meshing with said opposing pair of pinions.

11. Operating mechanism for washing and like machines comprising, in combination with a body, a primary operating shaft mounted therein, an upright shaft at the side of the body, a motor mounted beneath the body for rotating said shaft, means for operatively connecting the upper end of the upright shaft with said primary operating shaft, a pair of secondary operating shafts geared together, an intermediate shaft geared to one of the secondary operating shafts, a shaft operatively connected at one end with the upper end of said upright shaft and provided at its other end with gearing for operatively connecting it with said intermediate shaft to drive the latter and a clutch mechanism associated with the latter gearing for connecting the intermediate shaft with and disconnecting it from the shaft which drives the same.

12. Operating mechanism for washing machines and the like comprising, in combination with a body, a primary operating shaft capable of rotary reciprocatory motion, a motor driven shaft beneath the body, a fly wheel on said latter shaft, an upright shaft at the side of the body, gears connecting the lower end of the upright shaft with the motor driven shaft to drive the upright shaft in one direction, a reversing gear mechanism operatively connecting the upper end of said upright shaft with the primary operating shaft at a point above said body for imparting rotary reciprocatory motion to said operating shaft, a secondary operating shaft, and operative connections between the upper end of said upright shaft and said secondary operating shaft.

13. Operating mechanism for washing machines and the like comprising, in combination with a body, an operating shaft capable of rotary reciprocatory motion, a pinion on said shaft, a toothed element meshing with said pinion, means by which to removably attach a hand device to said toothed element to actuate the operating shaft by hand power, a motor beneath the body, gearing driven by said motor and adapted to be operatively connected to said toothed element to actuate the operating shaft by motor power and means whereby the said gearing is connected to said toothed element, arranged also to disconnect the toothed element from the gearing to permit the toothed element to be operated by hand power.

14. Operating mechanism for washing machines and the like comprising, in combination with a body, an operating shaft capable of rotary reciprocatory motion, a pinion on said shaft, a toothed rocking sector meshing with said pinion, means for removably attaching thereto a hand device, a motor driven shaft below said body, an upright shaft at the side of said body geared at its lower end to said motor driven shaft and operative connections between the rocking sector and the upper end of said upright shaft, said operative connections embracing a part that is releasable to disconnect said upright shaft from the rocking sector to permit the operating shaft to be actuated by hand power.

15. Operating mechanism for washing

and like machines comprising, in combination with a body, a primary operating shaft, means whereby said shaft may be operated by hand power, motor driven means operatively connected to said primary operating shaft to drive the same, the operative connections embracing means to releasably connect the same to the primary shaft, whereby said operative connections may be released from the primary shaft to permit the latter to be driven by hand power, a secondary operating shaft provided with means whereby it may be operated by hand power and gearing between the motor driven means and said secondary shaft, embracing means to releasably connect the motor driven means to the secondary shaft, and to disconnect the motor driven means from the secondary shaft to permit the latter to be operated by hand power.

16. Operating mechanism for washing and like machines comprising, in combination with a body, a primary operating shaft thereon, a pinion on said primary shaft, a toothed element meshing with said pinion, means whereby a hand device may be removably attached to said toothed element to operate the primary shaft by hand power, a motor below said body, gearing driven by said motor and operatively connected to said toothed element by means permitting the gearing to be disconnected from said toothed element to permit the primary shaft to be operated by hand power, a secondary operating shaft, and means for releasably connecting said gearing with the secondary operating shaft to drive the latter, whereby the secondary operating shaft may be driven simultaneously with or independently of the primary operating shaft, as desired.

In testimony that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this second day of May A. D. 1910.

GUSTAV N. MEVES.

Witnesses:
D. J. MURPHY,
HUGO C. VOGT.