

July 2, 1946.

A. J. PATCH

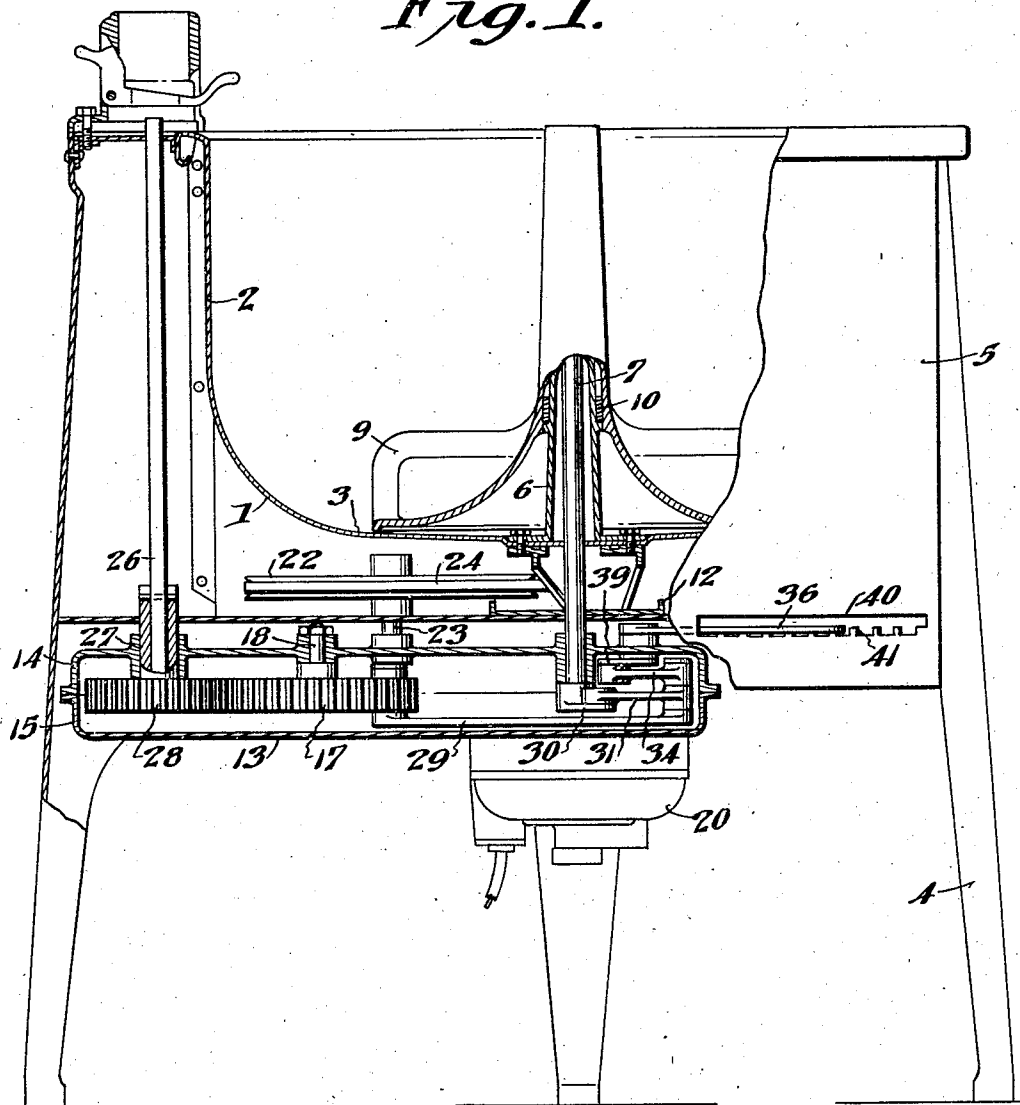
2,403,233

WASHING MACHINE.

Filed Sept. 13, 1943

8 Sheets-Sheet 1

Fig. 1.



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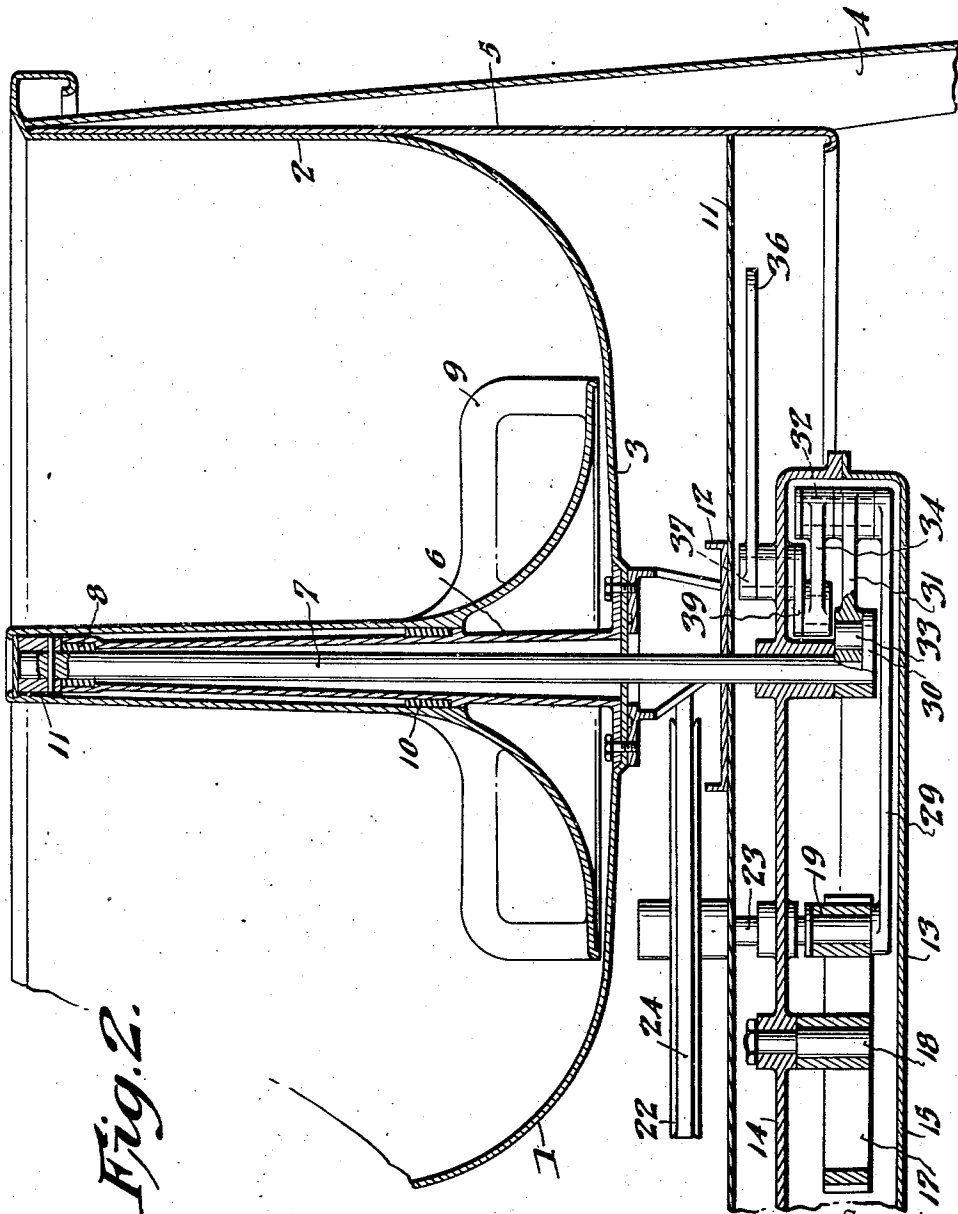
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Fig. 3.

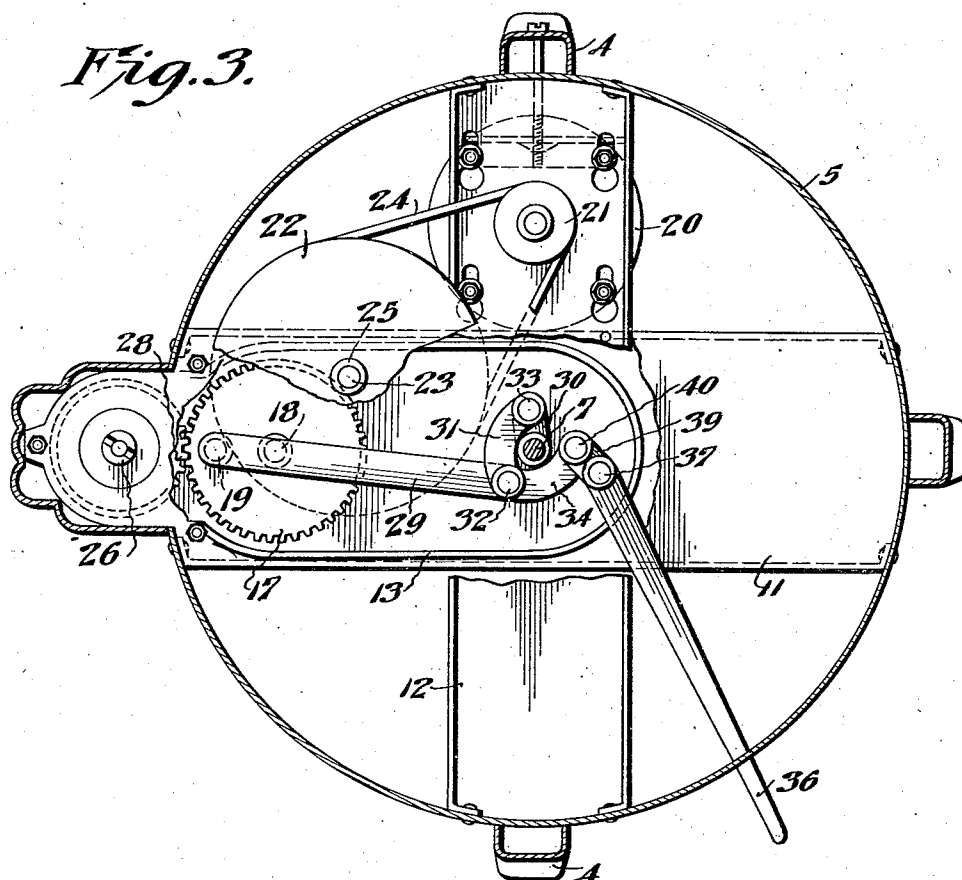
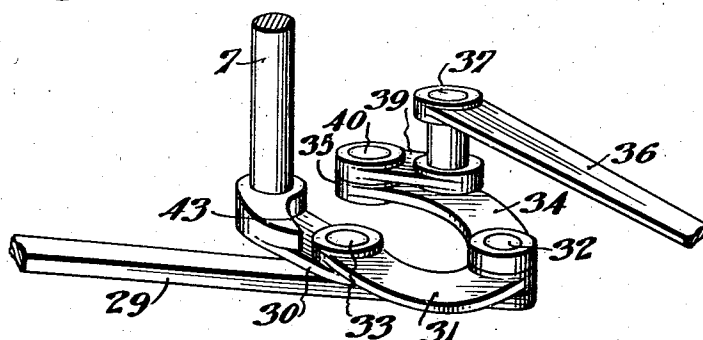


Fig. 4.



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Fig. 5.

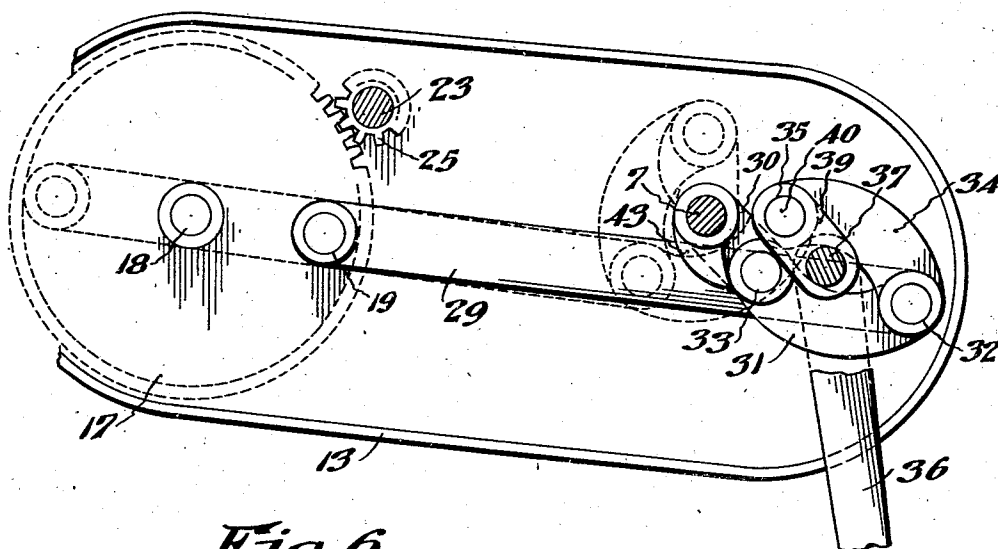
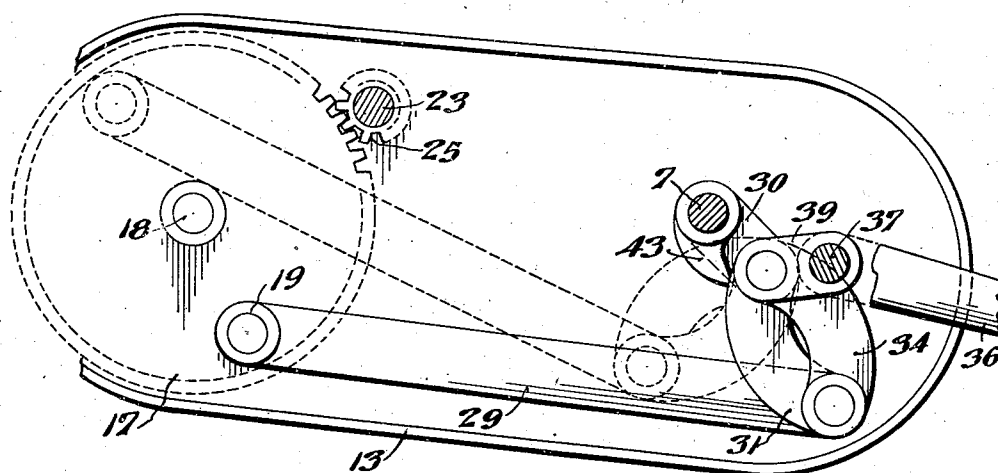


Fig. 6.



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Fig. 7.

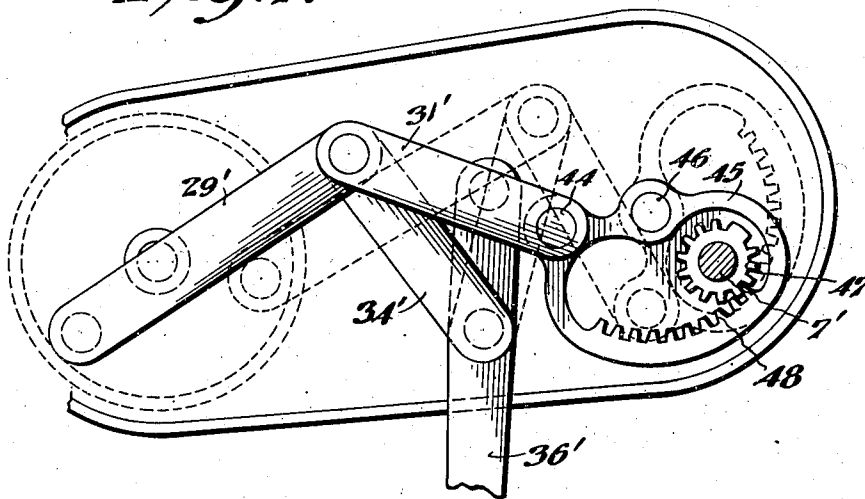
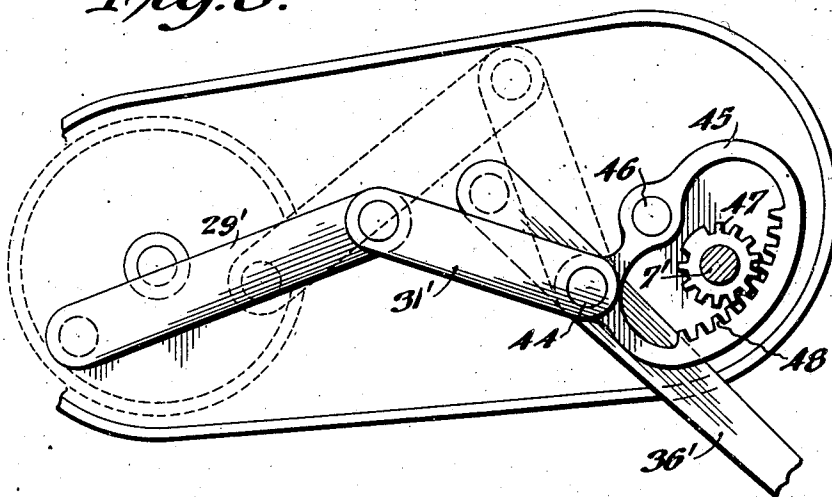


Fig. 8.



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Fig. 9.

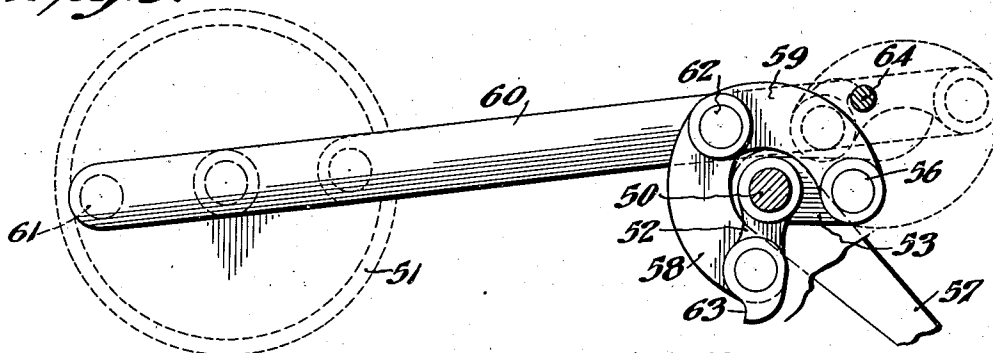


Fig. 10.

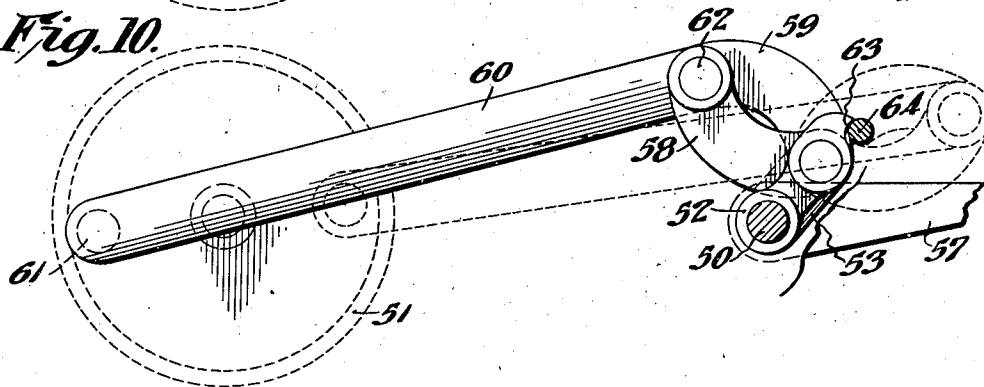
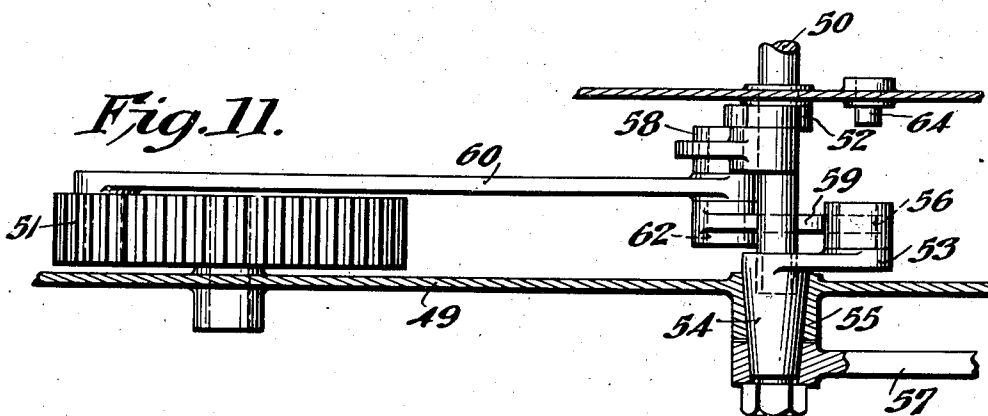


Fig. 11.



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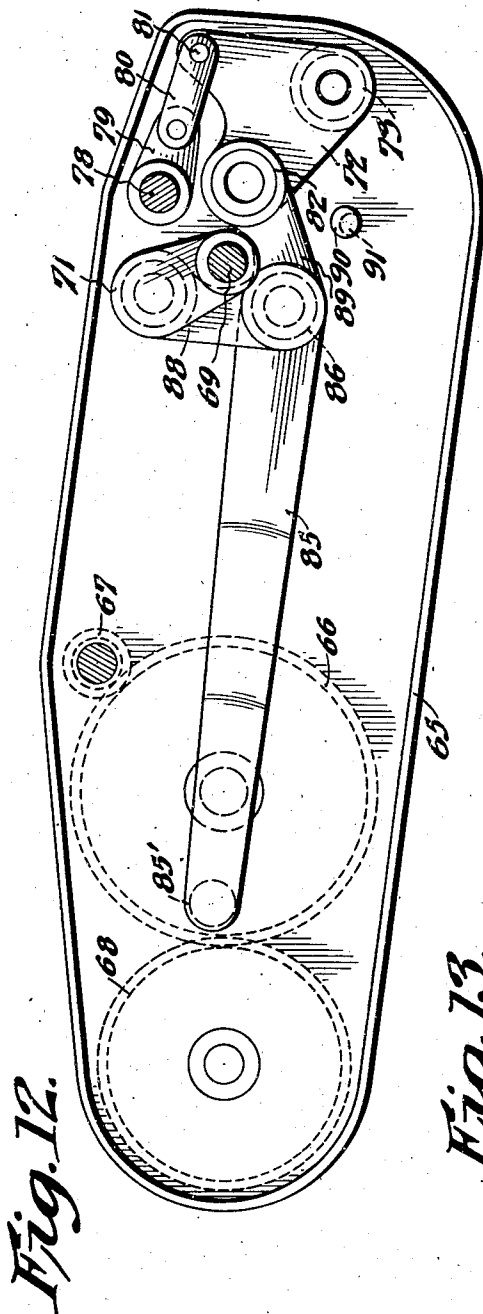
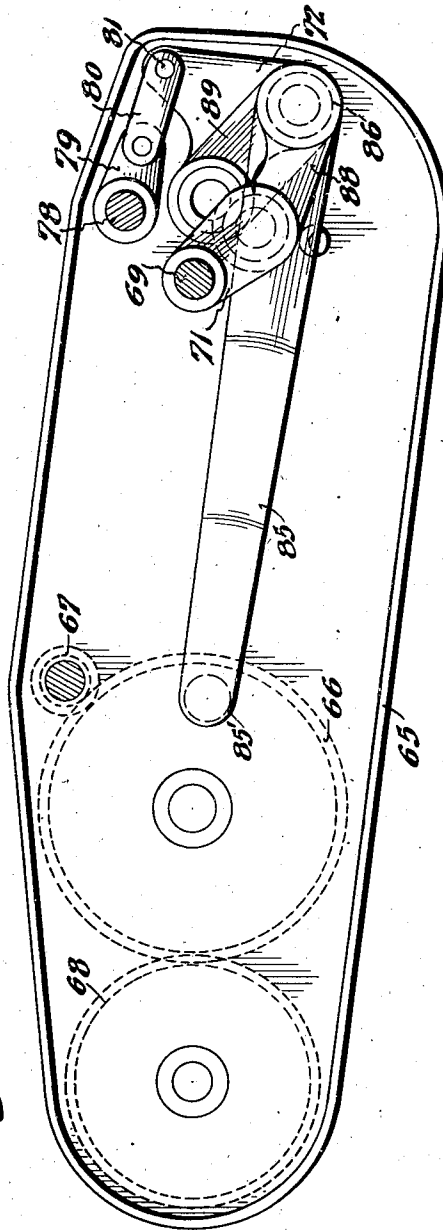


Fig. 13.



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Fig. 14.

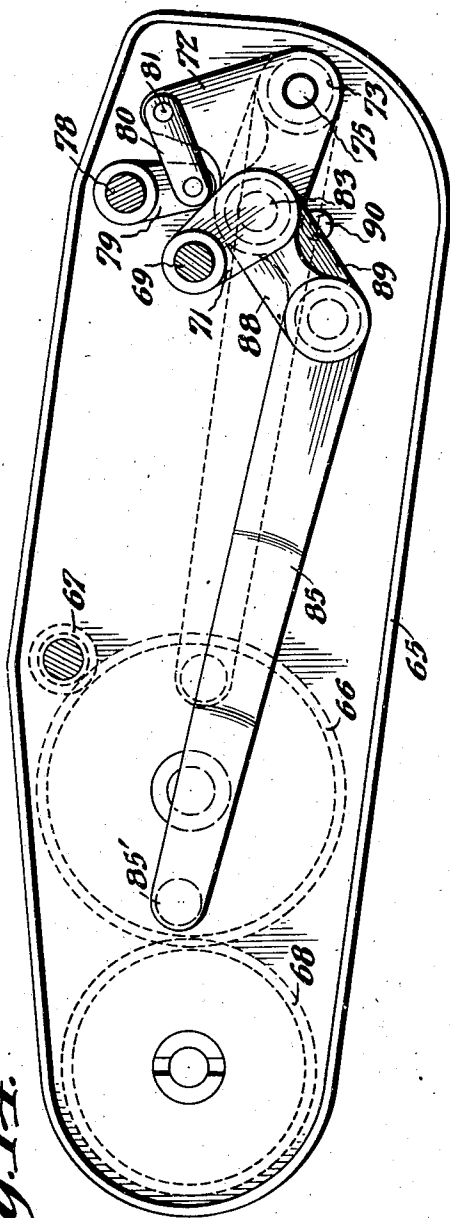
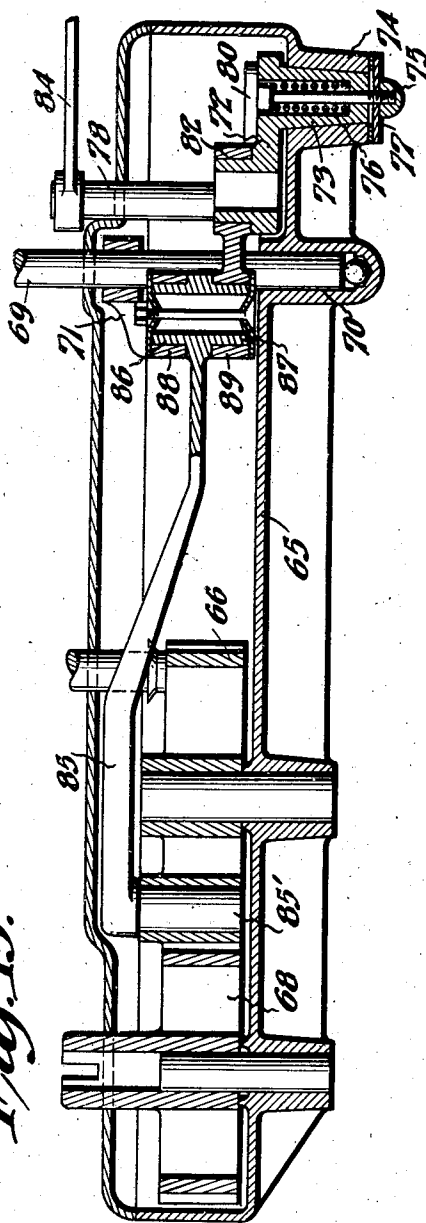


Fig. 15.



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UNITED STATES PATENT OFFICE

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WASHING MACHINE

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Application September 13, 1943, Serial No. 502,179

14 Claims. (Cl. 74-75)

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My present invention relates to washing machine operating mechanism, and particularly to clothes washing or laundry machines having an impulsing agitator oscillatable on a vertical axis with the oscillation accomplished by bottom drive means, and to controls for the impulsing agitator.

An object of this invention is to provide a washing machine of this type, and control means therefor, in which the impeller or agitator oscillating or driving means can be adjusted to vary the length or degree or angle of oscillation.

Another object is to so construct and associate the parts that the oscillation control and varying means can be shifted to or set in a neutral position in which the impeller or agitator remains stationary, thus obviating the necessity of providing a clutch or other similar starting and stopping control connection or means between the power means and the oscillating impeller or agitator parts.

A further object is to provide a single manually actuatable and settable means, capable of being set and controlled during operation of the machine, that can be operated to initiate operating movement of the impeller or agitator from a completely stopped or stationary position to any degree of oscillation and to maximum or full oscillation, to suit and adapt the operation for different articles or fabrics being washed or to suit other particular or special or usual conditions of use.

Still another purpose is to provide agitator actuating means by which the agitator can be swung through a wide angle of oscillation, with smooth and substantially vibrationless operation, and with which the parts can be adjusted to accomplish oscillation of the agitator from a stopped position through easy stages or increases of length of oscillation up to the angle or degree of oscillation suitable for the particular conditions or to the maximum, and with which the parts can be gradually adjusted to accordingly decrease the oscillation or can be set for immediate adjustment of the parts to instantaneously stop the oscillatory movement of the impeller, with smooth operating and control in any and all adjustments and actuations and settings of the parts.

Still another purpose is to provide a washing machine and oscillating means and control therefor made up of few simple and inexpensive parts readily assembled and unlikely to become quickly or easily worn or damaged while in use, whereby fully adjustable control and agitator starting and stopping means can be employed in and with the

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washing machine mechanism at a cost no greater than the usual clutch or other similar power or drive connecting and disconnecting means as now ordinarily employed.

Another purpose is to provide a washing machine having an operating and oscillation control means of this character, with which a single control and actuating lever or member is available for full and ready manual control and adjustment of the parts from the stopped to the full oscillating setting for the agitator, and to all desirable degrees intermediate.

With the above and other objects in view, some of which will be apparent to those skilled in the art, and others of which are inherent in the construction and assembly and the operation and use of the parts, my invention includes certain novel features of construction and combinations and arrangements and associations of parts which will be hereinafter set forth in connection with the drawings.

In the drawings:

Figure 1 is a vertical sectional view through a clothes washing machine showing one embodiment of my invention.

Fig. 2 is an enlarged fragmentary view of parts shown in Figure 1 and with portions in section.

Fig. 3 is a horizontal sectional view across the lower part of the machine below the tub, and with parts of the gear case broken away.

Fig. 4 is an enlarged fragmentary perspective view showing the operating lever and linkage connection and the adjustment therefor.

Fig. 5 is an enlarged plan view looking into the gear case to better show the construction and mounting of the gearing and lever and linkage arrangements in one embodiment of the invention with the parts in operative or oscillating position.

Fig. 6 is a view similar to Fig. 5 showing the parts in the inoperative setting or adjustment.

Fig. 7 is a view similar to Fig. 5 illustrating another embodiment of the invention with the parts in oscillating and operating position.

Fig. 8 is a view similar to Fig. 7 showing the parts adjusted to non-oscillating or stopped relation.

Fig. 9 is a view similar to Fig. 5, disclosing still another embodiment of my invention with the parts in oscillating and operating setting.

Fig. 10 is a view similar to Fig. 9 showing the parts set in non-oscillating or stopped relation.

Fig. 11 is a longitudinal vertical sectional view of the embodiment disclosed in Fig. 9.

Fig. 12 is a view similar to Fig. 5 illustrating

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another and perhaps preferred form of my invention with the parts in one extreme of swing or oscillatory operating movement.

Fig. 13 is a like view showing the parts in an extreme operating position.

Fig. 14 is still another like view disclosing the inoperative or neutral setting of the parts.

Fig. 15 is a longitudinal vertical sectional view of the showing in Fig. 12 taken substantially on a staggered medial line to thereby better show bearing connections and mountings of and for the operating parts.

In each of the embodiments of the invention as herein illustrated, an agitator is mounted and is actuated for oscillation within an upright tub having side and bottom walls, through an impeller shaft oscillatably mounted in upright disposition through the bottom of the tub; and, means is provided within the control of the operator, through the medium of a readily accessible lever, for adjusting the length or angle or degree of oscillation of the upright impeller shaft and for setting of the parts to a position in which oscillation of the shaft is stopped, thereby permitting the starting and stopping of the oscillatory movement of the agitator and allowing minute adjustment of the length or degree of swing when the parts are set for oscillation of the impeller.

In the adaptation of the invention illustrated in Figures 1 through 6, the tub 1, substantially circular in plan, has a side wall 2 and a bottom wall 3, and this tub is mounted and supported on legs 4, an enclosing case structure 5 being preferably provided around the tub and substantially concentrically following the contour of the side wall 2. A bearing sleeve 6 is mounted to rise substantially centrally within the tub 1 as a housing around an opening through the bottom of the tub, and agitator shaft 7 is mounted in a bearing 8 at its upper end for oscillatory movement within the housing, the upper end of this agitator shaft preferably extending above the bearing sleeve 6. An agitator 9 is mounted on suitable bearings 10 on the sleeve 6 to be capable of oscillatory movement within the tub, and this agitator is provided with a portion 11 engaging with and holding upon the upper end of the oscillatable agitator shaft 7 so that as the shaft 7 is oscillated the agitator will be carried therewith to have a similar oscillatory movement. Further, as the degree or angle of oscillation of shaft 7 is increased or decreased the movement of the agitator 9 will be accordingly varied and as shaft 7 is stopped the agitator 9 will also be stopped.

A cross supporting member 12, or other suitable supporting structure below the bottom 3 of the tub 2, carries a gear casing 13, which in the present instance is perhaps preferably made up of upper and lower portions 14 and 15. The agitator shaft 7 has the lower end thereof extending into this gear casing 13 and the shaft is preferably mounted in and through a bearing carried by the gear casing 13. A drive gear 17 is revolubly mounted on a stub shaft 18 within the gear case 13, at a point separated laterally from the mounting of the agitator shaft 7, and this drive gear has a bearing 19 eccentrically disposed with respect to the axis of rotation, whereby the gear constitutes eccentric means. A motor, generally indicated at 20, has a belt pulley 21 on the shaft thereof, and a belt pulley 22 is connected on a stub shaft 23 mounted in a suitable bearing in the gear case 13. A belt 24 is fitted over the belt pulleys 21 and 22 so that motion is trans-

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mitted from the motor 20 to this stub shaft 23, and a drive pinion 25 on the stub shaft 23 meshes with the drive gear 17 for continuously rotating said gear 17 or eccentric means while the motor is in operation. A wringer operating shaft 26 has one end thereof revolubly mounted in bearing 27 and extending into the gear case 13 where it is provided with a pinion gear 28 meshing with drive gear 17. In this way motion is imparted to the wringer shaft 26, and this shaft can be connected in any desired manner with a wringer and can be provided with any suitable control.

A pitman rod 29 has one end thereof connected at the eccentric bearing 19, in consequence of which the pitman will be continuously operated during rotation of the drive gear or eccentric means 17. The pitman rod has its free end extending adjacent to the oscillatable agitator shaft 18.

Within the gear case 13 an oscillating arm 30 is connected on the agitator shaft 7 to extend substantially radially therefrom, and an arcuate operating link 31 pivotally connecting on the end of the pitman 29 at 32 has a bearing at its remaining end pivotally connected at 33 with the extending oscillating arm or means 30. An arcuate control link 34 is pivotally connected with the pitman 29 on the axial center as at 32, of the pivotal mounting of the operating link 31, and this control link 34 has a bearing 35 at its swinging and spaced a distance substantially corresponding to the distance of the bearing 33 from the pivotal mounting at 32.

A control and setting lever 36 is swingably mounted by stub shaft 37 oscillatable in a bearing 38 on the gear case 13, and on its inner end this stub shaft 37 carries a radially extending adjusting arm 39, or equivalent structure. The adjusting arm is pivotally connected with the bearing 35 of adjusting link 34 by pivot means 40. As shown in Figs. 2 and 3, this operating and control lever 36 projects through a peripherally extending slot or opening 41 provided through the wall of the casing 5, and this opening 41 is provided on one side with serrations or notches and with toothed formations 42 providing a plurality of stops for the adjusting lever 36 whereby this lever is held in desired adjusted positions. With the structure as shown, the operating lever 36 can be made sufficiently flexible to permit elevation for disengagement from the tooth-like detents 42 and the lever can then be freely swung to any desired position of adjustment. Upon release, the operating and control lever will fit into one of the recesses between adjacent detents 42 and the parts will be held in this adjustment until manually released or reset.

The relative disposition and association of the oscillating link and the control link and the control lever and connecting parts is perhaps best shown in Fig. 4, and the oscillating connection or setting of the parts is illustrated in Fig. 5; whereas, the inoperative or stopped setting and relation of the parts is disclosed in Fig. 6.

With this construction and mounting and connection and association of the parts, when the lever 36 is moved to the position shown in Fig. 5 the axial center of the bearing of the part 40 and the bearing opening 35 is offset from any position occupied or assumed by the axial center of the bearing at 33 when the oscillating arm or means 30 is swung through oscillatory movement. Consequently the operation of pitman 29, through the eccentric means 17, will cause link 34 to be swung around the bearing center at 40

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and will at the same time cause the operating link 31 to be moved so that oscillatory movement will be imparted to the oscillating arm or means 30, in consequence of which the agitator shaft 7 will receive oscillatory movement. When operating or control lever 30 is swung or moved to bring the axial center of the bearing at 40 more nearly into substantially axial alignment with the center of the bearing 30, the degree or length of the oscillatory impulse imparted to the oscillating means 30 will be shortened. When the axial centers of bearing portions 40 and 30 are brought into axial alignment, as illustrated in Fig. 6, the two links will swing or pivot around this coinciding axially aligned center as the common bearing connection at 32 is moved by the pitman 29, in consequence of which the agitator shaft 7 will not have any oscillating force or movement applied thereto. To insure that the agitator shaft 7, and consequently the agitator 9, will remain stationary in the stopped position of the parts, a stop 41 extends radially with respect to the stub shaft 37 and has a face presented to engage with a portion of the linkage, or with some other portion, whereby the shaft 7 is held in the stopped position and against casual oscillating impulses or forces or movement. This stopped position or setting of the parts is illustrated in Fig. 6, and it will of course be understood that the control or operating lever 30 can be set to and will be retained in any position intermediate the extreme settings as illustrated in Figs. 5 and 6 to adapt the parts for a greater or lesser degree of oscillatory movement or swing of the agitator.

Consequently, with the parts as illustrated and described the movement of the agitator can be gradually started and gradually stopped and the parts can be set so that the agitator can be oscillated or operated through any desired length or angle of oscillation as may be considered suitable or desirable for the particular materials being washed or particular conditions under which the machine is being operated. In the starting and stopping and the operation with any desired degree of oscillation, the motor and the drive eccentric means are continuously operated and there is no jerking or severe strain upon the agitator or the operating parts or the control means as the controls are actuated for starting and stopping and for adjustment of the movement or degree of oscillation of the agitator.

With the modified construction shown in Figs. 7 and 8, the tub and agitator and support parts are in the main substantially as set forth in the hereinbefore described embodiment. The operating link 31' is here illustrated as having its end pivotally or swingably connected, as at 44, with oscillating means in the form of a segmental rack member 45 swingably or oscillatably mounted on a stub shaft 46. A rack pinion 47 on the agitator shaft 7' has the teeth thereof engaging with the segmental rack teeth 48 of the rack member 45. The pitman 29' has the oscillating link 31' and the control link 34' oscillatably or swingably mounted thereon at a common center, and the control link 34' can be swingably connected at its outer end with a control lever 30'. With this modified construction, when the parts are in the full operating position as illustrated in Fig. 7, the segmental rack portion 45 constitutes oscillating means cooperating with the rack pinion 47 for oscillation of the agitator shaft 7', and when the parts are in the position illustrated in Fig. 8, movement of the segmental rack mem-

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ber or oscillating means 45 will be stopped in consequence of which the agitator shaft 7' will also be stopped and will not impart any oscillatory force to the agitator 9. Obviously, the structure as disclosed in Figs. 7 and 8 permits of adjustment of the control means to various settings of the parts so that the oscillating means will start and stop oscillatory movement of the agitator shaft 7', and consequently the agitator, and will impart controlled oscillating movement to the agitator through any length or degree or angle of oscillation between the two extremes of setting.

In Figs. 9, 10 and 11 of the drawings I have illustrated another modified construction which in several respects lends itself particularly well to manufacture and to embodiment in a commercial washing machine. The gear casing 49 has the lower end of the agitator shaft 50 extending thereto, and drive gear 51 is revolvably mounted within the gear casing at a point spaced away from the agitator shaft 50. An oscillating arm 52 is fixed on the agitator shaft 50 to extend substantially radially therefrom and is provided with a bearing opening at its outer swinging end. A control and setting arm 53 extends substantially radially from a stub shaft 54 mounted in a bearing 55 formed in the gear casing 49 so that the stub shaft is substantially axially aligned with the agitator shaft 50, and this control and setting arm 53 has a bearing pin or member 56 carried at the outer end thereof and spaced from the axial center a distance corresponding substantially to the distance between the axial center of the agitator shaft 50 and the center of the bearing opening of the oscillating arm 52. The stub shaft 54 has its lower end extending beneath the casing 49 and a control and setting lever 57 is connected on this extending end to be available to oscillate the stub shaft 54 and consequently swing the control and setting arm 53. An arcuate link 58 is swingably connected at one end at the bearing of the oscillating arm 52, and a second arcuate link 59 is pivotally connected at one end with the control and setting arm 53.

These two arcuate links 58 and 59 have bearings at their outer ends and the spacing between the bearings at the ends of the two links is substantially equal. A pitman rod 60 is connected at one end at an eccentric bearing 61 of the drive gear 51, and is extended toward the location of the parts as grouped around the agitator shaft 50. At its extending end, the pitman 60 is connected with the extending ends of the two arcuate links 58 and 59 through the medium of a bearing pin 62, or in any other suitable manner. The oscillating arm 52 has at its outer end a stop extension 63, and a stop lug or pin 64, or other similar part, is carried by the casing structure in position to be engaged by this stop extension 63 when the oscillating arm 52 is in one extreme position of movement.

With this modified construction, the control and setting lever 57 can be manually moved to adjust the control and setting arm 53 to the positions shown in Figs. 9 and 10 and to any position intermediate. When the parts are in the adjusted relation illustrated in Fig. 9, the arcuate links 58 and 59 will be moved or operated through the connection with the pitman 60 between the positions as shown by the full and the dotted lines, and in consequence the oscillating arm 52 will be moved and oscillated through an angle considerably more than one-half of a circle, thus imparting wide angle oscillatory movement of

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the agitator shaft 55 and consequently to the agitator carried or actuated by or from this shaft 55. When the control and setting lever 57 is moved to the position shown in Fig. 10, the control and setting arm 53 will be correspondingly shifted and will be disposed with the axial bearing of the pin 56 substantially aligned with the axial bearing of pin 62, when the oscillating arm 52 is swung to a position with the stop extension 63 thereof engaging with the stop lug or pin 64. With the axial centers of the pins 56 and 62 aligned, the arcuate links 58 and 59 will move or swing in substantially the relation as indicated by the full and the dotted lines and in consequence there will be no movement imparted or transmitted to swing the oscillating arm 52. In this adaptation, the control and setting lever 57 can be adjusted to any desired position intermediate the two extremes as illustrated in Figs. 9 and 10 respectively, and in consequence the control and setting arm 53 will be adjusted to give or impart greater or lesser swinging movement to the oscillating arm 52.

As stated, the embodiment of my invention illustrated in Figs. 12 through 15 may be a preferred form, and may prove best adapted to commercial manufacture and most practical in use and performance. With this adaptation, the tub and agitator and the supporting and other main structural features may be substantially the same as described above. The gear casing 65 has the drive gear 66 revolvably mounted therein and meshed to be rotated by drive pinion 67. The drive gear 66 can in turn be meshed with a wringer operating gear 68, or any other suitable adaptation or connection for wringer drive can be resorted to. In this instance, the agitator shaft 69 can be extended through the entire opening of the gear case and can be stepped in a suitable bearing 70 in the bottom of the gear case, thus insuring a sturdy construction not likely to become readily loosened or worn or damaged through long continued use. This agitator shaft can be extended upwardly, in the manner as hereinbefore described, through the bottom of the washing machine tub and can have the agitator mounted thereon substantially in the manner set forth, or in any other way that will be best suited for the particular construction and conditions of use. An operating arm 71 is fixed to and extends radially from the oscillatable agitator shaft 69, preferably in the upper part of the gear casing 65, and a fulcrum and adjusting member 72 is swingably mounted within the lower part of the gear case at a point separated from the shaft 69 and on the side thereof away from the drive gear 66. This fulcrum member is of somewhat segmental shape and is swingably or oscillatable on a bearing stud 73 mounted in a suitable bearing 74 of the gear casing. As here shown, the bearing stud 73 is formed externally on a long taper and the opening of the bearing 74 is correspondingly formed. A bolt 75 extends upwardly through an enlarged bore in the bearing stud 73 and a spring 76 received around the bolt bears between the head of this bolt and the lower end of the enlarged recess of the stud bearing portion 73, with a washer 77 seated against the lower end of the bearing portion 74 holding the bolt 75 against upward thrust, and in this manner the bearing stud 73 is resiliently urged to a frictional seating within the correspondingly tapered opening of the bearing 74. This frictional bearing will serve to hold the fulcrum member 72 in adjusted positions, and at the same time

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will establish a substantially leakproof connection through the bottom of the casing so that the lower portion of the casing can be employed to receive and retain a lubricant.

A control and setting shaft 78 is fitted in suitable bearing to have a portion thereof within the gear case 65, and an operating arm 79 is fixed upon and extends substantially radially from this control and setting shaft 78. A toggle link 80 is swingably connected at one end with the end of the operating arm 79, and this toggle link at its other end is swingably connected with the fulcrum and adjusting member 72, as at 81. The fulcrum and adjusting member has a bearing 82 thereon which upon swinging movement of said member 72 will be moved to substantially center with the axis of bearing 83 at the outer end of the operating arm 71. A control and setting lever 84 is fixed to and extends radially from the control and setting shaft 78 with its outer end disposed to be readily available to the user or operator of the washing machine so that this control and setting lever can be manually swung to move the fulcrum and adjusting member 72 from the position shown in Figs. 12 and 13 to the neutral position shown in Fig. 14, or to any operating position intermediate these two extremes.

A pitman rod 85 extends from an eccentric bearing 85' of the drive gear 66 to have its free end disposed adjacent to and on one side of the agitator shaft 69, and this end of the pitman rod is provided with bearings 86 and 87. An operating link 88 having bearings at its two ends is connected swingably at one end with the bearing 85' of the pitman rod and at its remaining end with the bearing 83 of the operating arm 71. A fulcrum link 89 having bearings at its opposite ends is fitted to the bearing 87 of the pitman rod 85 and the bearing 82 of the fulcrum and adjusting member 72.

As the mechanism is illustrated in Figs. 12 and 13, the fulcrum and adjusting member is moved to one extreme, or to the position where maximum oscillatory movement will be imparted by the pitman rod and the linkage to the agitator shaft 69, and in this relation the toggle link 80 is set on substantially dead center so that the parts will be substantially held and retained against accidental or casual displacement or readjusting. When the parts are moved to the other extreme position, being the neutral position as illustrated in Fig. 14, the toggle link 80 is in folded relation and it is then desirable to have a stop 90 extending upwardly from the bottom of the casing 65 to engage with the fulcrum and adjusting member to retain this member against excessive movement. In this neutral adjustment, it is desirable that the axial center of the bearing stud 73 substantially coincides with the axial center of the bearings 86 and 87 when the pitman rod 85 has attained its full movement to one extreme position, and consequently the stop 90 may well be made adjustable, as by being mounted eccentrically on a clamp bolt, as indicated at 91. Obviously, rack or retaining means for holding the control and setting lever 84 in adjusted positions can be provided, perhaps somewhat after the manner as described above, or in any other suitable form.

With this construction of the parts, the movement or setting of the fulcrum or adjusting member from the position shown in Figs. 12 and 13 through the neutral position as illustrated in Fig. 14 will bring the bearing 82 thereof closer to the neutral position, and in consequence the pivotal connection for the fulcrum link 89 will

be so adjusted that the operating link 88 will swing the operating arm 71 through an angle of lesser degree, thereby shortening the oscillatory movement of the agitator shaft 69. The maximum operating setting is shown in Figs. 12 and 13, and the two extremes of movement are illustrated in these views. When the parts are set for the neutral or inoperative position, as illustrated in Fig. 14, the operating arm 71 will be swung to a position with the bearing 83 thereof perpendicularly aligned with the bearing 82 of the fulcrum and adjusting member 72, in consequence of which the operating link 88 and the fulcrum link 89 will be simultaneously swung around this same axial center between the full and dotted line positions shown in Fig. 14, without moving or swinging the operating arm 71, in consequence of which the agitator shaft 69 will remain stationary and will not have oscillatory movement imparted thereto.

By actuation of the control and setting lever 84 the fulcrum and adjusting member 72 can be swung away from the position of Fig. 14 toward the position as disclosed in Figs. 12 and 13, and as the axial center of bearing 82 is moved from possible perpendicular alignment with the axial center of bearing 83 the operating link 88 and the fulcrum link 89 will have their outer bearings separated so that as these two links are actuated through the pitman rod 85 movement will be imparted to swing the operating arm 71 and consequently oscillate the agitator shaft 69. Obviously, the fulcrum and adjusting member 72 can be set to any desired position between the two extremes and the degree or angle of oscillation of the agitator shaft 69 will be correspondingly varied. This particular embodiment of the invention will lend itself well to manufacturing methods and procedures, and the structure when in use will operate smoothly and with precision thereby preventing undue wear upon or damage to any of the parts and insuring quiet operation of the washing machine throughout a long period to life and utility.

While I have herein shown and described only certain specific embodiments of my invention and have suggested only certain other possible modifications or embodiments, it will be appreciated that the linkage or operating connections can be varied in other manners, and that changes in the form and construction and connection and association of the parts can be made to accomplish the desired function without departing from the spirit and scope of my invention.

I claim:

1. A washing machine mechanism comprising an agitator shaft oscillatably mounted in upright relation, oscillating means connected with said agitator shaft, eccentric means spaced from said agitator shaft, a pitman rod connected at one end with said eccentric means and having its remaining end extending toward the agitator shaft, a pair of links pivotally connected with the extending end of said pitman and provided with bearings at their free ends spaced substantially an equal distance from the pivotal connection with the pitman, means pivotally connecting the free end of one of said links with the oscillating means of the agitator shaft, and means pivotally connecting and swingably mounting the bearing end of the second link whereby said bearing end can be moved into and from axial alignment with the pivotal connection between the first link and the oscillating means.

2. A washing machine mechanism comprising,

an agitator shaft oscillatably mounted in upright relation, oscillating means connected with said agitator shaft, continuously operating eccentric means spaced from said agitator shaft, a pitman rod connected at one end with said eccentric means and having its remaining end extending toward the agitator shaft, a pair of links pivotally connected with the extending end of said pitman and provided with bearings at their free ends spaced an equal distance from the pivotal connection with the pitman, means pivotally connecting the free end of one of said links with the oscillating means for the agitator shaft, and means pivotally connecting and swingably mounting the bearing end of the second link whereby said bearing end can be moved into and swung away from axial alignment with the pivotal connection between the first link and the oscillating means.

3. A washing machine operating mechanism comprising an agitator shaft oscillatably mounted in upright relation, oscillating means connected with said upright agitator shaft, continuously rotating eccentric means spaced from said agitator shaft, a pitman rod pivotally connected at one end with said eccentric means and having its remaining end extending toward the agitator shaft and provided with a bearing, a pair of links pivotally connected at the bearing of said pitman and provided with bearings at their free ends spaced an equal distance from the said pivotal connection, means pivotally connecting the free end of one of said links with the oscillating means for the agitator shaft, and lever means swingably mounted and having the bearing end of the second link pivotally connected therewith eccentrically of the swingably mounting whereby said bearing end can be moved into and from axial alignment with the pivotal connection between the first link and the oscillating means.

4. A washing machine operating mechanism comprising an agitator shaft oscillatably mounted in upright relation, oscillating means connected with said agitator shaft, eccentric means spaced from said agitator shaft, a pitman rod connected at one end with said eccentric means and having its remaining end extending toward the agitator shaft, a pair of links pivotally connected with the extending end of said pitman and provided with bearings at their free ends spaced an equal distance from the pivotal connection with the pitman, means pivotally connecting the free end of one of said links with the oscillating means for the agitator shaft, means pivotally connecting and swingably mounting the bearing end of the second link whereby said bearing end can be moved into and from axial alignment with the pivotal connection between the first link and the oscillating means, and stop means holding parts against oscillation when the bearing ends of the two links are in axial alignment.

5. A washing machine operating mechanism comprising an agitator shaft oscillatably mounted in upright relation, oscillating means connected with said agitator shaft, eccentric means spaced from said agitator shaft, a pitman rod connected at one end with said eccentric means and having its remaining end extending toward the agitator shaft, a pair of links pivotally connected with the extending end of said pitman and provided with bearings at their free ends spaced an equal distance from the pivotal connection with the pitman, means pivotally connecting the free end of one of said links with the oscillating means for the agitator shaft, a case on one side of said

tub having an elongated slotted opening therethrough, a control lever swingably mounted adjacent to said agitator shaft and having its end projecting through said slot and available for manual setting, and a swinging connection between the end of the second link and said control lever at a point spaced from the swingable mounting of said control lever.

6. In a machine of the character described, an element mounted to be alternately oscillated, a swingable operating link connected at one end to oscillate said element, an adjusting link swingably connected at the other end of said operating link, means applying swinging force to said links substantially at the point of swinging connection therebetween, and a movable pivot connection for the free end of the adjusting link.

7. Means for operating an element including an oscillatable actuating shaft having an arm extending therefrom, an operating link swingably connected with said arm and having a bearing at its free end, a setting link swingably connected at said bearing, means applying operating force through said swinging connection to said links, and a variable movable pivot connection for the remaining end of said setting link.

8. Means for operating an element including an oscillatable actuating shaft having an arm extending therefrom, an operating link swingably connected with said arm and having a bearing at its free end, a setting link swingably connected at said bearing, means applying operating force through said swinging connection to said links, a variable movable pivot connection for the remaining end of said setting link, and manually actuatable setting means for adjusting said movable pivot into axial alignment with the bearing connection of the operating link with the operating arm and to positions away from such axial alignment.

9. A device of the character described comprising an oscillatably mounted agitator shaft, oscillating means connected with said agitator shaft, eccentric means spaced from said agitator shaft, a pitman rod connected at one end with said eccentric means and having its remaining end extending adjacent to the agitator shaft, an operating link pivotally connected at one end with the end of said pitman rod and having a bearing at its remaining end, a control link pivotally connected with said pitman substantially at the center of pivoting of the operating link and said control link being provided with a bearing at its remaining end spaced from the pivotal connection a distance corresponding substantially to the similar distance on the operating link, and means pivotally connecting and swingably mounting the bearing end of the control link whereby said bearing end can be moved into and laterally away from axial alignment with the pivotal connection between the operating link and the oscillating means.

10. A device of the character described comprising an oscillatably mounted agitator shaft, oscillating means connected with said agitator shaft, eccentric means spaced from said agitator shaft, a pitman rod connected at one end with said eccentric means and having its remaining end extending adjacent to the agitator shaft, an operating link pivotally connected at one end with the end of said pitman rod and having a bearing at its remaining end, a control link pivotally connected with said pitman substantially at the center of pivoting of the operating link

and said control link being provided with a bearing at its remaining end spaced from the pivotal connection a distance corresponding substantially to the similar distance on the operating link, a casing around said tub having an elongated slotted opening therethrough and notched on one side to provide detents, a control lever pivotally mounted at one side of the agitator shaft and having its end extending through the opening in the case for manual access and adjustment, and a pivotal connection between the free end of the control link and the control lever at a point spaced from the swinging mounting of said lever.

11. A mechanism of the character described comprising an oscillatably mounted agitator shaft, a gear case into which said agitator shaft extends, an oscillating arm on said agitator shaft within the gear case provided with a bearing portion at its outer end, eccentric means within the gear case spaced from said agitator shaft, a pitman rod connected at one end with said eccentric means and having its remaining end extending adjacent to the agitator shaft, an operating link pivotally connected at one end with said pitman rod and at its other end at the bearing of the oscillating arm, a control link also pivotally connected with the pitman at substantially the axial center of the pivotal connection of the operating link and provided with a bearing spaced from the pivotal mounting a distance corresponding substantially to the spacing of the bearing of the operating link, and means pivotally connecting and swingably mounting the bearing end of the control link whereby said bearing end can be moved into and from axial alignment with the swinging connection between the operating link and the oscillating arm.

12. A mechanism of the character described comprising an oscillatably mounted agitator shaft, a gear case into which said agitator shaft extends, continuously operated eccentric means within the gear case, a pitman rod connected at one end with said eccentric means and having a remaining end extending adjacent to the end of the shaft within the gear case, an operating link pivotally connected at one end with said pitman rod and having a bearing at its remaining end, a control link pivotally connected with said pitman on substantially the same axial center and having a bearing at its end spaced a distance corresponding substantially to the spacing of the bearings of the operating link, a rack pinion on the end of the agitator shaft within the gear case, a segmental rack oscillatably mounted within the gear case and having the teeth thereof meshing with the teeth of the rack pinion, an oscillating connection between the end of the power link and said oscillating means, a control lever swingably mounted adjacent to the agitator shaft and having its end extending for manual manipulation and adjustment, and a pivotal connection between the outer end of the control link and said control lever at a point spaced from the pivotal mounting thereof.

13. A washing machine operating mechanism of the class described comprising an oscillatably mounted agitator shaft, an oscillating arm carried by said agitator shaft and having a bearing at its outer swinging end, a stub shaft substantially axially aligned with the lower end of said agitator shaft having a control and setting arm extending radially therefrom and provided with a bearing opening spaced substantially the same distance from the axial center as from the

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opening of the oscillating arm, an arcuate link swingably connected with said oscillating arm, a second arcuate link swingably connected with said control and setting arm, said two arcuate links being provided at their outer ends with bearings spaced substantially equal distances from the swinging mountings of said links, eccentric means, and a pitman rod from said eccentric means having the bearing ends of the arcuate links pivotally connected therewith on a common axis.

14. A washing machine operating mechanism of the class described comprising an oscillatably mounted agitator shaft, an oscillating arm carried by said agitator shaft and having a bearing at its outer swinging end, a stub shaft substantially axially aligned with the lower end of said agitator shaft having a control and setting arm extending radially therefrom and provided with a bearing opening spaced substantially the same distance from the axial center as from the open-

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ing of the oscillating arm, an arcuate link swingably connected with said oscillating arm, a second arcuate link swingably connected with said control and setting arm, said two arcuate links being provided at their outer ends with bearings spaced substantially equal distances from the swinging mountings of said links, eccentric means, a pitman rod from said eccentric means having the bearing ends of the arcuate links pivotally connected therewith on a common axis, stop means at one extreme of oscillating movement of the oscillating arm on the agitator shaft, and a control and setting lever by which said stub shaft is moved to adjust said control and setting arm to have the bearing at the end thereof substantially aligned with the bearing at the end of the oscillating arm when said oscillating arm is against said stop means and to other positions in which the said bearings are out of axial alignment.

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