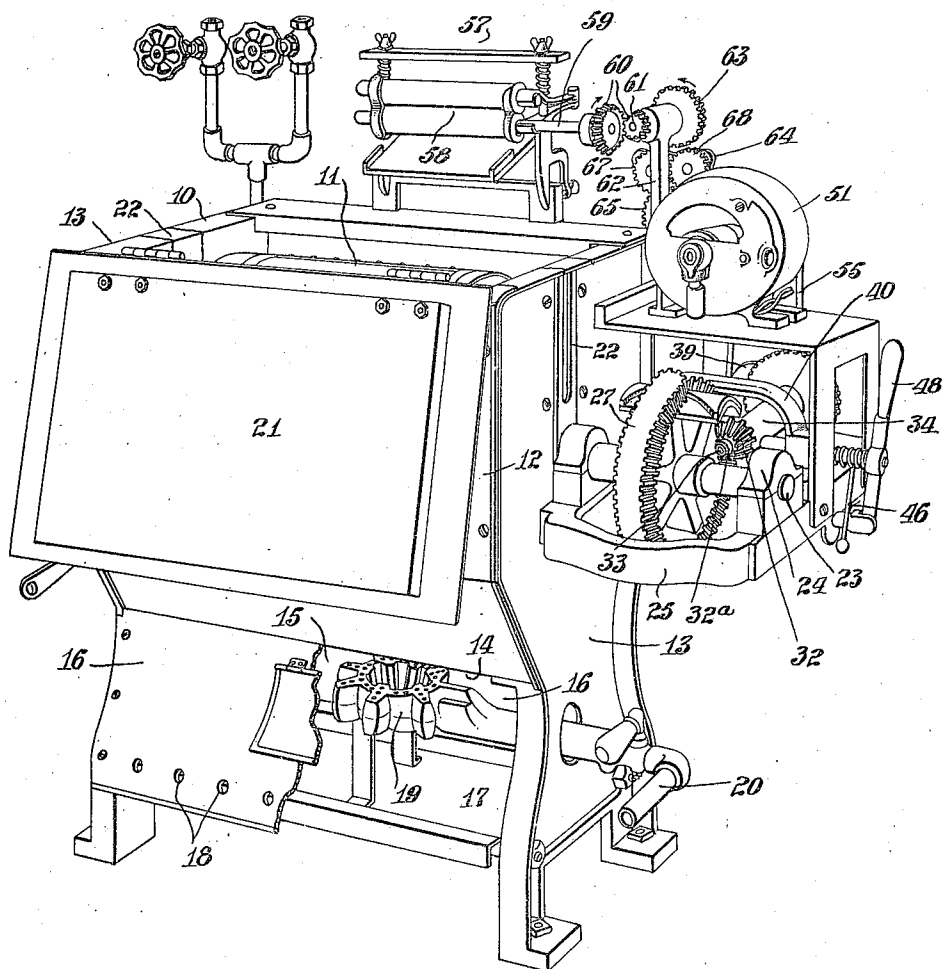


L. JUDELSON.
WASHING MACHINE.
APPLICATION FILED JUNE 25, 1921.

1,435,527.

Patented Nov. 14, 1922.
6 SHEETS—SHEET 1.

Fig. 1.



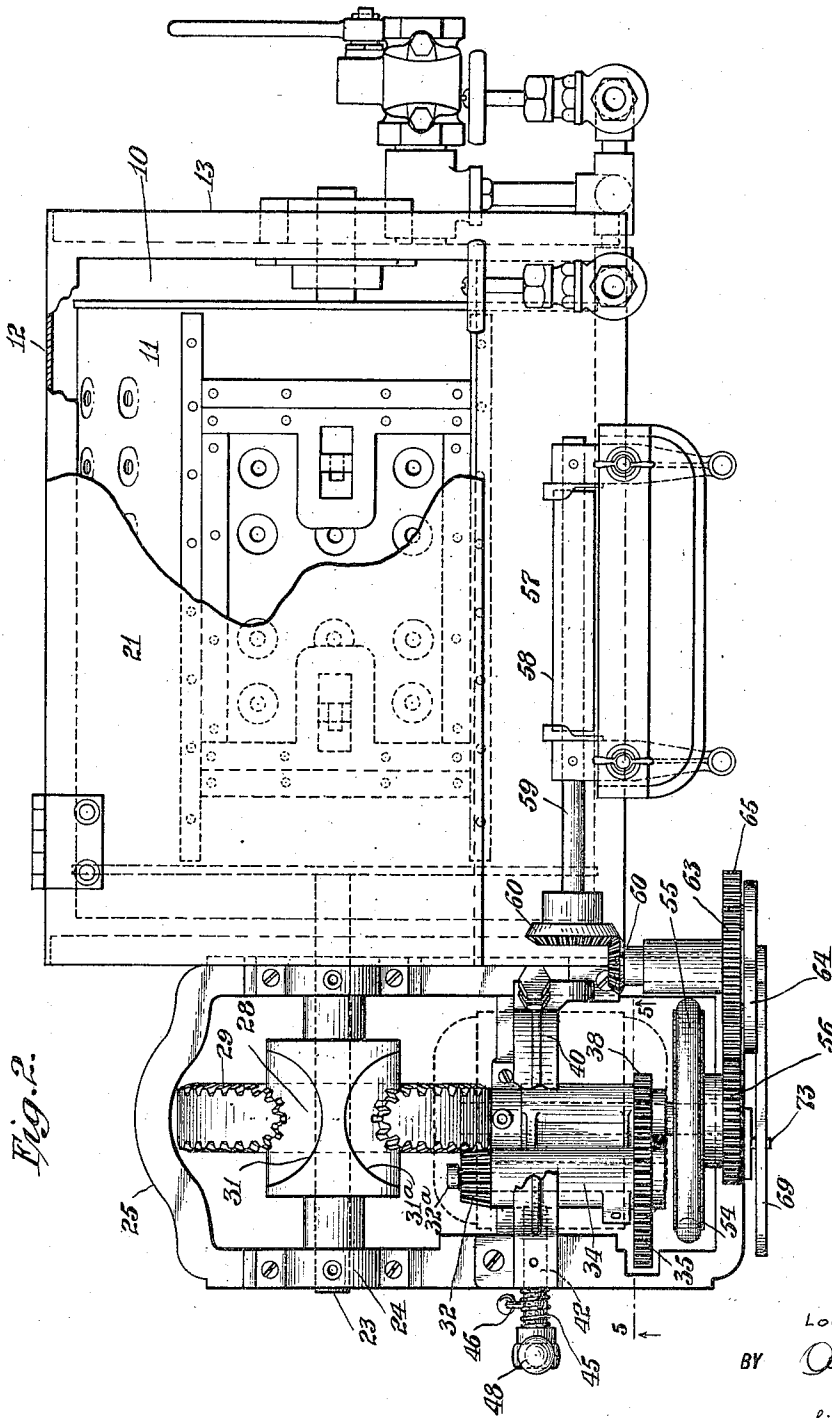
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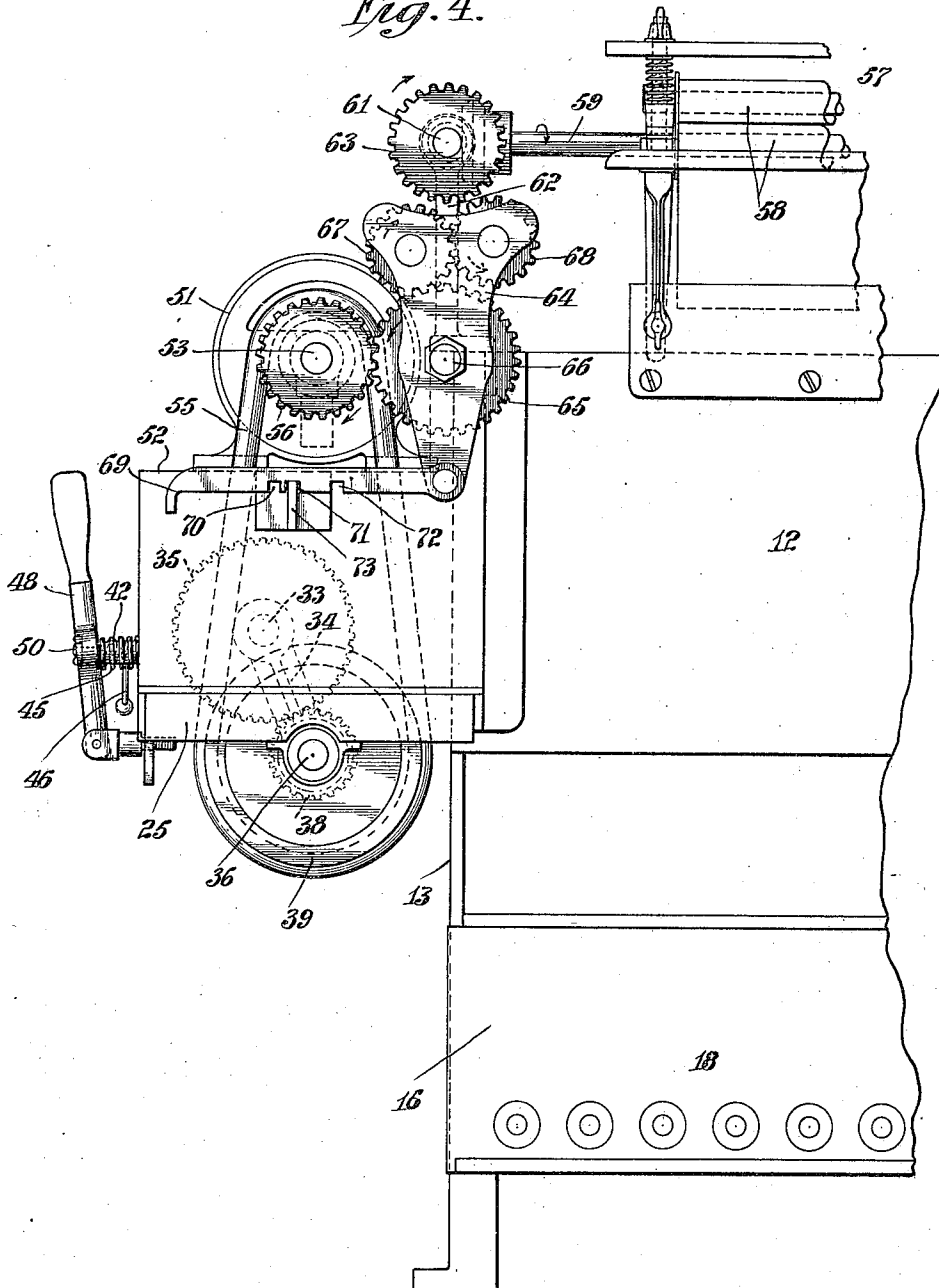
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Fig. 4.



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Fig. 5.

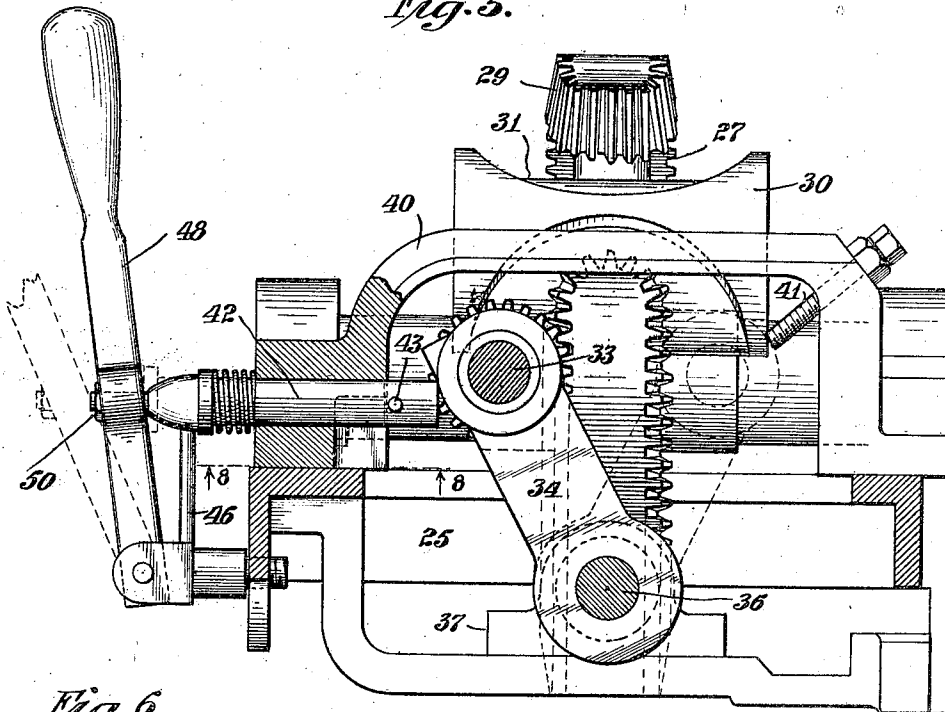


Fig. 6.

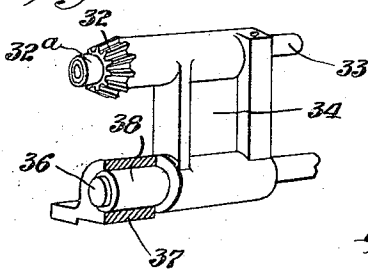


Fig. 8.

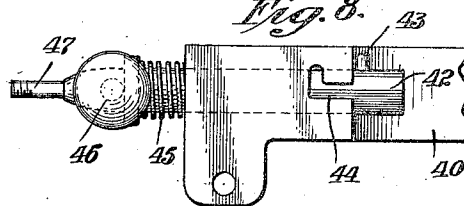
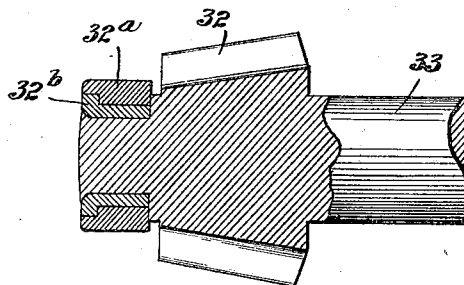


Fig. 7.



INVENTOR
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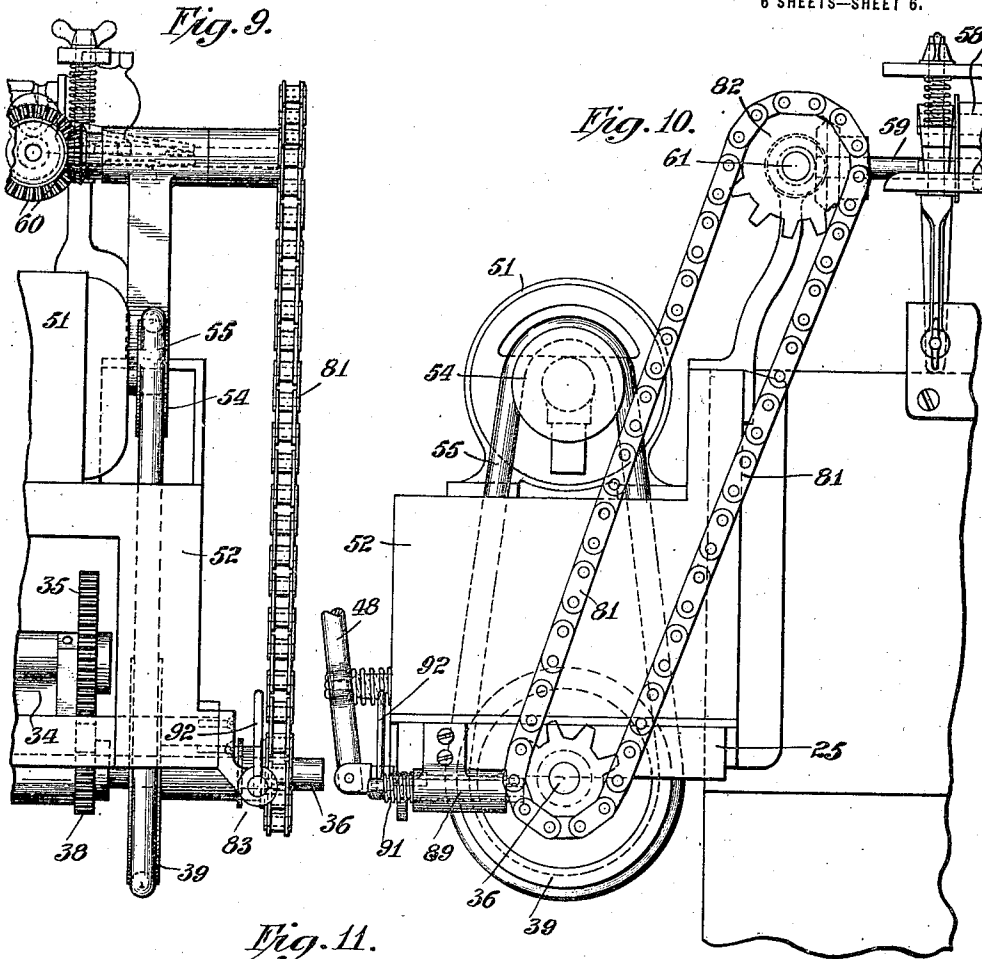
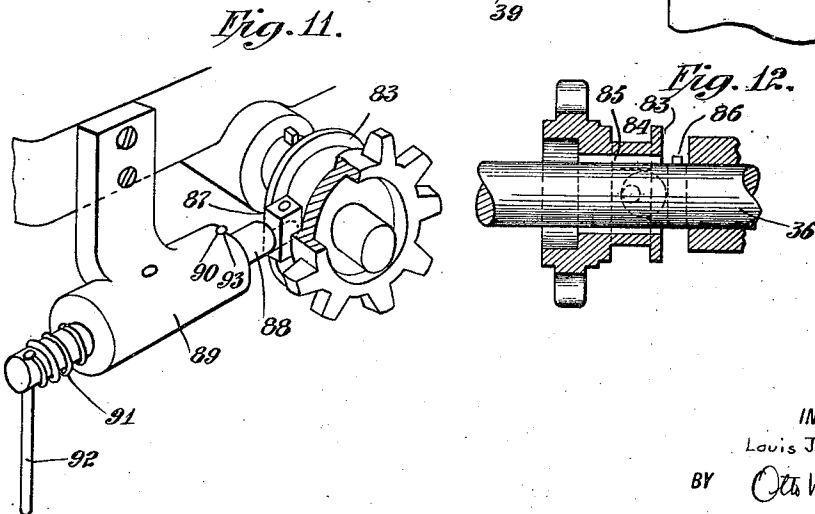
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6 SHEETS—SHEET 6.



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UNITED STATES PATENT OFFICE.

LOUIS JUDELSON, OF NEW YORK, N. Y.

WASHING MACHINE.

Application filed June 25, 1921. Serial No. 480,275.

To all whom it may concern:

Be it known that I, LOUIS JUDELSON, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Washing Machines, of which the following is a specification.

My invention relates to laundering devices and has reference particularly to washing machines.

The principal object of this invention is to provide simple and efficiently operating means whereby the revolving cylinder in which the clothes to be washed are placed may be reversed following each rotation of the latter.

Another object of the invention is to provide a washer tub having its bottom wall substantially flat so as to spread the heating flame evenly over the surface to effectively heat the liquid contents of the tub.

A still further object of the invention is to provide an improved throwoff and reversing mechanism for a clothes wringer mounted on the washing machine.

Other objects and advantages of my invention will be more fully hereinafter explained and defined in the appending claims. The invention is illustratively exemplified in the accompanying drawings, wherein:

Fig. 1, is a perspective view of my improved washing machine showing parts broken away to show the water heating apparatus.

Fig. 2, is a plan view of the washing machine with the motor platform removed to show the reversing mechanism.

Fig. 3, is an end elevational view of the machine showing the driving mechanism revolving the cylinder and wringer.

Fig. 4, is a rear elevational view of one end of the washing machine showing the driving and reversing mechanism for the wringer.

Fig. 5, is a longitudinal sectional view taken on the lines 5—5 of Fig. 2, showing the rocker arm and the adjustable stops adapted to limit the throw of the arm.

Fig. 6, is a detail perspective view of the rocker arm and drive pinion.

Fig. 7, is a sectional view of the bevel drive gear and cam roller.

Fig. 8, is a bottom plan view of the throwoff and stop device for the rocker arm.

Fig. 9, is an end elevational view of a modified form of driving mechanism for the wringer.

Fig. 10, is a rear elevational view of the form of the drive shown in Fig. 9.

Figs. 11 and 12 are detail views of the clutch mechanism shown in Figs. 9 and 10.

Referring to the drawings, 10 denotes a washer tub in which is mounted an oscillatable cylindrical casing 11 adapted to contain the articles to be washed. The tub 10 comprises a substantially U shaped sheet metal member 12 connected at its opposite ends to standards 13. The bottom wall 14 of the tub is flat to provide a straight horizontal surface against which heat may be directed to boil the water in the tub. This flat lower wall 14 constitutes the upper wall of a heating chamber 15 extending between the standards 13 and which is enclosed by side walls 16 and bottom pan 17. A series of air inlet openings 18 communicate with the interior of the chamber 15 to supply air to any suitable burner, such as a gas burner 19 supported above the pan 17. Fuel is fed to the burner through inlet pipe 20 in the usual manner. It will be understood however that any desired heating means may be used without materially changing the present construction. The opening in the top of the tub 10 is provided with a hinged cover 21 having its central portion raised to fit the size of the opening so that the raised portion will project below the surface of the tub and thereby prevent the escape of steam generated therein. The cylindrical casing 11 is supported by two steel shafts 23 in suitably packed bearings carried by insertable bearing plates 22 in the standards 13. The right hand shaft 23 of the cylinder extends through its bearing plate 22 beyond the standard 13 and is journaled at the outer end thereof in a split bearing block 24 mounted upon a rectangular frame 25 suspended from the side of the right hand standard 13.

During operation the cylinder 11 revolves and completes one rotation and then reverses and completes a rotation in the opposite direction. This movement is effected by means of a mangle machine gear 26 comprising a wheel 27 mounted on the shaft 23 and having a segment of its periphery removed to provide a space 28. The lateral faces on both sides of the wheel and about the free ends

are toothed to form a continuous series of teeth 29. A curved guide plate 30 is carried by the wheel 27 between the free ends and below the periphery thereof and is provided with oppositely disposed curved grooves 31. A pinion 32 for revolving the wheel 27 is fixed to one end of a shaft 33 which is loosely mounted in the free end of an oscillating arm 34 and the opposite end of the shaft 33 carries a spur gear 35. A roller 32^a adapted to enter the grooves 31 is mounted on the outer end of the shaft 33 beyond the pinion 32. The end of the shaft 33 is reduced to receive a flanged bushing 32^b about which the roller revolves as shown in Fig. 7. The axis of the pinion 32 is substantially on the same plane with the axis of the shaft 23, so that as the roller 32^a travels through the space 28, to reverse the direction of rotation of the wheel 27, its path of movement will follow the grooves 31 in the guide plate 30. In order to carry out this operation, the lower end of the arm 34 is pivotally supported about a rotary shaft 36, parallel to the shaft 33, and loosely mounted in bearings 37 in the frame 25. To prevent possible strain of the shaft 36 one end of the pivoted bearing of the arm 34 is provided with a spindle 38 which surrounds the shaft 36 and bears in one of the bearings 37. The opposite end of this shaft 36 carries a gear 38 adapted to mesh with the gear 35 as the latter oscillates from side to side with the arm 34. A belt pulley 39 is fixed to the shaft 36 beyond the gear 38.

To control the arcuate movement of the arm 34, I provide a U-shaped bridge 40 spanning the arm 34 and having its legs supported at each side of the rectangular frame 25. The inner leg of the bridge carries an adjustable set screw 41, shown in Fig. 5, adapted to be extended into the path of movement of the oscillatory arm 34 to limit its throw and hold the teeth of the pinion 32 in mesh with these on the inner face of the wheel 27. Extensible in the opposite leg of the bridge 40 is a bolt 42 the inner end of which engages the arm 34 in its outward arcuate movement. As shown in Fig. 5, the bolt 42 is set to act in the same capacity as the set screw 41, whereby the pinion 32 will remain in engagement with the wheel 27 and the latter will continue to revolve, but in order to allow the pinion 32 to swing away from the wheel 27 the bolt 42 may be withdrawn and the arm 34 permitted to drop against the inner wall of the bridge. This operation is carried out by providing the bolt 42 with a transverse pin 43 see Figs. 5 and 8, adapted to enter a bayonet slot 44 in the leg of the bridge. This slot extends downwardly from the surface of the bolt 42 and to a depth in the bridge leg equal to the length of the bolt 42 beyond the pin 43. The outer end of the bolt 42 is provided with an

enlarged head portion and is under constant control of a coiled spring 45 surrounding the bolt 42 between the outer face of the bridge leg and the enlarged head. Projecting from the head and in a direction transverse to the pin 43 is a handle 46 and at the end of the head portion is a threaded extension 47. The bolt 42 may be moved back against the pressure of the spring 45 by a lever 48 pivoted directly below the bolt 42, and designed to receive the extension 47 through an opening therein provided with a slotted collar, shown at 49 in Fig. 3. A nut 50 on the outer side of the collar prevents the lever 48 from being moved outwardly without withdrawing the bolt 42, this being due to the fact that it is first necessary to rotate the latter in order that the pin 43 may register with the bayonet slot 44 into which it readily enters under pressure of the spring 45.

Power is applied to the machine by means of a motor 51 which is mounted above the frame 25 on an L piece 52. Power is distributed from a shaft 53, upon which a pulley 54, is mounted, through a belt 55 to the pulley 39, clearly shown in Figures 3 and 4.

The motor shaft 53 also carries a spur gear 56 adapted to drive a wringer 57 which may be of any suitable type wherein parallel rubber rollers 58 cooperate to press articles between their surfaces to remove water. As shown in Figure 4, one of the rollers is provided with a drive shaft 59 having a bevel gear 60 at its outer end. A counter shaft 61 mounted in a hanger 62, at the edge of the tub 10 and parallel with the motor shaft 53, carries a gear 63 aligned with the gear 56. A reversing mechanism provided between the gear 63 and the motor gear 56 comprises a pivoted plate 64 provided with a loosely mounted gear 65 constantly in mesh with the motor gear 56 and bearing about the pivot shaft 66 of the plate 64. A pair of idle pinion gears 67 and 68 are mounted above the gear 65, one of the gears 67 being constantly in mesh with the gear 65 and the other pinion gear 68 being in mesh with 67 so that one or the other may be rocked with the plate 64 to engage with the gear 63. The lower end of the plate 64, below the pivot shaft 66, carries a draw lever 69 extending forward and provided with three notches 70, 71 and 72. These notches represent the three possible positions of the drive and reversing mechanisms. A lug 73 is supported at the side of the motor support and is located beneath the draw lever 69 so that as each notch engages the lug 73 the lever will remain fixed. The first notch 70 will throw the pinion 68 into mesh with the gear 63, while the second notch 71 disengages both of the pinions and the rollers of the wringer remain inoperative. From the neutral position the lever may be moved

so that the third notch 72 engages the lug and the pinion 67 will engage the gear 63 direct, whereupon the rollers of the wringer will be rotated in a reverse direction.

5 In the modified forms shown in Figs. 9 to 12, the wringer is driven directly from the shaft 36 by means of a sprocket wheel 80, chain 81 and sprocket wheel 82 mounted on the counter shaft 61. A clutch 83 forming
10 part of the sprocket wheel 80 comprises an annular grooved portion 84 and a keyway 85 adapted to be moved over a key 86 projecting from the surface of the shaft 36. The member 83 is shifted axially of the shaft
15 36 by a block 87 mounted eccentrically on a bolt 88, which block is adapted to engage in the groove 84. This bolt 88 is rotatable in a hanger 89 and carries a pin 90 transversely of its axis and normally held against
20 the inner end of the hanger by a spring 91 surrounding the bolt on the opposite side of the hanger. A handle 92 extends from the bolt 88 and by simply moving the latter arcuately the pin 90 will register with
25 shallow grooves 93 in the face of the hanger; the grooves 93 being arranged 90° from each other.

In operating the machine, the cylinder is filled with articles to be washed and the
30 cover put in place, water is then turned on and the tub 10 permitted to fill to a predetermined mark. The heat may or may not be applied as desired whereupon the electric current is turned on. It will be assumed
35 that the lever 48 is now in the position shown in dotted lines in Fig. 5 and to bring the cylinder 11 into motion the handle 46 is swung downwardly and the lever 48 pushed inwardly until the pin 43 has moved out of
40 the bayonet slot 44. The handle 46 is then dropped again and the pin 43 rides over the face of the bridge leg to a position illustrated in Figure 5. The pinion 32 being constantly driven by the gears 35 and 38, traverses the toothed sides of the wheel 27 rotating
45 the latter and is guided through the space 28 to the opposite side of the wheel by the roller 32^a which engages the grooves 31. This movement of the pinion 32 reverses the direction of rotation of the wheel 27 and
50 cylinder 11 following each revolution of the latter. After ample time has been allowed to thoroughly cleanse the articles in the cylinder the bolt 42 is again withdrawn after
55 the handle 46 has been raised to register the pin 43 with the bayonet slot 44. The cylinder 11 will then be brought to a rest position with its opening readily accessible through the opening in the top of the tub.

60 In operating the wringer 57 as described in the foregoing paragraph it is simply necessary to move the lever 69 from the neutral position in Fig. 4, until the notch 70 engages over lug 73 whereupon pinion gear
65 48 will engage gear 61 and movement in a

clockwise direction, indicated by the arrows A, will rotate the rollers 58 to draw the articles out of the tub.

Claims:—

1. In a washing machine, a drive mechanism comprising a wheel having a portion of its periphery removed and provided with a continuous series of gear teeth extending on both lateral faces and about the free ends thereof, a pinion for revolving said wheel, 70 a pivoted arm supporting said pinion, a bridge spanning said pinion, an adjustable stop on one end of said bridge adapted to be moved in the path of the arcuate movement of said pinion in one direction, and an
80 extensible stop and throwoff means movable in the path of the pinion when the latter swings in the opposite direction, whereby said pinion may remain in mesh with said wheel or swing away from said wheel. 85

2. In a washing machine having a revolving cylinder supporting the articles to be washed, a mangle machine gear including a side toothed wheel having a portion of its periphery removed and an oscillatory arm 90 supporting a pinion adapted to move from one side to the other through the open portion of said wheel, a bridge spanning said oscillatory arm and provided with an adjustable stop at one side of said wheel, and
95 an extensible lever actuated stop pin mounted in said bridge and at the opposite side of said wheel, whereby the distance of oscillatory movement of said arm may be predetermined to hold the pinion in mesh with
100 said wheel or to permit the arm to swing away from said wheel during its forward arcuate movement to disengage the pinion from the wheel.

3. In a washing machine having a revolving cylinder for supporting the articles to be washed, a mangle machine gear including an oscillating arm provided with a pinion for rotating said cylinder, a bridge spanning said oscillating arm and clear of movement 110 of the latter, means for limiting movement of said arm in one direction, an extensible stop bolt controlling the amount of movement of said arm in the opposite direction, a pin carried by said bolt, and a bayonet slot in the under surface of the bridge and extending outwardly from the adjacent surface of said bolt, whereby said pin may be engaged against the surface of said bridge to hold the bolt in position to receive
115 said arm to hold the pinion in engagement with the wheel and by the rotation of said bolt the pin may be registered with the bayonet slot to permit the withdrawal of the bolt out of the path of movement of said
120 arm to allow said pinion to rotate freely of said wheel. 125

In testimony whereof I have affixed my signature.

LOUIS JUDELSON.