

R. D. TITTLE.
 OPERATING DEVICE FOR DRIVEN MECHANISMS.
 APPLICATION FILED DEC. 21, 1907.

938,726.

Patented Nov. 2, 1909.
 4 SHEETS—SHEET 1.

Fig. 1.

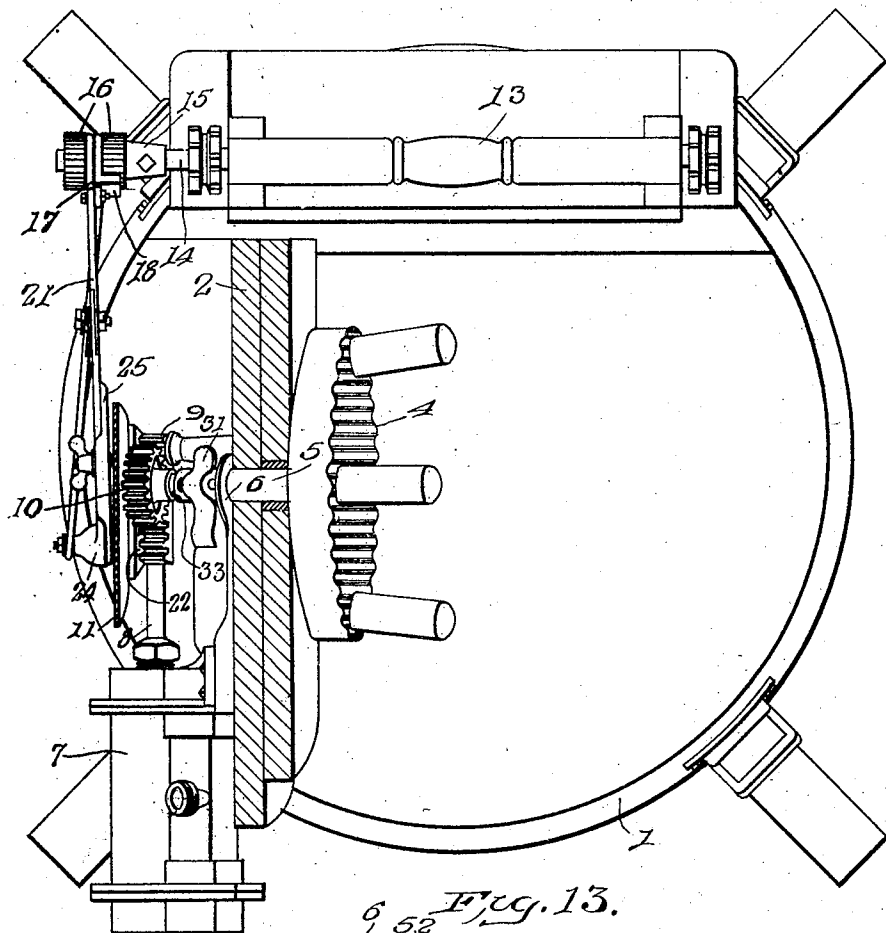
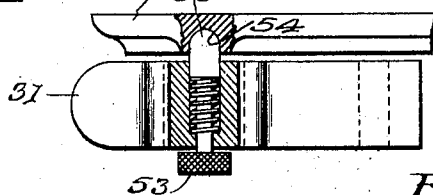


Fig. 13.



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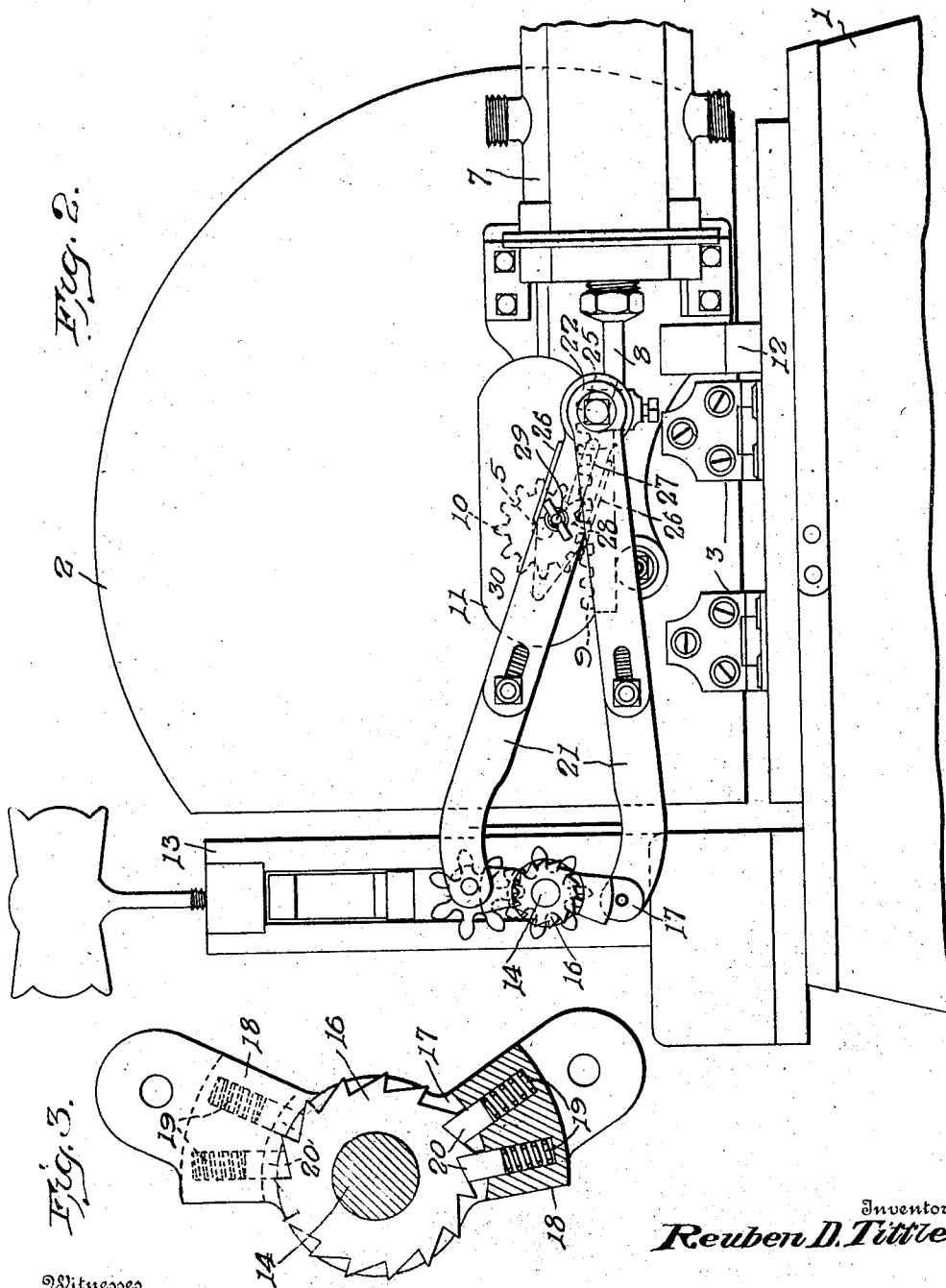
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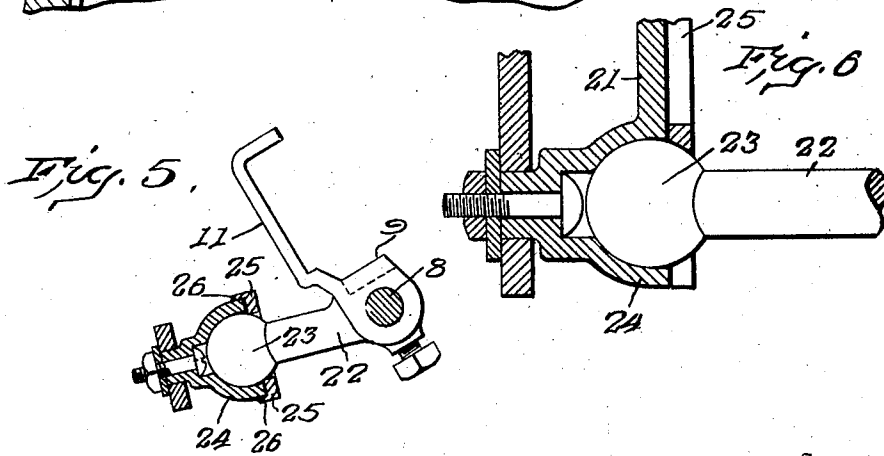
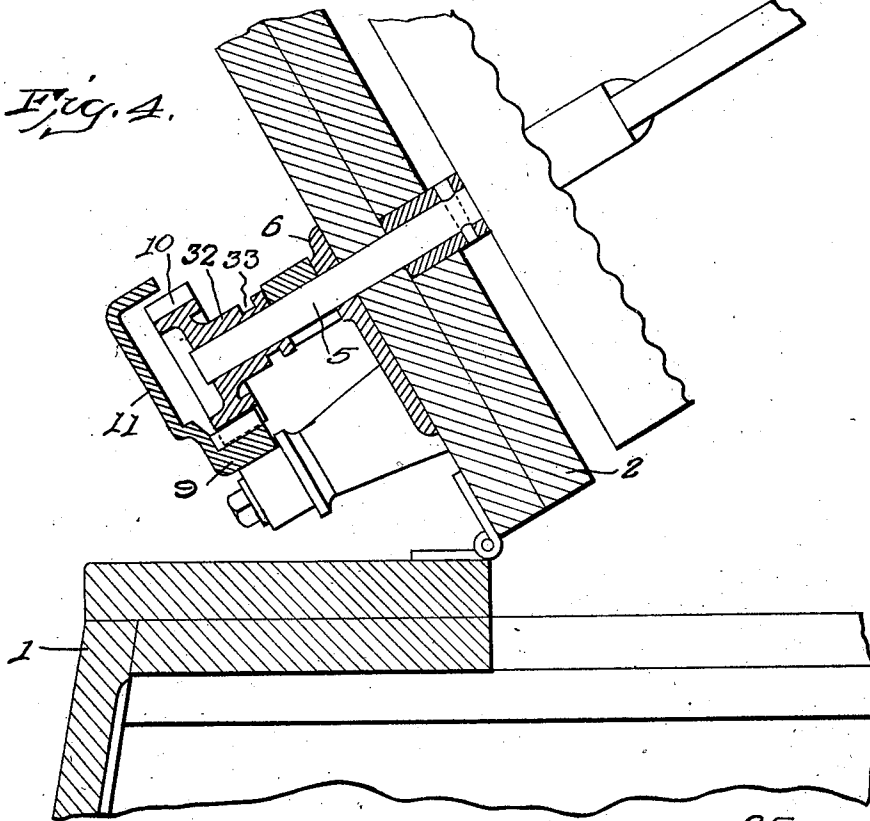
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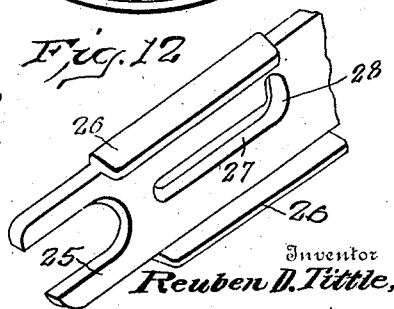
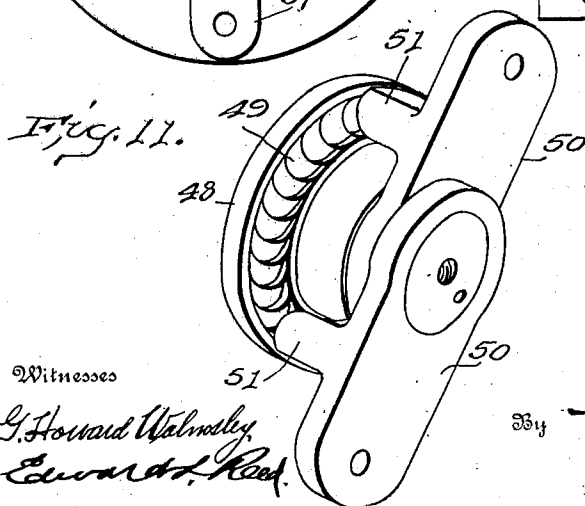
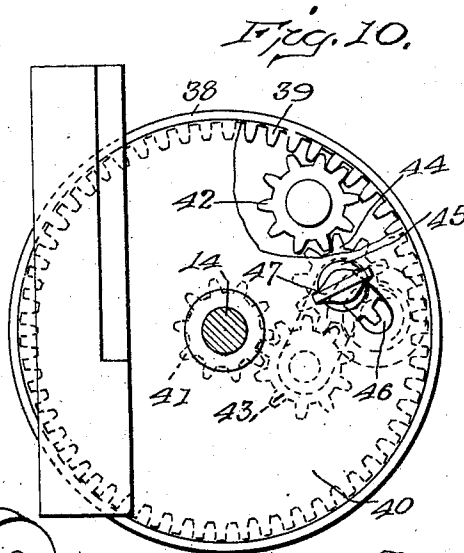
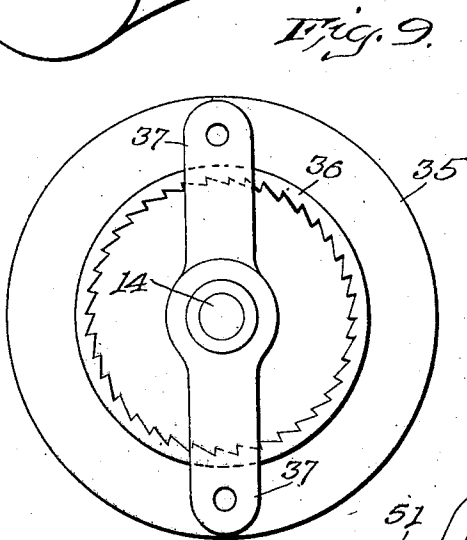
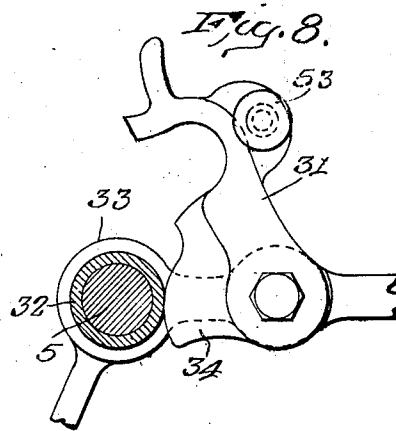
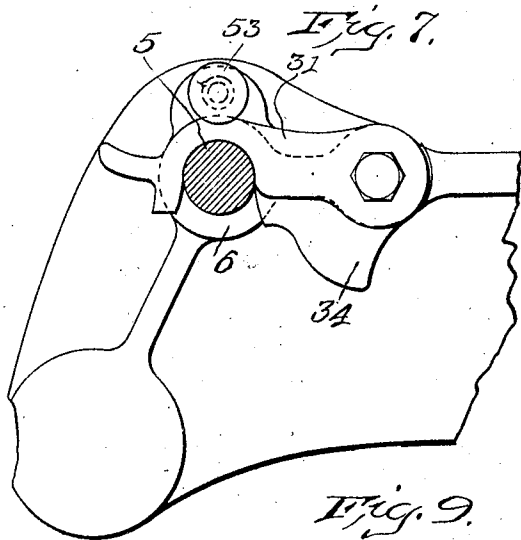
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R. D. TITTLE.
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4 SHEETS—SHEET 4.



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OPERATING DEVICE FOR DRIVEN MECHANISMS.

938,726.

Specification of Letters Patent.

Patented Nov. 2, 1909.

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To all whom it may concern:

Be it known that I, REUBEN D. TITTLE, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Operating Devices for Driven Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to operating mechanism for clothes wringers, and more particularly to means for operating such a wringer where the same is used in connection with a washing machine.

It is common practice to provide washing machines with suitable motors for operating the same and it is the object of my invention to provide means whereby the clothes wringer may be operated from the same motor and it is a further object of the invention to provide suitable means for detachably coupling the operating means for the wringer to the motor and to provide means for disconnecting the washing mechanism from the motor.

With these objects in view my invention consists in certain novel features of construction and in certain parts and combinations hereinafter to be described, and then more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan view, partially broken away, of a washing machine equipped with my invention; Fig. 2 is a side elevation of the same; Fig. 3 is a detail view of one of the actuating pawls; Fig. 4 is a sectional detail view of the operating mechanism for the agitator; Figs. 5 and 6 are detail views of a coupling between the actuating arms and the piston rod of the motor; Figs. 7 and 8 are detail views of the locking means for securing the pinion of the agitator shaft either in or out of engagement with the rack; Figs. 9 and 10 are detail views of a modified form of actuating ratchet; Fig. 11 shows a further modification of the actuating ratchet; Fig. 12 is an enlarged detail view of the sliding portion of the coupling for the actuating arms and piston rod; and Fig. 13 is a detail view, partly in section, showing the fastening means for the locking plate.

In carrying out my invention I provide two mechanisms to be operated, one of said

mechanisms being capable of being moved 55 into an inoperative position and I have provided a single motor adapted to operate both of these mechanisms, successively, the motor being normally connected to that mechanism which is capable of being moved into an in- 60 operative position and being adapted to be operatively connected to the other mechanism when said first-mentioned mechanism has been moved into its inoperative position. These mechanisms to be actuated may be of 65 any suitable character, and in these drawings I have illustrated the preferred form of my invention and have shown the same as applied to a washing machine of ordinary construction comprising a body portion or 70 tub 1 having a suitable closure or lid 2 hinged to said body portion at 3. The washing mechanism, which, in the present instance, is an agitator 4, is carried by the shaft 5 extending through the closure 2 and 75 journaled in a bearing 6 secured to said closure. That portion of the shaft which extends above the closure 2 is provided with means for actuating the washing mechanism or agitator 4. This actuating mechanism 80 may be of any suitable character, and, in the present instance, I have shown the same as an ordinary motor 7, preferably a reciprocating water motor, mounted on the closure 2 and having its piston rod 8 provided with a rack 9 85 adapted to mesh with a pinion 10 carried by the shaft 5. A suitable guard plate 11 extends outwardly over the rack and pinion and is preferably formed integral with the rack. The closure 2 being hinged to the 90 body of the machine and both the washing mechanism and the motor for actuating the same being mounted upon this closure, it will be apparent that when the closure is moved to its open position, the washing 95 mechanism will be moved out of the tub and into an inoperative position, that is, out of engagement with the wash which is in the tub. A suitable stop 12 is secured to the body portion of the machine for limiting 100 the backward movement of the closure 2 and retaining the same in an approximately vertical position. The wringer 13 is mounted adjacent to the machine and preferably upon the body portion thereof, as here 105 shown. This wringer has one of its shafts extended beyond the end thereof, as shown at 14, and adapted to receive suitable mech-

anism for actuating said wringer. My invention consists in providing means for operatively connecting this shaft with the motor carried by the closure 2. This connection may be of any suitable character, but I prefer that herein shown, which consists in providing the shaft 14 with a pawl and ratchet adapted to be actuated from the motor. This ratchet may be of any desired construction, and, as here shown comprises a sleeve 15 having mounted thereon two toothed rings or ratchets 16 spaced some distance apart to form a bearing on the sleeve 15 between said rings or ratchets, upon which are journaled two levers adapted to engage said ratchets. Each of these levers preferably consists of a plate 17 having one end apertured to form a bearing adapted to extend about the bearing formed on the sleeve 15 between the ratchets 16 and is provided at a point adjacent to the outer periphery of said ratchets with a projection 18 extending across the face of the adjacent ratchet and carrying suitable means for engaging the teeth thereof. The projection 18 is preferably provided with one or more recesses 19, in which are mounted spring-pressed dogs 20 adapted to engage the teeth of the ratchet 16 in a well known manner, the dogs of the two levers facing in opposite directions. The outer end of each plate 17 is adapted to be connected to one of a pair of actuating arms or rods 21 which are so connected to the motor as to receive therefrom a reciprocating movement. When connected to the arms 21, the outer ends of the levers 17 extend toward the opposite sides of the shaft 14, and, as the arms 21 are reciprocated in unison toward and away from said shaft, the projections 18 and the dogs 20, carried thereby, are caused to travel about the ratchets 16 in the same direction, and inasmuch as the dogs of the two levers face in opposite directions, the dogs of one lever will engage its ratchet on the forward movement of the actuating arms and the dogs of the other lever will engage its ratchet on the rearward movement of said arms, thus rotating the shaft 14 always in one direction and imparting practically continuous rotation thereto.

The actuating arms 21 are preferably pivotally connected to the piston rod of the motor and are pivoted about a common axis. In the form here shown this pivotal connection is formed by providing the rack 9 of the piston rod with a finger or stud 22 extending at such an angle thereto that when the closure 2 is raised to its open position, the stud or finger will occupy a substantially horizontal position. This stud has on its outer end a bearing ball 23 which is adapted to fit within a bearing socket 24 carried by the outer end of one of the arms 21 and preferably formed integral therewith. This

bearing socket is preferably of a depth greater than one-half of the diameter of the bearing ball or stud 23, which is retained therein by means of a recessed plate 25 slidably connected to the arm 21 and adapted to have its recessed end moved about the outer end of the ball 23, the recess being of less diameter than the diameter of the ball. This plate is provided with suitable flanges 26 adapted to extend on the opposite sides of the arm 21 and form a guide for the slide or plate 25. The plate is further provided with a longitudinal slot 27 which has at its rear end an upwardly extending portion 28 and is adapted to receive a suitable bolt 29 which extends through the arm 21 and the slot 27 of the plate 25 and is provided with a thumb screw 29 for locking the plate in its adjusted position. The upwardly extending portion 28 of the slot 27 occupies such a relation to the bolt 29 that when the recessed end of the plate is moved into engagement with the bearing ball 23, this upwardly extending portion of the slot will be in alinement with said bolt and will, by gravity, move downward into engagement therewith, thus positively retaining the plate against rearward movement until the same has been disengaged from said bolt.

Inasmuch as the washing mechanism or agitator 7 is inoperative when the closure is in its open position, it is desirable that the actuating mechanism for the same should be disconnected from the motor to permit the agitator to remain idle. To this end I provide a movable recessed plate or hook-shaped member 31, which is preferably pivoted above the closure 2 and is adapted to extend between the upper portion of the bearing 6 and the hub portion 32 of the pinion 10, the plate 31 being of such a thickness that when the recessed portion thereof is in engagement with the shaft 5, it will support the pinion 10 in engagement with the rack 9 and will practically form a continuation of the bearing 6. When it is desired to disconnect the pinion from the rack, the plate 31 is moved outwardly and the shaft 5 and pinion 10 moved downwardly and out of engagement with the rack 9. As here shown, the plate is also provided with means for locking the pinion out of engagement with the rack and to this end the hub 32 of the pinion is provided with an annular groove 33, which, when the pinion is out of engagement with the rack 9, will be engaged by a projection or stop 34 carried by the plate or hook 31 and so arranged thereon as to engage said recess when said hook is in its rearmost position, the relative positions of the projection 34 and the recessed portion of the plate being such that when the plate 31 is moved outwardly sufficiently to free the same from the hub of the pinion, the projection 34 will be out of engagement

with said groove and will permit the pinion to be moved out of engagement with the rack, and the continued rearward movement of the plate 31 will then bring the projection 34 into engagement with said groove.

Thus, it will be seen that I have provided simple means for operating a clothes wringer from the operating mechanism of a washing machine, the operation of which will be readily apparent from the foregoing description, and it will be further apparent that I have provided actuating means for said wringer which can be readily attached to and detached from the motor, and that I have provided means for disconnecting the washing mechanism from the motor while the same is being used to actuate the wringer.

In Figs. 9 and 10 of the drawings I have shown a modified form of ratchet for the actuating mechanism which comprises two plates mounted upon the shaft 14, the outermost plate, 35, being provided with a ratchet 36 adapted to be engaged by a plurality of levers 37 in substantially the same manner as the ratchet 16 in Figs. 1, 2 and 3 is engaged by the levers 17. On the side opposite said ratchet the plate is provided with an annular flange 38 having inwardly extending gear teeth 39. The second plate 40 is provided with a train of gearing, preferably comprising an inner gear 41 connected to the shaft 14 and an outer gear 42 adapted to mesh with the gear teeth 39 of the plate 35 and two intermediate gears 43 and 44, whereby the gear 41 and shaft 14 are actuated by the rotation of the plate 35. One of the intermediate gears, preferably the gear 44, is movably mounted on the plate 40, whereby the same can be moved out of engagement with the gear 42 and into engagement with the gear teeth of the plate 35, thus cutting out the pinion 42 and rotating the pinion 44 directly from said rack, and thereby rotating the same and, consequently, the shaft 14 in a reverse direction. The gear 44 is preferably mounted on a stud shaft 45, the outer end of which extends through a slot 46 in the plate 40 and is provided with a thumb nut 47 for locking the same in its adjusted position. This form of mechanism enables the wringer to be operated in either direction, a feature which is sometimes very desirable.

In Fig. 11 I have shown a further modification of the ratchet mechanism which comprises a plate 48 provided with ratchet teeth 49 on its inner face. The levers 50 are substantially the same as those shown in Fig. 3 save that the dogs extend outwardly from the projections 51 at substantially right angles to the lever or plate 50. The operation of this form of the device is practically the same as that shown in Figs. 1 and 2.

I have also provided means for fastening the

locking member or plate 31 in its closed position, that is, in the position in which it locks the pinion 10 in engagement with the rack 9. This fastening means may be of any suitable character and I have shown in Fig. 13 a convenient means for accomplishing this purpose, which consists of a spring-pressed pin 52 slidably mounted in the plate 31 and having a milled head 53. The inner end of the pin 52 is adapted to project beyond the plate 31 and to engage a stop or recess 54 in the adjacent surface of the bearing plate 6.

It will be apparent therefore that in carrying out my invention I have provided a machine having two active mechanisms, *i. e.*, the washing mechanism and the wringer; that one of these mechanisms, the washing mechanism, being mounted upon a supporting part which can be moved into and out of its operative position; that I have also mounted on this movable support a motor which is normally connected to that mechanism which is mounted on the movable part, but which may be disconnected therefrom; and that I have provided means for connecting this motor with the other of said mechanism when said movable part has been moved into a position to render the mechanism carried thereby inoperative and I consider myself the first to have produced a machine comprising such a combination and arrangement of parts.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. The combination, with two active mechanisms, one of said mechanisms being movable into and out of operative position, and a motor operatively connected to said movable mechanism, of means for operatively connecting said motor to the other of said mechanisms when said movable mechanism is in its inoperative position.

2. The combination, with two active mechanisms, a supporting part for one of said mechanisms movable from one position to another, of a motor also mounted on said supporting part and having a piston rod, and means to operatively connect said motor with the active mechanism mounted on said supporting part, and other means to operatively connect said rod and said other active mechanism when the supporting part is in one of its positions.

3. The combination, with two active mechanisms to be alternately operated, one of said mechanisms having a driving shaft, of a motor having a piston rod, means for operatively connecting said piston rod to one of

said active mechanisms, a bearing stud carried by said piston rod, an actuating rod operatively connected at one end to the shaft of the other of said mechanisms and having a bearing at its opposite end adapted to engage said bearing stud, and means for detachably securing said bearing on said stud.

4. The combination, with two active mechanisms, both of said mechanisms having shafts, and a pinion secured to the end of the shaft of one of said mechanisms, of a motor having a piston rod, a rack carried by said piston rod and adapted to engage said pinion, said pinion being movable into and out of engagement with said rack, an actuating rod having one end operatively connected to the shaft of the other of said mechanisms, and means for connecting the other end of said actuating rod to the piston rod of said motor.

5. The combination, with two active mechanisms, each of said mechanisms having a shaft, a supporting part for one of said mechanisms having a bearing adapted to receive the shaft of that mechanism, and a pinion carried by the shaft of the mechanism mounted on said part, of a motor having a piston rod provided with a rack adapted to mesh with said pinion, a recessed member pivotally mounted on said part and adapted to engage said shaft between said bearing and the hub of said pinion to retain the pinion in engagement with said rack, and detachable means for operatively connecting said motor to the shaft of the other of said active mechanisms.

6. The combination, with two active mechanisms, each having a shaft, a supporting part for one of said mechanisms, the shaft of said mechanism being mounted in said supporting part, and a pinion secured to the shaft mounted in said supporting part, of a motor having a piston rod provided with a rack adapted to mesh with said pinion, the shaft carrying said pinion being slidable to permit said pinion to be moved into and out of engagement with said rack, means for locking said pinion in either position, and means for operatively connecting said piston rod to the shaft of the other of said active mechanisms.

7. The combination, with two active mechanisms, one of said mechanisms having a shaft, of a motor having a piston rod, means for operatively connecting said piston rod to one of said mechanisms, a ratchet carried by the shaft of the other of said mechanisms, a pair of levers mounted on said shaft adjacent to said ratchets, pawls carried by said levers and adapted to engage said ratchet on opposite sides of said shaft, actuating rods each having one end pivotally connected to the outer end of one of said levers and its other end adapted to be connected to said piston rod.

8. The combination, with two active mechanisms, one of said mechanisms having a shaft, of a motor having a piston rod, means for operatively connecting said piston rod to one of said mechanisms, a ratchet carried by the shaft of the other of said mechanisms, a pair of levers mounted on said shaft adjacent to said ratchets, pawls carried by said levers and adapted to engage said ratchet on opposite sides of said shaft, actuating rods each having one end pivotally connected to the outer end of one of said levers, said actuating rods having their other ends pivotally connected one to the other and pivotally connected to said piston rod on an axis coincident with the pivotal center of the connection between said actuating rods.

9. The combination, with two active mechanisms, one of said mechanisms having a shaft, of a motor having a piston rod, means for operatively connecting said piston rod to one of said active mechanisms, an actuating rod having one end operatively connected to the shaft of the other of said active mechanisms and having its other end adapted to be connected to said piston rod, and means for reversing the direction of rotation of said shaft without altering the movement of said actuating rod.

10. The combination, with two active mechanisms, one of said mechanisms having a shaft, a pinion mounted on said shaft, a member rotatably mounted on said shaft, an internal gear carried thereby, a second member mounted on said shaft adjacent to said pinion, a pinion mounted on said second member and adapted to engage said internal gear, a pair of intermediate pinions meshing one with the other, one of said intermediate pinions meshing with the pinion on said shaft, and the other of said intermediate pinions meshing with the pinion in engagement with said internal gear, means for moving said last-mentioned intermediate pinion out of engagement with said last-mentioned pinion and into engagement with said internal gear, a ratchet carried by the first-mentioned member, a pair of levers mounted adjacent to said ratchet, and pawls carried by said levers and adapted to engage said ratchet on opposite sides of said shaft, of a motor having a piston rod, means for operatively connecting said piston rod to one of said active mechanisms, and actuating rods each connected at one end to one of said levers and adapted to be connected at its other end to the piston rod of said motor.

11. The combination, with two active mechanisms each having a driving shaft, a supporting part adapted to be moved from one position to another, the shaft of one of said active mechanisms being mounted in said supporting part, and a pinion secured to the end of said shaft, of a motor mounted on said supporting part and having a piston

rod, a rack carried by said piston rod and adapted to mesh with said pinion, an actuating rod having one end operatively connected to the shaft of the other of said active mechanisms and its other end adapted to be connected to said piston rod when said supporting part is in one of its positions.

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

REUBEN D. TITTLE.

Witnesses:

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EDWARD L. REED.