C. A. MUNGER.

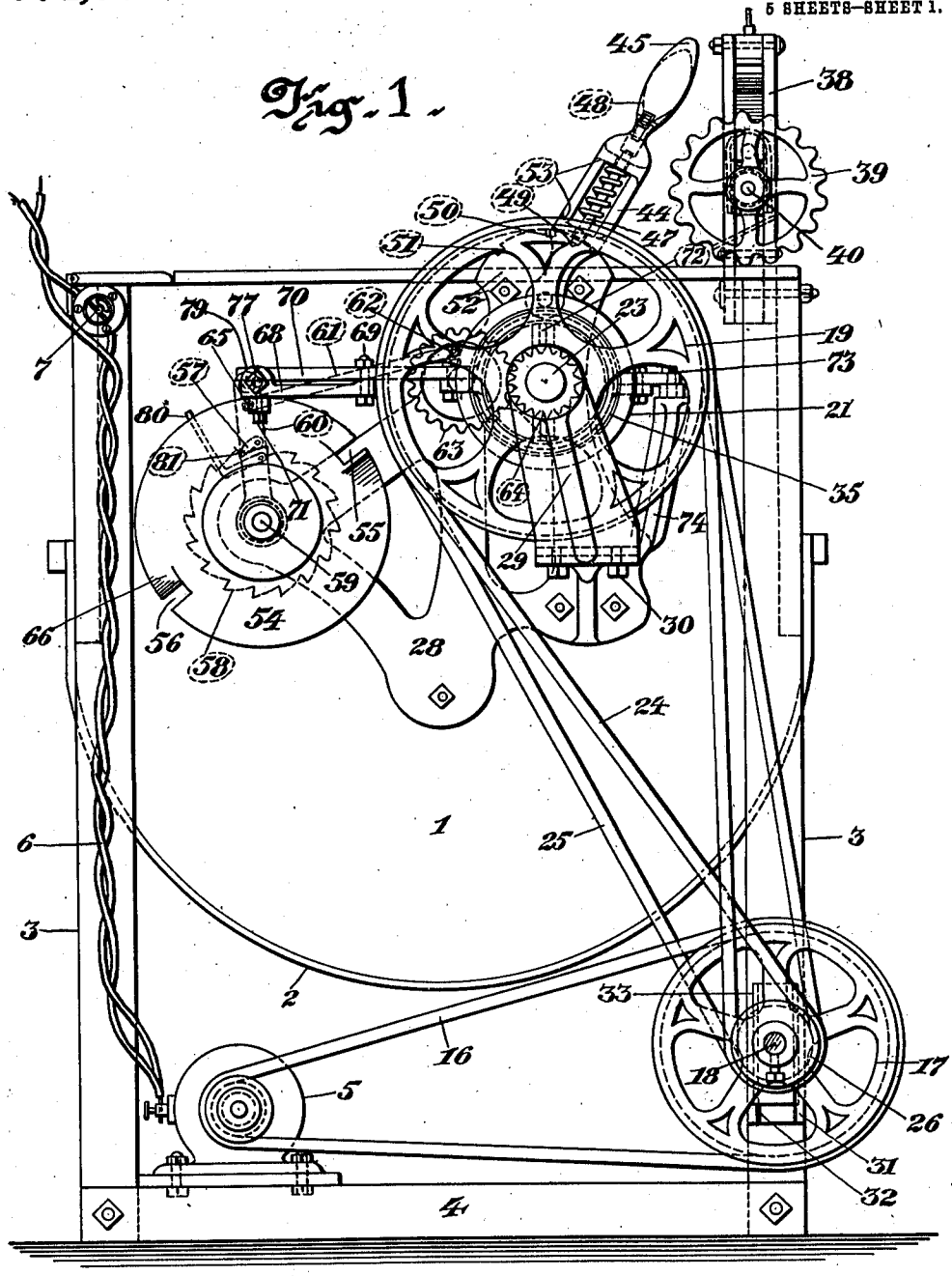
GEARING.

APPLICATION FILED SEPT. 17, 1909.

974,508. Patented Nov. 1, 1910.

5 SHEETS—SHEET 1.

Fig. 1.



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George G. Anderson.

Inventor:
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By Hugh V. Wagner,
His Attorney.

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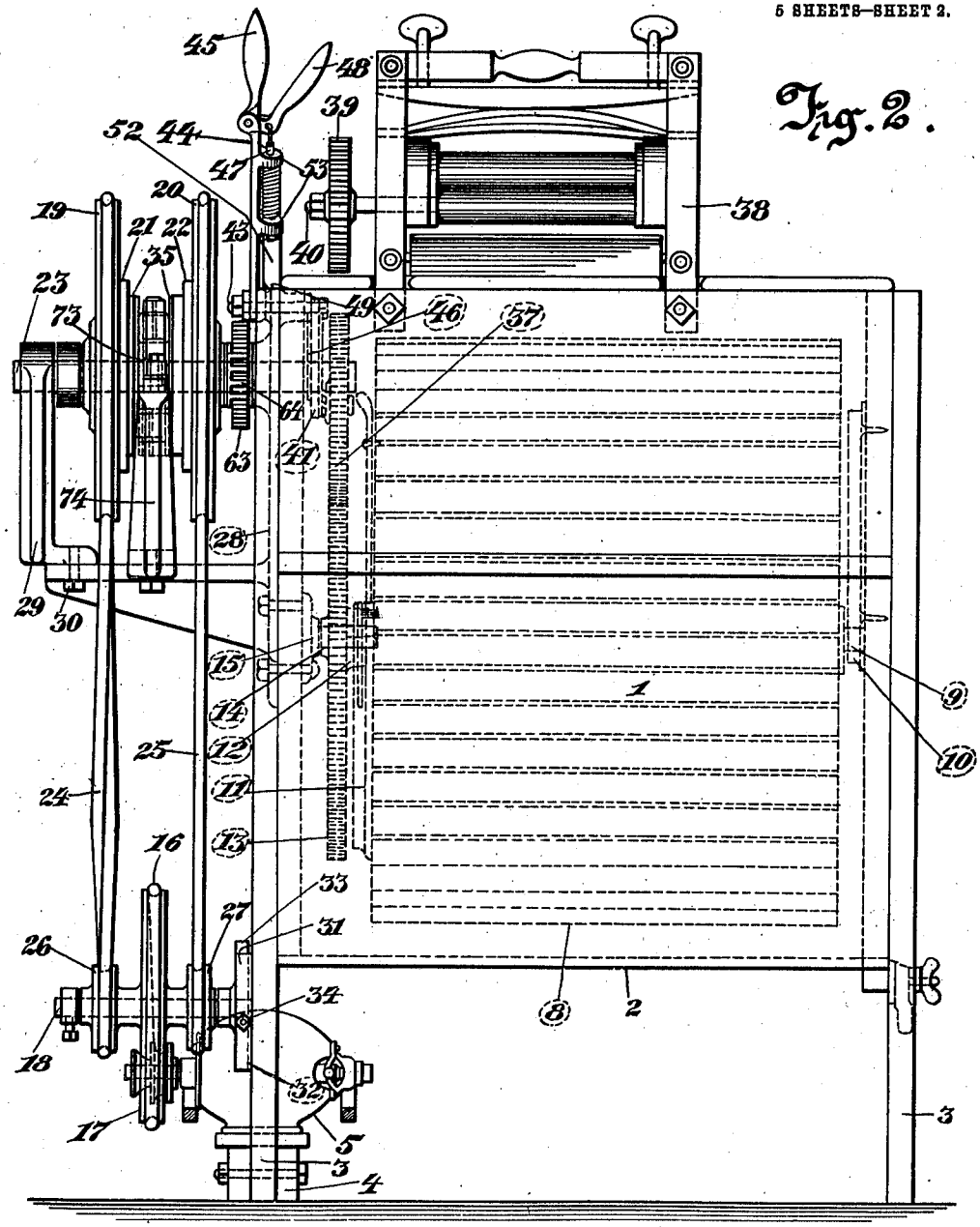
5 SHEETS—SHEET 2.

Fig. 2.



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5 SHEETS—SHEET 3.

Fig. 3.

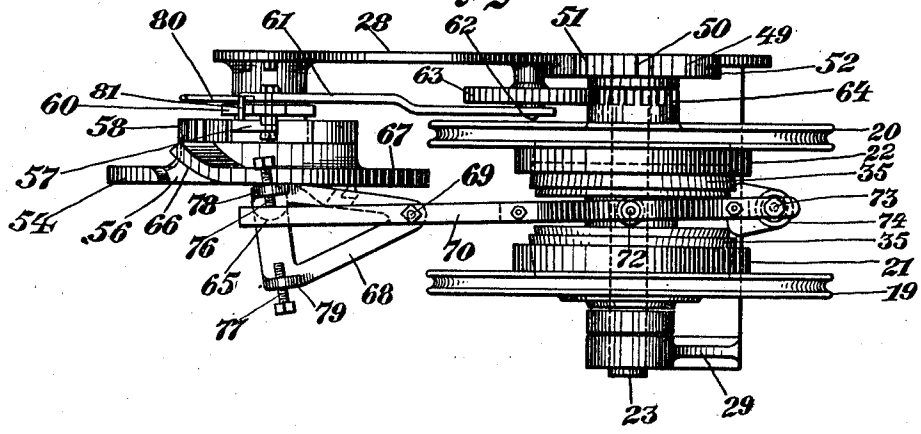
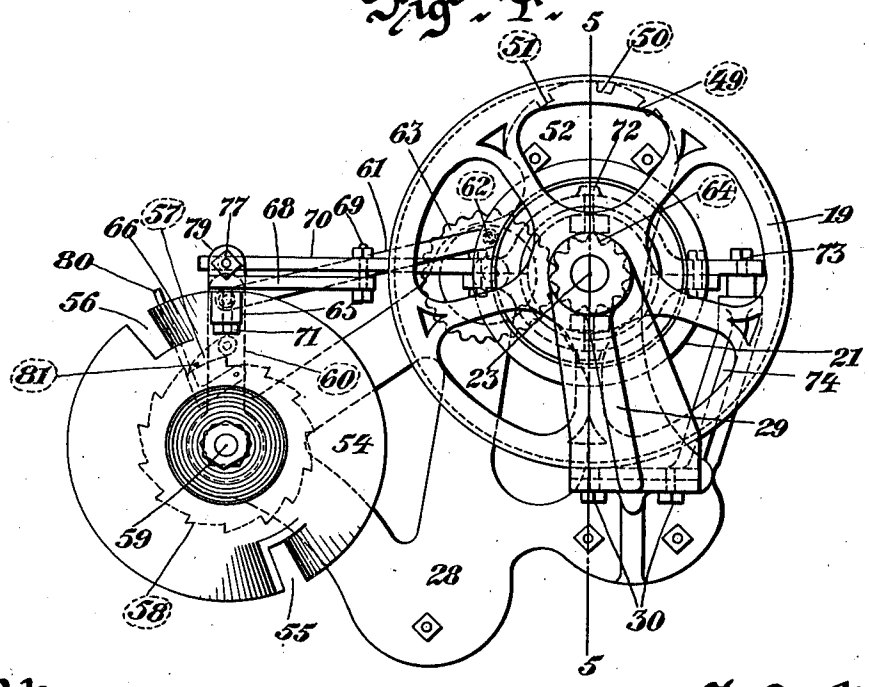


Fig. 4.



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5 SHEETS—SHEET 4.

Fig. 5.

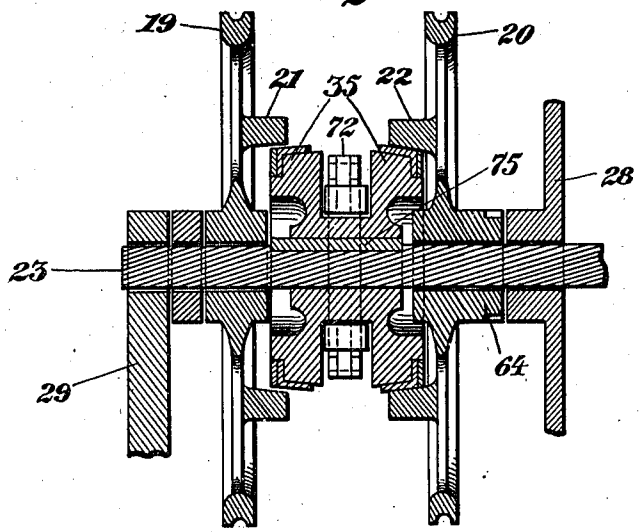


Fig. 6.

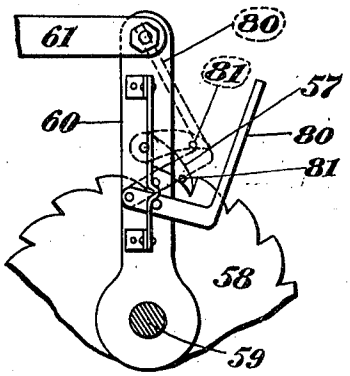
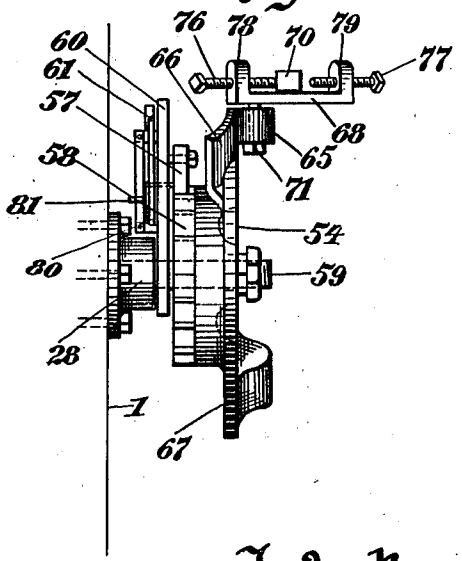


Fig. 7



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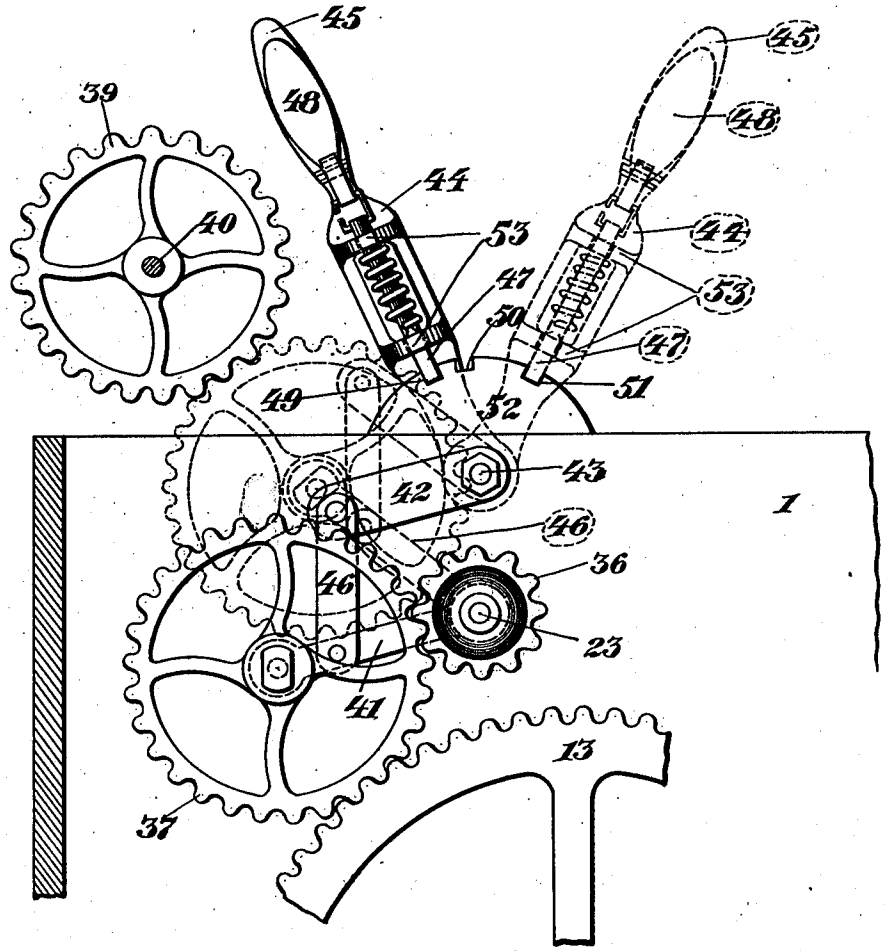
5 SHEETS—SHEET 5.

Fig. 8.



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UNITED STATES PATENT OFFICE.

CARLTON A. MUNGER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO WAYNE MANUFACTURING COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

GEARING.

974,508. Specification of Letters Patent. Patented Nov. 1, 1910.

Application filed September 17, 1909. Serial No. 518,166.

To all whom it may concern:

Be it known that I, CARLTON A. MUNGER, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Gearing, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention consists of mechanism for operating washing machines, and particularly for the type of machine constituting the subject-matter of my copending application, Serial No. 497,595, filed May 22, 1909.

In the drawings forming part of this specification, in which like numbers of reference denote like parts wherever they occur, Figure 1 is a side elevation; Fig. 2 is a front elevation; Fig. 3 is a detailed view, on an enlarged scale and in plan view, of the mechanism for producing rotary reciprocatory movement of the cylinder or like parts; Fig. 4 is a side elevation of the same; Fig. 5 is a sectional view on the line 5—5, Fig. 3; Fig. 6 is a detail of the means for transforming rotary reciprocatory movement of the clothes cylinder or like part into continuous rotary movement, as, for instance, in the operation of the wringer rolls; Fig. 7 is an end elevation of Fig. 4; and Fig. 8 is a side elevation of means for shifting the power drive from its connection with the clothes cylinder to actuating connection with the wringer.

The casing 1 is intended to contain the water, and is preferably provided with a rounded bottom 2. Said casing is preferably supported by legs 3, which can be connected by a cross-piece 4 or a plurality of such pieces. When an electric motor 5 or a water motor or the like is used, it may be conveniently attached to one of said cross-pieces and the operating fluid may be led to and from same by the conductor 6, which, in the case of electric wires, will be governed by the button 7. The clothes cylinder or barrel 8 is provided with a stud 9, which projects from one end thereof and is adapted to rotate in bearing 10. At the other end of the barrel a casting 11 is attached thereto, into an open space in which projects the square hub 12 of gear 13, which is mounted on short shaft 14, projecting from casting 15 attached to one of the sides of casing 1. Forked casting 11 is adapted to receive and hold the square hub 12 of gear 13, whereby the barrel to which said casting is attached is caused to rotate with gear 13 on shaft 14. It should be noted that, while the squared or other rectangular form for the hub 12 and for the bearing within casting 11 is preferred, nevertheless, other angular forms can be substituted therefor, or other forms of engagement between the barrel 8 and the gear 13 may be utilized.

The mechanism may receive its power from any suitable source, but in the drawings is shown as actuated by a belt 16 driven by the motor 5, said belt 16 leading to a wheel 17 mounted on shaft 18.

A pair of grooved pulleys 19 and 20 bearing female friction cones 21 and 22, which cones face toward each other, are mounted on shaft 23. A pair of belts 24 and 25 drives said pulleys 19 and 20 from pulleys 26 and 27 mounted on shaft 18 in such manner as to rotate with wheel 17, one of said belts being crossed so that the pulleys 19 and 20 will rotate in opposite directions, notwithstanding the fact that wheel 17 and pulleys 20, 26, and 27 all rotate in one direction. Shaft 23 is supported by a casting 28 and the supports for other moving parts, to be more particularly hereinafter described, are, also, borne by the same casting, thus insuring that, in case of warping of the wood-work by reason of moisture, the relation of the principal moving parts will at all times remain the same. The outer end of said shaft 23 is journaled in arm 29, which is attached by bolts 30 to said casting 28. A casting 31, having a groove 32 therein, receives a slidable block 33, which can be adjusted at any desired height by set-screw 34. The elevation of shaft 18 can thus be increased or diminished, and thereby belts 24 and 25 loosened or tightened, as may be desired. A double male cone 35 is so mounted on shaft 33 as to be adapted to slide thereon and alternately to engage female friction cones 21 and 22. Dependent on whether said male cone is coöperating with female cone 21 or female cone 22, shaft 23 is rotated either forwardly or rearwardly, as pulleys 19 and 20 rotate in opposite directions. A pinion 36, mounted on the inner end of shaft 23, is driven thereby and is in constant mesh with shiftable pinion 37, and when the latter is in engagement with gear 13, rotates same and, there-

fore, cylinder 8 in the same direction as the direction of rotation of shaft 23. When the rotation of said shaft 23 is changed to the opposite direction, that of cylinder 8 is, also. The result of the alternate engagement of the double male friction cone 35 with the female cones 21 and 22 is that reciprocatory rotary motion is imparted to shaft 23 and, thus, to pinions 36 and 37, and in that manner to gear 13 and the cylinder or barrel 8 driven thereby.

After the clothes have been adequately washed by the tumbling of them in the soapy water caused by the rotation of the barrel in which they are contained, the surging of the water in and out of said barrel and through the clothes, due to the movement of the barrel, also assisting in the cleansing process, it is desirable to wring same from said barrel into a receptacle containing rinsing water by a direct operation without the necessity of first carrying the washed articles from the washer to some other place. In order to make this operation possible and thus obtain the convenience arising therefrom, a clothes wringer 38 is secured to the casing 1. To save manual operation of said wringer, and in order to operate it by the same power and mechanism which has been utilized in producing the movement of the clothes cylinder, the shiftable pinion 37 is lifted from engagement with gear 13 into mesh with gear 39 mounted on the extension 40 of the shaft of one of the wringer rollers. The pinion 37 is mounted on the end of an arm 41 pivoted on shaft 23. Another arm 42 is rigidly secured to shaft 43, which is rotatable by lever 44 having the handle 45, which lever 44 is also rigidly secured to said shaft 43. When pinion 36 is causing cylinder 8 to rotate, the several parts are in the position shown in full lines in Fig. 8. When work of the washer has been accomplished, and it is desired to wring the clothes from the washer into the next receptacle, usually containing rinsing water, the handle 45 will be pulled from the full line position in Fig. 8 to the position depicted in dotted lines, which movement causes arm 42 to rise to the dotted-line position, pulling link 46 with it and, thereby, raising pivoted arm 41 to the dotted-line position and with it pinion 37 so as to engage gear 39, as shown by the dotted-line illustration of pinion 37.

It is a great advantage in the economy of a laundry to be able to save labor by utilizing mechanical power in wringing the clothes out of the washer into the rinsing water, and it is a particular advantage of this machine that it provides means for utilizing the same power both for washing and wringing. This desideratum is produced in this machine by the means provided by throwing the driving mechanism into engagement at will with either the washer or the wringer. In order to hold the shiftable pinion 37 into firm engagement with gear 39 or gear 13, it is desirable that a lock be provided to prevent movement thereof when it has been shifted to the desired position. A spring-pressed bolt 47, controlled by the pivoted handle 48, is adapted to seat in notches 49, 50, and 51 in the periphery of plate 52, said bolt moving through perforations in lugs 53 connected with lever 44. When bolt 47 is seated in notch 49, pinion 37 is held in engagement with gear 13. When said bolt is seated in notch 51, pinion 37 is held in engagement with gear 39, so that the lower roll of the wringer is driven thereby.

The male cone 35 is actuated alternately to enter and engage the female cones 21 and 22 by the cam disk 54, in the periphery of which are cut notches 55 and 56, said cam disk being caused to rotate by means of pawl 57, which engages ratchet 58, which is mounted on shaft 59 and to which cam disk 54 is rigidly secured. Said pawl 57 is mounted on a link 60 pivoted to shaft 59 and also pivoted to arm 61 eccentrically connected at 62 to gear 63 driven by pinion 64 formed on or driven by pulley 20. While cam disk 54 is rotating, roller 65 is riding on the side thereof adjacent its periphery and in circumferential alinement with notches 55 and 56 and cam faces 66 and 67. Said roller 65 is supported from plate 68 pivoted at 69 to arm 70 by pintle 71. As roller 65 rides alternately first on one side and then the other of cam disk 54, it causes double male cone 35 to engage either female cone 21 or female cone 22 by reason of its connection through plate 68 with arm 70, which is pivotally attached at 72 to said male cone 35 and pivoted at 73 to bracket 74 attached to casting 28. The swinging of arm 70 on pivot 73 causes double cone 35 to slide to the right or the left on shaft 23 and thus engage alternately the female cones, which rotate in opposite directions by reason of the direction of movement of pulleys 19 and 20. The rotation of the double cone 35 by the particular female cone with which it at any time is engaged drives shaft 23 in the same direction by reason of the spline 75, or similar connection between said cone and said shaft.

When the rotation of the cam disk 54 has brought notch 55 adjacent roller 65 to engage cam face 66 and to ride through notch 55 into the position depicted in Fig. 7, further travel of said roller 65 will then be upon the right-hand side of cam disk 54 until notch 56 is reached, whereupon cam face 67 is engaged by roller 65, with the result that roller 65 is carried through to the left-hand side of said disk until it again reaches notch 55 and again engages cam face 66. The transfer of roller 65 from one side

to the other of the disk 54 rocks arm 70 on pivot 73 and slides double cone 35 on spline 75, as hereinbefore mentioned.

In order to provide an adjustable connection between roller 65 and arm 70, said roller is attached to plate 68, which plate is adapted to rock on its pivotal connection 69 with rod 70; but the degree of movement of plate 68 is limited by the adjustment provided by set-screws 76 and 77, which pass through lugs 78 and 79 projecting upwardly from plate 68. When, through wear or other circumstances, it is found that, by the transfer of the roller 65 from one side to the other of disk 54, cone 35 is not caused to engage the coöperating female cones tightly enough, the degree of friction can be increased by screwing the set-screws 76 and 77 farther in toward the end of arm 70, thus reducing the play of plate 68. On the other hand, if it is found that the friction between cone 35 and the coöperating female cones is too great or too sudden, more play can be produced by retracting the set-screws from arm 70 and allowing greater play of plate 68.

One of the advantages of this mechanism is that due to the slipping between the male and female friction cones, the cylinder 8 does not, at the end of its travel in one direction, stop rotation suddenly or with a jar or pound, but in a slightly gradual manner, preparatory to beginning to revolve in the opposite direction. In this respect, and for this reason, the application of a friction drive to the reciprocatory rotary movement customary in a washing machine is of great advantage, as the reversal of the direction of movement of the cylinder merely by gears would be accompanied by the objectionable jarring due to too sudden change of direction.

Ordinarily, reciprocatory rotary movement of the cylinder 8 will be desirable, while, on the other hand, continuous rotation in the same direction of the driving roll of the wringer will be preferable. In order to produce these opposite kinds of motion in this machine and at the same time retain the advantage of interchangeably using the same driving mechanism for the wringer and the washer, means must be provided for transforming the reciprocatory rotary movement of shaft 23 when engaged in driving the washer cylinder into continuous rotary movement when the same shaft is driving the wringer. Such means is found in the detent 80, which, while normally occupying the position shown in full lines in Fig. 6 allowing pawl 57 to engage ratchet 58, whereby the reciprocatory rotary movement of shaft 23 is produced, as hereinbefore described, can be moved to the position shown in dotted lines in Fig. 6, thus lifting said pawl from engagement with said ratchet by engagement of detent 80 with pin 81, projecting from pawl 57. When pawl 57 is thus disengaged from ratchet 58, cam disk 54 ceases to rotate, and one end of double male friction cone 35 is allowed to remain continuously in engagement with its coöperating female friction cone, and thus continuous rotary motion is imparted to shaft 23. Dependent upon which female friction cone is engaged by the male friction cone at the moment when the detent 80 lifts pawl 57 from ratchet 58, said continuous rotary motion of shaft 23 may be in either direction with the result that the wringer may be used to wring clothes either taken from cylinder 8 and passed through the wringer into rinsing water or that are taken out of some other receptacle and passed through the wringer into cylinder 8. If said detent be not raised, the wringer would operate with a reciprocatory rotary motion. If continuous rotary movement in either direction of cylinder 8 be desired, detent 80 may be raised and said cylinder will travel continuously in one direction until detent 80 is moved back so that pawl 57 is allowed again to engage ratchet 58. While in a washing-machine reciprocatory movement of cylinder 8 would likely be desired, yet if this mechanism were used for other purposes continuous rotary movement of the barrel or other part driven in its place might be needful. Moreover, the interior construction of barrel 8 might be made such that the clothes would be adequately agitated therein by continuous rotation thereof.

The operation of the mechanism is as follows: If electricity be the motive fluid, the button 7 will be turned so as to close the circuit. Belt 16 will drive wheel 17 and with it pulleys 26 and 27 and, in opposite directions, pulleys 19 and 20. Pinion 64 drives gear 63 and thus actuates arm 61. The eccentric thrust and retraction of arm 61 causes pawl 57 successively to engage the teeth of ratchet 58 and thus to rotate cam disk 54. The rotation of said disk presents cam faces 66 and 67 alternately and successively to engagement with roller 65, which rides thereon, and is thereby caused to pass from one side to the other of disk 54, said cam faces 66 and 67 leading the said roller in opposite directions. Passage of roller 65 from one side to the other of disk 54 rocks arm 70 and pushes either one end or the other of double male cone 35 into engagement with either one or the other of the female cones 21 and 22. The direction of oscillation of arm 70 depends upon which cam face 66 or 67 roller 65 rides upon, and which end of cone 35 engages a coöperating female cone depends upon the direction of oscillation of arm 70, said arm 70 being caused by the continuous rotation of disk 54 to oscil-

late alternately to the right and to the left, and thus to cause cone 35 alternately to engage female cones 22 and 21. Cone 35 being splined to shaft 23, when cone 35 is in engagement with either cone 21 or cone 22, shaft 23 is driven in the same direction as the direction of the rotation of the female cone 21 or 22 thus engaged, the direction of said female cone being that of the pulley 19 or 20 with which it is connected, said pulleys rotating in opposite directions. Thus, when cone 35 is in engagement with cone 21 driven by pulley 19, shaft 23 is rotating in one direction, and when cone 35 is in engagement with cone 22 driven by pulley 20 shaft 23 is rotating in the direction opposite to that in which it rotates when cone 35 engages cone 21. Dependent upon whether interchangeable pinion 37 is in engagement with gear 13 or wringer gear 39, either the barrel 8 is reciprocatingly rotated or the wringer roll is driven. In the latter case, detent 80 will have been raised while shaft 23 is rotating in the direction that will produce the desired direction of wringing through the wringer, and, by reason of detent 80 having lifted pawl 57 out of engagement with ratchet 58, the direction of wringing will be continuously in one direction (unless, in exceptional cases, reciprocatory rotation of the wringer rollers is unobjectionable or desirable), while, on the other hand, when pinion 37 drives barrel 8 from shaft 23 pawl 57 will generally be in engagement with ratchet 58 to produce reciprocatory rotation of barrel 8, except in unusual instances or uses where constant rotation of said barrel in one direction is desirable.

It will be observed that, as the roller 65 is always on either one side or the other of cam disk 54, except at the particular moment when same is riding on the middle of either cam face 66 or cam face 67, male cone 35 never occupies a neutral position, but is always in engagement with either friction cone 21 or friction cone 22.

It will be obvious that many minor changes in the form, arrangement, location, and relation to each other of the several parts may be made without departing from the spirit of the invention, which is more particularly pointed out by the following claims.

I claim:

1. The combination of a driving shaft adapted to be rotarily reciprocated, a pair of female friction cones mounted on said shaft, means for driving said cones, a male friction cone adapted alternately to engage said first-mentioned cones, and means for producing such engagement, said means consisting in a pivoted member attached to said male cone, a roller connected with said member, a cam with which said roller is adapted to engage, and means for actuating said cam, said means consisting in a ratchet connected to said cam, a pawl in engagement with said ratchet, and means driven from one of said first-mentioned cones for moving said pawl forward and backward.

2. The combination of a driving shaft adapted to be rotarily reciprocated, a pair of female friction cones mounted on said shaft, means for driving said cones, a male friction cone adapted alternately to engage said first-mentioned cones, and means for producing such engagement, said means consisting in a pivoted member attached to said male cone, a roller connected with said member, a cam with which said roller is adapted to engage, and means for actuating said cam, said means consisting in a ratchet connected to said cam, a pawl in engagement with said ratchet, eccentrically driven means for moving said pawl forward and backward, and means connected with one of said first-mentioned cones for operating the last-mentioned means.

3. The combination of a driving shaft adapted to be rotarily reciprocated, a pair of female friction cones mounted on said shaft, means for driving said cones, a male friction cone adapted alternately to engage said first-mentioned cones, and means for producing such engagement, said means consisting in a pivoted member attached to said male cone, a roller connected with said member, a cam with which said roller is adapted to engage, and means for actuating said cam, said means consisting in a ratchet connected to said cam, a pawl in engagement with said ratchet, and driven means driven from one of said first-mentioned cones for moving said pawl forward and backward.

4. The combination of a driving shaft adapted to be rotarily reciprocated, a pair of female friction cones mounted on said shaft, means for driving said cones, a male friction cone adapted alternately to engage said first-mentioned cones, and means for producing such engagement, said means consisting in a pivoted member connected to said male cone, a member pivoted thereto and having adjustable screws adapted to impinge thereagainst and thus impart motion thereto, cam-engaging means borne by said last-mentioned member, and a cam adapted to impart motion to said last-mentioned member and thereby to the member connected to the male cone.

5. The combination of a driving shaft, a member adapted to be rotarily reciprocated, a member adapted to be continuously rotated in one direction, a driver for each of said members, a driver mounted on said shaft, a shiftable driver connected to said shaft and continuously engaged with the second named driver, means for shifting said shiftable driver into interchangeable en-

gagement with the two first named drivers, means for imparting rotary reciprocatory movement to said shaft, to impart rotary reciprocatory movement to the first named member when said shiftable driver is in engagement with said first named driver, and a detent for rendering the reverse-producing means inoperative, to impart continuous rotary movement to the second named member when said shiftable driver is in engagement with said second named driver.

6. The combination of a driving shaft, a member adapted to be rotarily reciprocated, a member adapted to be continuously rotated in one direction, a driver for each of said members, a driver mounted on said shaft, a shiftable driver connected to said shaft and continuously engaged with the second named driver, means for shifting said shiftable driver into interchangeable engagement with the two first named drivers, means for imparting rotary reciprocatory movement to said shaft, to impart rotary reciprocatory movement to the first-named member when said shiftable driver is in engagement with said first named driver, comprising a pair of friction members mounted on said shaft, mechanism for driving said friction members in opposite directions, an additional friction member adapted to alternately engage the first named friction members, oscillating means for producing such alternate frictional engagement, a ratchet-driven cam for actuating said oscillating means, a pawl adapted to drive said ratchet, and a detent adapted to disengage said pawl from said ratchet to render said cam inoperative, for imparting continuous rotary movement to the second-named member when said shiftable driver is in engagement with said second-named driver.

7. The combination of a main driving shaft constantly rotating in one direction, a secondary driving shaft adapted to rotate forwardly and backwardly, a plurality of pulleys mounted on said first-mentioned shaft all adapted to rotate in one direction, a pair of pulleys mounted on said second-mentioned shaft and adapted to rotate in opposite directions, belts connecting said pairs of pulleys, friction members adapted to be actuated by said oppositely-revolving pulleys, said pulleys being alternately in engagement with said shaft, a movable member in operative connection with said shaft, and means for effecting the alternating engagement of said friction members with said secondary shaft, said means consisting in a gear driven by one of said pulleys mounted on said secondary shaft, another gear in engagement therewith, a rod eccentrically pivoted to said second-mentioned gear, a pawl driven by said rod, a ratchet driven by said pawl, a cam driven by said ratchet, and a member adapted to be oscillated by said cam, said oscillating member being connected to one of said friction members.

8. The combination of a driving shaft, a pulley mounted on said shaft having a gear connected with its hub, another pulley mounted on said shaft, belts arranged to drive said pulleys in opposite directions, a friction member driven by each of said pulleys, an intermediate friction member adapted alternately to engage each of the first mentioned members and to change the direction of rotation of said shaft dependent upon which of said members it engages, a gear driven by said first-mentioned gear, a rod eccentrically pivoted to said gear, a shaft bearing a rotatable cam, a ratchet in connection with said cam and adapted to rotate same, a link connected to said rod, said link being connected to said ratchet, a pawl actuated by said link to rotate said ratchet and an oscillating member adapted to be oscillated by said cam and connected to said intermediate friction member.

9. The combination of a driving shaft, a pulley mounted on said shaft having a gear connected with its hub, another pulley mounted on said shaft, belts arranged to drive said pulleys in opposite directions, a friction member driven by each of said pulleys, an intermediate friction member adapted alternately to engage each of the first mentioned members and to change the direction of rotation of said shaft dependent upon which of said members it engages, a gear driven by said first-mentioned gear, a rod eccentrically pivoted to said gear, a shaft bearing a rotatable cam, a ratchet in connection with said cam and adapted to rotate same, a link connected to said rod, said link being connected to said ratchet, a pawl actuated by said link to rotate said ratchet, an oscillating member adapted to be oscillated by said cam and connected to said intermediate friction member, and a detent for holding said pawl out of engagement with said ratchet.

10. The combination of a shaft adapted to be rotarily reciprocated, a friction driving mechanism therefor, pulleys and belts for actuating said mechanism, a grooved plate, and a shaft-bearing block adapted to be adjusted in the groove of said plate for the purpose of tightening or loosening said belts.

11. The combination of a shaft, a fast-clutch member and a pair of loose clutch members mounted thereon, means for driving the loose clutch members in opposite directions, mechanism for engaging the fast clutch member alternately with said loose clutch members, to impart reciprocatory rotary movement to said shaft, and means for rendering the reverse-producing means inoperative, to impart continuous rotary movement to said shaft.

12. The combination of a shaft, a fast clutch member and a pair of loose clutch members mounted thereon, means for driving the loose clutch members in opposite directions, oscillating means engaged with the fast clutch member for alternately engaging the same with said loose clutch members, to impart reciprocatory rotary movement to said shaft, a rotary member for actuating said oscillating means, means for actuating the rotary member, and means for rendering said rotary member inoperative, to impart continuous rotary movement to said shaft.

13. The combination of a shaft, a fast clutch member and a pair of loose clutch members mounted thereon, means for driving the loose clutch members in opposite directions, oscillating means engaged with the fast clutch member for alternately engaging the same with said loose clutch members, to impart reciprocatory rotary movement to said shaft, a cam for actuating said oscillating means, means for rotating the cam, and means for terminating the rotation of said cam, to impart continuous rotary movement to said shaft.

14. The combination of a shaft, a fast clutch member and a pair of loose clutch members mounted thereon, means for driving the loose clutch members in opposite directions, oscillating means engaged with the fast clutch member for alternately engaging the same with the loose clutch members, to impart reciprocatory rotary movement to said shaft, a ratchet-driven cam for actuating said oscillating means, a pawl for driving said ratchet, and means for disengaging said pawl from said ratchet.

15. The combination of a shaft, a fast clutch member and a pair of loose clutch members mounted thereon, means for driving the loose clutch members in opposite directions, a cam provided with notches, means for driving said cam, an oscillatory member provided with a roller arranged to ride against the opposite faces of said cam and through the notches therein, said member being connected with said fast clutch member for engaging the latter alternately with said loose clutch members, to impart a reciprocatory rotary movement to said shaft, and means for rotating said cam.

16. The combination of a shaft, a fast clutch member and a pair of loose clutch members mounted thereon, means for driving the loose clutch members in opposite directions, a ratchet-driven cam provided with notches, an oscillatory member provided with a roller arranged to ride against the opposite faces of said cam and through the notches therein, said member being connected with said fast clutch member for engaging the latter alternately with said loose clutch members, to impart a reciprocatory rotary movement to said shaft, a pawl for driving said ratchet, and means for disengaging said pawl from said ratchet.

17. The combination of a member adapted to be rotarily reciprocated, a gear secured thereto, a member adapted to be continuously rotated in one direction, a gear secured to the second-named member, a drive shaft, a gear secured to said shaft, a shiftable gear connected to said shaft and continuously engaged with the gear thereon, means for shifting said shiftable gear into interchangeable engagement with the first and second-named gears, means for imparting rotary reciprocatory movement to said shaft, to impart rotary reciprocatory movement to the first-named member when said shiftable gear is engaged with the first-named gear, and means for rendering the reverse-producing means inoperative, to impart continuous rotary movement to the second-named member when said shiftable gear is engaged with the second-named gear.

In testimony whereof I have affixed my signature in presence of two witnesses.

CARLTON A. MUNGER.

Witnesses:

GEORGE G. ANDERSON,

GLADYS WALTON.