April 12, 1932. G. MORE 1,853,919

REVERSIBLE SWINGING WRINGER MECHANISM

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Fig. 1.

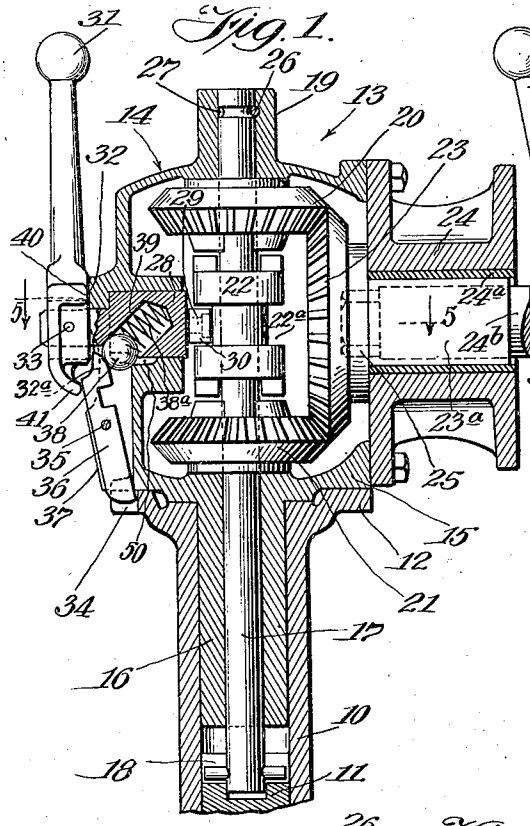

Fig. 2.

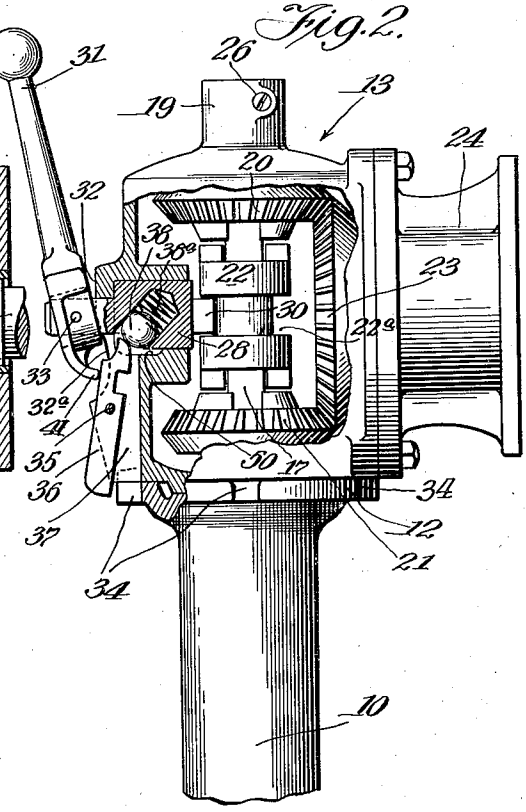

Fig. 3.

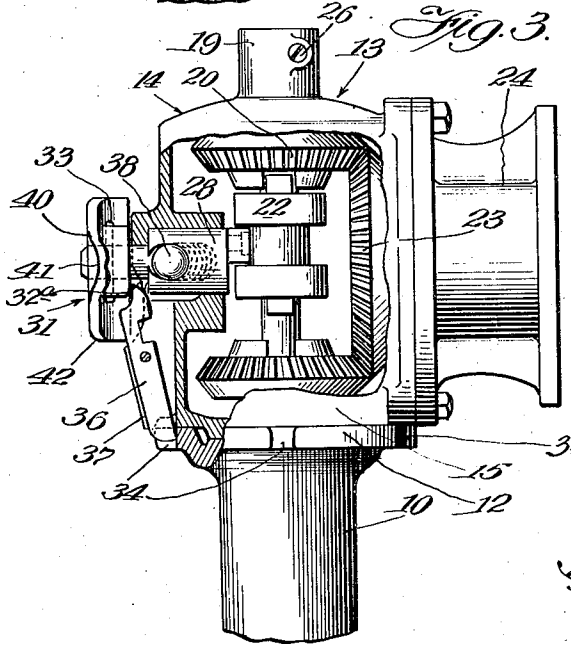

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Fig. 4.

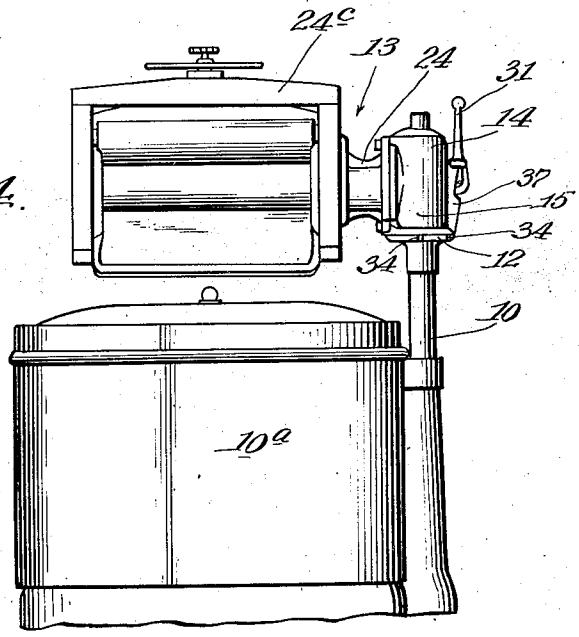


Fig. 5.

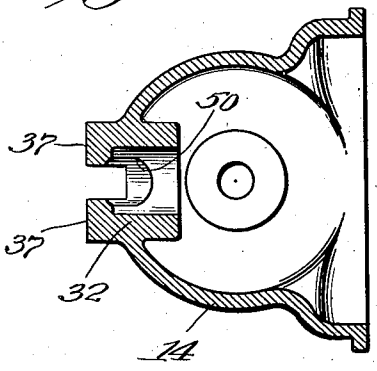


Fig. 7.

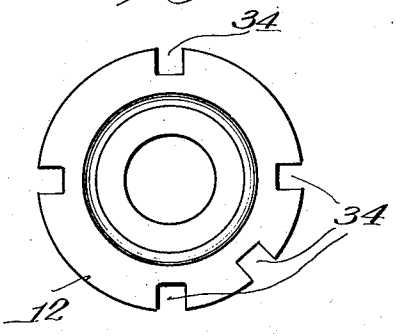
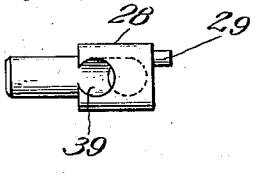


Fig. 6.



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UNITED STATES PATENT OFFICE

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REVERSIBLE SWINGING WRINGER MECHANISM

Application filed September 15, 1930. Serial No. 481,940.

This invention relates to a novel and improved reverse-gear swinging wringer mechanism for washing machines and the like and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The object of the invention is to provide a simple, economical and efficient reverse-gear swinging wringer mechanism capable of being swung to any one of a predetermined number of positions in which the wringer is to be operated, and in which a single control arm or lever is operative not only to shift the reverse gearing, but also to swing the wringer to the desired position when, but only when, the reverse gearing is in neutral position. Said arm is also inoperative to start the gears to rotate the wringer rolls except when the wringer is locked in one of its predetermined positions.

The advantages of such a device will be obvious to those familiar with the art and will appear more clearly as I proceed with my specification.

In the drawings:—

Figure 1 is a view representing a vertical central section through the improved swinging wringer mechanism, with the reverse gearing in neutral position and with the control arm in that position which it occupies when the wringer is in one of its predetermined positions and is locked against swinging movement.

Figure 2 is a like view except that the control arm has been shifted to permit the wringer to be swung to a different position.

Figure 3 is another like view with the control arm in position after shifting the clutch common to the reverse gears from neutral to operative engagement with one of said reverse gears.

Figure 4 is a partial elevation of a washing machine with my improved mechanism applied thereto.

Figure 5 is a horizontal cross section through the housing of the reverse-gearing in a plane indicated by the line 5—5 of Figure 1.

Figure 6 is a plan view of a shaft operated by the control arm for shifting the clutch of the reverse gearing.

Figure 7 is a top plan view of a notched collar or flange on the tubular post supporting the gearing,—the notches in said collar corresponding to the several predetermined positions of the wringer.

Referring now to that embodiment of the invention illustrated in the drawings, as designed for use with a power driven washing machine of any familiar type:—

10 indicates the usual tubular bearing standard adapted to be supported upon and to extend vertically alongside a power washing machine tub 10^a, containing and providing bearing for a power driven vertical shaft 11. (See Figs. 1 and 4.) At its upper end said standard has a horizontal radial flange or collar 12 which presents a base or support for the swinging wringer mechanism indicated as a whole by the numeral 13.

14 indicates a housing having a flat annular base 15 resting upon the flange 12, with a depending tubular post 16 which engages and has rotatable bearing in the tubular standard 10. A vertical shaft 17 has bearing in the tubular post 16 and depends therebelow to be coupled to the power driven operating shaft 11 by a diametric pin and slot connection 18 in a familiar manner. Said shaft 17 extends vertically through the housing 14, which provides for it a top bearing 19. On said shaft are assembled the two reverse gears 20 and 21, with the movable feathered clutch collar 22 between them for operatively connecting the one or other to the shaft 17,—both reverse gears engaging the intermediate operating gear 23 which drives the wringer—all in a well known manner.

24 indicates a bracket which directly supports the wringer 24^c. It contains a horizontal bushing 24^a in which bears the hollow hub 23^a of the intermediate gear 23. Said hollow hub is designed to receive the end of the driven shaft 24^b of the wringer and contains a polygonal socket 25 for locking said wringer shaft to the said intermediate gear.

The vertical shaft 17 is held against longi-

tudinal movement in the housing 14 in any familiar manner, as by a pin 26 taking through the top bearing 19 and engaging an annular groove 27 on the shaft. Obviously the housing 14 with its enclosed gearing, the shaft 17 and the attached wringer, may be removed from the standard 10 by withdrawing the tubular post 16 vertically therefrom.

In one side of the housing 14 is mounted a horizontal rock shaft 28. At its inner end said shaft carries an eccentrically placed pin 29 on which is pivotally mounted a short horizontal bar 30 which engages the usual annular groove 22^a in the clutch collar 22. The other end of said shaft 28 is reduced in diameter and extends outside the housing where there is attached to it a control arm 31. Said control arm 31 is fixed on the shaft 28 against any movement in a plane at right angles to said shaft 28 so that it may rock the shaft to shift the clutch collar. But said control arm is capable when in one position of a swinging movement in the plane of the shaft 28 away from the housing—as from the vertical position shown in Figure 1, to a position inclined away from the housing, as shown in Figure 2. Said movement is made possible by reason of a pin and slot connection of the arm 31 to the shaft 28, as indicated at 33.

The housing, adjacent the arm 31, is provided with a boss 32, which abuts against the arm 31 in a semi-circular arc above the horizontal axis of the shaft 28, but is cut away below said axis, as indicated at 32^a (Figs. 1 and 2) to permit the arm 31, when in vertical position, to be swung from the vertical position shown in Figure 1 to the position inclined away from the housing, shown in Figure 2. In these positions of the arm 31, the shaft 28 and its eccentric pin 29 are in position to hold the clutch collar 22 in neutral position. In any other position of the arm 31, as when it has been swung into horizontal position, illustrated in Figure 3, to rock the shaft 28 and shift said clutch collar into operative engagement with one of the reverse gears 20, 21, the boss 32 will block any swinging movement of the arm 31 on its pivot pin 33.

In the edge of the supporting flange 12 of the vertical standard 10, there are provided a plurality of notches 34, the number of said notches depending upon the number of positions which the swinging wringer is designed to occupy, each notch corresponding to one of said positions. In the vertical plane of the swinging movement of the arm 31 away from the housing and immediately below the shaft 28 on a horizontal pin 35 is mounted a spring-controlled pivoted trigger 36. Said trigger is suitably placed in a vertical slot provided by parallel spaced ribs 37 projecting from the housing, and as shown, depending from the boss 32. In said ribs the pin 35, placed intermediate the ends of the trigger, is fixed. The bottom end of the trigger 36 extends into the plane of the flange 12 of the standard for engagement with one of the notches 34 therein. Said trigger is held in engagement with the said flange 12 by means of a ball 38 and spring 38^a mounted in a downwardly and outwardly inclined recess 39 in the rock shaft 28, with the ball in engagement with the upper end of the trigger. When the housing 14 with the attached wringer 24^c is swung on its vertical axis, as by the rotation of the post 16 in the standard 10 to bring the trigger 36 opposite one of said notches 34, said trigger will be forced by the spring into said notch and thus lock the housing against further rotative movement.

The control arm 31 has a finger 40 which depends below the rock shaft 28 to the horizontal level of the upper end of the trigger 36 and above its pivot pin 35, when said arm is in its vertical position corresponding with the neutral position of the clutch collar 22 When in that position, and when in that position only, the arm 31 may be swung on its pivot 33 away from the housing,—that is to say, from the position shown in Figure 1 to the position shown in Figure 2. In this movement the finger 41 will depress the upper end of the trigger (against the action of the spring 38^a) and lift the bottom end of the trigger from its engagement with the notch 34. This releases the housing and, with the control arm in the position shown in Figure 2, the housing may be swung by said arm 31 to bring the wringer to a position corresponding to another notch 34, whereupon the arm 31 will be shifted back to vertical position, releasing the trigger which is forced by the spring 38^a into engagement with said notch. This locks the housing in the new position.

At any position of the wringer intermediate the several positions corresponding to the several notches 34 in the flange 12, the upper end of the trigger 36 will engage in the open end of the recess 39, as illustrated in Figure 2, so as to lock the rock shaft 28 against rotative movement. As a result, the control arm is incapable of shifting the clutch collar to operatively connect either of the reverse gears to the shaft 17 for actuating the wringer shaft. When the housing and wringer are brought to position so that the trigger is opposite one of the notches 34, the ball and spring will force the trigger into said notch, thereby swinging the upper end of the trigger from its engagement in the open end of the recess 39 and releasing the rock shaft. The control arm 31 may then be swung in a vertical plane (at right angles to the rock shaft) to shift the clutch collar. A depression 50 in the bearing for the rock shaft, is located to be engaged by the ball 38 when the rock shaft 28 is in neutral position, thus providing

a yielding lock for said shaft in that position.

From the foregoing description, it will be obvious that the single control arm 31 is operative both for reversing the gearing and for swinging the wringer; that said arm may only swing the wringer when the gearing is in neutral position; and that said arm may only reverse the gearing when the wringer is in one of its predetermined positions.

I claim as my invention:—

1. A swinging wringer reverse gear mechanism comprising a housing adapted to support a wringer, reverse gear mechanism therein adapted for operative connection to said wringer, a standard on which said housing is rotatable upon a vertical axis, a horizontal rock shaft having means at one end for reversing said gear and projecting at its other end beyond said housing, a control arm connected to said rock shaft adapted to swing in a plane at right angles to said shaft for rocking the same and of swinging in the plane of said shaft when said rock shaft has brought the reverse gearing to neutral position, but incapable of that movement in any other position of the rock shaft, a trigger carried by said housing adapted to lock said housing in one of a plurality of predetermined positions on said standard, means carried by said control arm engaging said trigger when said rock shaft has the gearing in neutral position, and means adapted to lock said rock shaft in said neutral position except when said trigger is in locking engagement with said standard.

2. A swinging reverse gear mechanism comprising a housing adapted to support a wringer, reverse gear mechanism therein adapted for operative connection to said wringer, a standard on which said housing is rotatable upon a vertical axis, a horizontal rock shaft having means at one end for reversing said gear and projecting at its other end beyond said housing, a spring-controlled trigger carried by said housing adapted to lock the same in one of a plurality of predetermined positions on said standard, a control arm connected to said rock shaft to rock the same, said arm carrying means for engagement by said trigger, said arm being capable of a second movement, when said rock shaft has the reverse gearing in neutral position, to release said trigger from locking engagement with said standard, and said trigger having a part adapted to lock the said rock shaft against rotative movement when said trigger is released from locking engagement with said standard.

3. A swinging wringer reverse gear mechanism comprising a housing, reverse gear mechanism therein for driving the wringer, including a vertical driven shaft, a standard on which said housing is mounted to rotate about the axis of said shaft, a horizontal rock shaft having means at one end for reversing said gearing and projecting at its other end beyond said housing, a control arm adapted for rocking said rock shaft, cooperating devices on said standard and housing for locking said housing in any one of a plurality of positions, said cooperating devices including a trigger, means carried by said control arm for disengaging said trigger to permit rotative movement of said housing when said rock shaft has brought the reverse gearing to neutral position, said means being inoperative in any other position, and means locking said rock shaft against rotation when said trigger is in position for releasing said housing for rotation on said standard.

4. A swinging wringer reverse gear mechanism comprising a housing, reverse gearing including a vertical shaft in said housing, a standard providing support for said housing permitting a rotative movement of said housing about the axis of said shaft, said standard presenting a plurality of notches corresponding to predetermined positions of said wringer, a clutch collar on said vertical shaft for reversing said gearing, a horizontal rock shaft adapted to operate said clutch collar, a control arm pivotally attached to said rock shaft outside the housing, said control arm being capable of a swinging movement away from said housing when the rock shaft is in position corresponding to the neutral position of said clutch collar, a trigger pivoted to said housing below said rock shaft adapted for engagement with the notches in said support, a recess in said rock shaft, a ball and spring in said recess adapted for engagement with the upper end of said trigger when said rock shaft is in neutral position, said trigger being adapted to engage in the open end of said recess when said rock shaft is in said neutral position and said control arm is swung to release said trigger from engagement with any one of said notches.

5. In a swinging wringer reverse gear mechanism, a housing, reverse gearing including a vertical shaft in said housing, a standard on which said housing is rotatably mounted, said standard being provided with a plurality of notches corresponding to predetermined positions of said housing, a horizontal rock shaft for reversing said gearing, a control arm pivotally attached to said rock shaft outside said housing and capable of a swinging movement in the vertical plane of said shaft when the rock shaft is in neutral position, a trigger pivoted to said housing in the vertical plane of and below said rock shaft, the bottom end of said trigger being adapted for engagement with the notches in said standard, said control arm being formed to engage the upper end of said trigger when said rock shaft is in neutral position, said rock shaft having a recess opening towards the upper end of said trigger, and a ball and

spring in said recess engaging said upper end of said trigger to normally hold the bottom end of said trigger in engagement with one of said notches, the upper end of said trigger engaging in the open end of said recess when its bottom end is released from locking engagement with one of said notches.

In testimony that I claim the foregoing as my invention, I affix my signature this 9th day of September, A. D. 1930.

GLENN MORE.