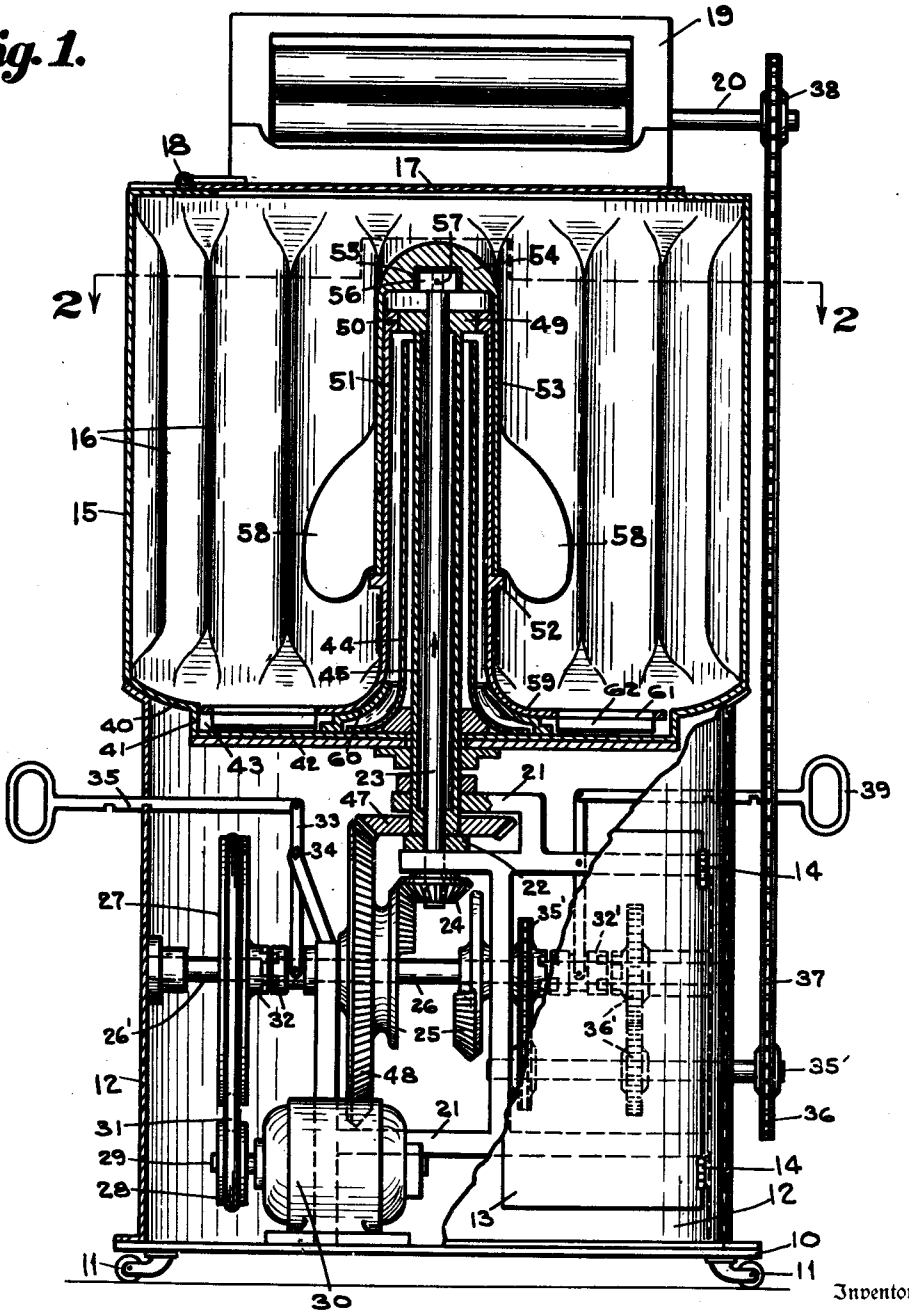
May 26, 1931. LE ROY R. McKERCHER 1,806,982

WASHING MACHINE

Filed Dec. 11, 1929 2 Sheets-Sheet 1

Fig. 1.



Inventor

By L.R.McKercher

Arthur H. Sturges.

Attorney

May 26, 1931. LE ROY R. McKERCHER 1,806,982

WASHING MACHINE

Filed Dec. 11, 1929 2 Sheets-Sheet 2

Fig.2.

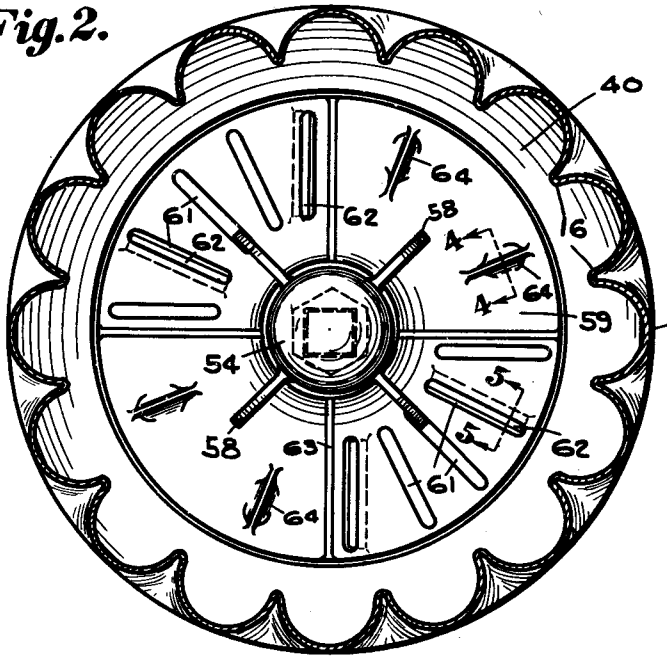


Fig.4.



Fig.5.

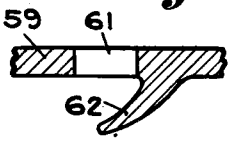


Fig.3.

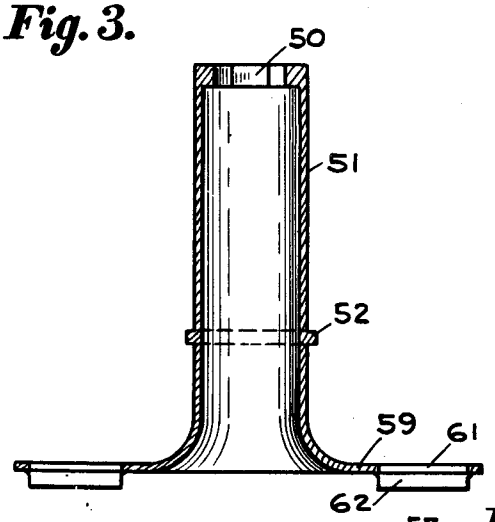


Fig.8.

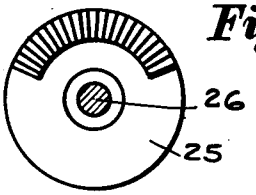


Fig.6.

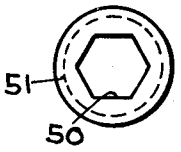
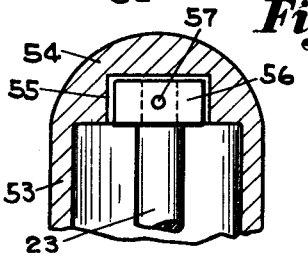


Fig.7.



Inventor

L.R.McKercher

By *Arthur H. Sturges*

Attorney

Patented May 26, 1931 1,806,982

UNITED STATES PATENT OFFICE

LEROY R. McKERCHER, OF CALIFORNIA, IOWA, ASSIGNOR OF ONE-HALF TO JAMES E. McKERCHER, OF VALPARAISO, NEBRASKA

WASHING MACHINE

Application filed December 11, 1929. Serial No. 413,214.

This invention relates to a washing machine and has relation more particularly to a device which is especially designed and adapted for use in connection with power operated washing machines.

It is an object of the invention to provide a device which is adapted to impart a movement to the clothes washing water within the machine, in a manner more advantageous than heretofore, whereby the clothes may be cleansed in a more rapid, economical and efficient manner than has been heretofore practiced.

A further object of the invention is to provide a washing machine the operative mechanism of which enters the tub portion thereof through the bottom of the latter thereby providing a light and easily swingable hinged lid for said tub, said lid or cover thereby being free of encumbering mechanism and moving parts which as heretofore practiced are in the operator's way during clothes wringing operations.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:—

Figure 1 is a view partly in section and partly in elevation illustrating a washing machine constructed in accordance with an embodiment of my invention, the base member of the machine being partially broken away and certain parts of the operating mechanism being indicated by dotted lines.

Figure 2 is a view partly in section and partly in plan, the view being taken along the dotted line 2—2 of Figure 1 and looking in the direction of the arrows.

Figure 3 is a vertical sectional view showing a novel disc wash-water distributor and agitator employed.

Figure 4 is an enlarged section showing a fragment of the disc and of a lug portion thereof, the view being taken along the dotted lines 4—4 of Figure 2.

Figure 5 is an enlarged detail showing a fragmental section of the disc, illustrating a water receiving slot and water collecting scoop thereof, the view being taken along the dotted lines 5—5 of Figure 2.

Figure 6 is a top plan view of a sleeve portion of the disc.

Figure 7 is a fragmental vertical section of a dolly drive shaft, sleeve and connecting means employed; and

Figure 8 is a face view of a mutilated gear of a dolly reversing mechanism.

Referring now to the drawings for a more particular description in which like numerals of reference designates like or corresponding parts, the numeral 10 indicates a base which may be formed of any suitable, strong, rigid material, such as channel iron. The base 10 is preferably supported upon caster wheels 11. A sheet metal housing 12 is secured to the base 10, by any suitable means and is provided with a door 13, which is adapted to be swung open upon its hinges 14.

The upper edge or perimeter of the housing 12 is adapted to support a tub 15 which may be formed of any suitable material and is preferably provided with metal copper ribs 16 upon its interior annular wall.

The top of the tub 15 is provided with a cover 17 which is preferably secured to it by means of hinges 18.

A clothes wringer 19 is adapted to be secured to the tub 15 by any suitable means and is provided with a driving shaft 20.

Any suitable frame may be employed, such as the frame 21 within the housing 12, for supporting the later described operating mechanism. The frame 21 is secured to the base 10 or to the housing 11 and is adapted to provide a bearing 22 for a vertically disposed dolly driving shaft 23, the latter being provided with a pinion 24, adjacent its lower end.

The pinion 24 is adapted to have intermittent mesh, in alternation, with either one of a pair of reversing gears 25, said gears, as best shown in Figure 8, are provided with gear teeth upon a segment of their annular perimeters, said segments, as shown in Figure 1, being opposed to each other and thereby are adapted to intermittently register with

the teeth of the pinion 24 at opposite sides thereof and to thereby rotate the latter in reversed directions. The reversing gears 25 are secured to their driver shaft 26 which is horizontally disposed and supported for rotary movements by means of the frame 21. The shaft 26 comprises a portion 26′ which carries a grooved pulley wheel 27. A small grooved pulley wheel 28 is splined or otherwise suitably secured to the shaft 29 of a motor 30, the latter being secured to the base 10. A motor belt 31 is employed for communicating motion from the motor to the wheel 27 and shaft 26′.

The motor 30 is electrically connected to a source of electrical supply, not shown, for actuating the motor and imparting rotary movements to the shaft 26.

The shafts 26 and 26′ are provided with a toothed clutch 32. The clutch mechanism comprises a splined slidable half-portion adapted to mesh with a fixed half-portion. A bifurcated lever 33 is employed for operating the clutch. The lever 33 is provided with a fulcrum 34 and a push-pull operating rod 35, which extends exteriorly of the housing 12. By this means the operator may selectively engage and disengage the clutch 32 for causing motion to be communicated from the motor 30 to the driving shaft 26.

A similar mechanism is employed for driving the wringer shaft 20.

The wringer may be operated by means of utilizing the power of the motor 30 through a clutch mechanism and train of gears which are adapted to drive a shaft 35′, the latter being provided with a sprocket wheel 36 and an endless chain or belt 37, which is in communication at all times with a sprocket wheel 38 carried by the wringer shaft 20.

A push-pull handle 39 is provided for the control of a clutch mechanism 32′ which is similar in all respects to the heretofore described clutch 32, except that the clutch 32′ is double acting and is adapted to communicate motion from the shaft 26 to the shaft 35 through the sprocket chain 35′ for driving the wringer shaft 20 in one direction, or to selectively drive said wringer in a reverse direction through the constantly meshed gears 36′. It will be understood that the wringer may also be motionless while the shaft 26 is moving by positioning the clutch 32′ in the natural position shown by the dotted lines in Figure 1.

The bottom 40 of the tub 15 is provided with a concaved or recessed central portion 43, having a vertical annular wall 41 and a horizontally positioned reinforcing member 42.

The central recess 43, provided in the bottom of the tub 15 is adapted to receive a later described wash-water agitating and distributing disc.

An elongated tubular sleeve 44 is suitably secured to the bottom of the tub and centrally thereof for preventing leakage of wash water therefrom.

A hollow tubular disc driving shaft 45 extends through the sleeve 44 and is suitably journalled in the tub's bottom and supported upon a horizontal bearing which may be the member 22.

A bevel pinion 47 is secured to the lower end of the hollow shaft 45 and is in mesh at all times with a vertically positioned pinion 48, the latter being integral with one of the mutilated gears of the pair of reversing gears 25 or said pinion 48 may be separate therefrom and splined to the shaft 26.

As thus described it will be understood that the hollow shaft 45 is adapted to receive rotary motion from the motor 30 at all times when the clutch 32 is engaged.

The upper end of the shaft 45 is provided with a rectangular head 49 which is adapted to register with a correspondingly shaped aperture formed by the interior wall 50 of a disc-sleeve 51, a plan view of the latter being shown in Figure 6. By this means the sleeve 51 is adapted to be removably secured to the hollow shaft 45 whereby the one may drive the other.

The disc-sleeve 51 is provided with an annular bushing 52. A dolly-sleeve 53 is carried by the bushing 52 and is adapted to have intermittent reciprocating rotary movements about the disc-sleeve which provides a journal for such purposes as shown in Figure 1.

As best shown in Figure 7, the dolly-sleeve 53 is provided with a semi-globular head 54 which is provided with an interior angular recess 55 which is adapted to receive a similarly shaped nut 56, the latter being secured to the dolly driving shaft 23 by means of a pin 57. By this means the dolly-sleeve 53 is removably secured to its drive shaft 23 at all times.

The dolly sleeve 53 is provided with any suitable number of outstanding dolly-arms 58 for engaging clothes placed within the tub and for causing reversing revoluble movements of the clothes and a rubbing action thereof against the vertical ribs 16 while washing water is forced through the clothes by a novel means now to be described.

The disc-sleeve 51 is preferably formed integral with a horizontally positioned disc 59 which is preferably formed integral with said disc and provided with a journal bearing and supporting member 60. The disc is adapted to have continuous rotary movements by means of the coupling members heretofore described.

As best shown in Figures 2 and 5, the disc is provided with an elongated radially disposed slot 61. A plurality of said slots 61 are preferably provided. The slot 61 is adapted to receive wash-water from the bottom of the tub, said water being forced up-

wardly through said slot, when the disc is rotated, by means of a scoop 62.

The disc may be further provided with reinforcing ribs 63 and a plurality of upstanding lugs 64 which are adapted to prevent the clothes from settling completely upon the disc.

In operation the tub is filled to a desired extent with hot soap suds and wash water and the clothing or other fabrics to be cleansed are placed within the tub. The paddle-like dollies 58 cause the clothing to become rubbed against the ribs 16 of the annular vertical wall of the tub and also serve as a regulator for evenly distributing the clothes about said wall. The movement of the dollies causes the surface of the wash water and clothes to mount higher adjacent the ribs as the dollies revolve thereby forming a "slant" to said surface from the ribs toward the central dolly-sleeve. A movement of the dollies in a reverse direction will first restore the surface of the water to a substantially normal level and subsequently create a "slant" as above described. The movements of the dolly paddles and attendant movements of the wash water in conjunction with the movements of the latter from the bottom of the tub by means of the disc has been found to be of great advantage in washing fabrics. The wash water from the bottom of the tub is forced upward through the slots 61 of the disc by means of the scoops 62 while the dollies revolve in alternate reverse directions, the movement of the wash water as above described through the clothes causes a thorough, efficient and economical washing thereof, said upward movement of water causing the clothes to be released from undue pressure and wear against the ribs, preventing the formation of "lumps" in the clothes and providing an advantageous slushing movement through the clothes of the cleansing wash water and suds.

It will be understood that the motor 30 may be dispensed with and a fly wheel and hand crank substituted therefor. Also it will be understood that a gasoline engine may be employed for motive power in lieu of the motor 30 for farm use when an electrical source of power is not available.

The invention is susceptible of various changes in its form, proportion and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

I claim:—

1. In a washing machine comprising operative and supporting means for the machine, a tub, a revolvable water-agitator provided with an upright sleeve within the tub, a drive shaft for the agitator journalled in the bottom of the tub, a revolvable sleeve provided with a dolly carried by the first named sleeve, a dolly-sleeve drive shaft journalled in the first named shaft, and a reversing mechanism for the dolly drive shaft.

2. In a washing machine comprising operative and supporting means for the machine, a tub, a revolvable disc provided with an upright sleeve within the tub, a drive shaft for the disc journalled in the bottom of the tub, a revolvable sleeve provided with a dolly carried by the first named sleeve, and a drive shaft for the dolly-sleeve journalled in the first named shaft, said disc being provided with a water receiving slot and a scoop adapted to force water upwardly through the slot during revolvable movements of said disc.

3. In a washing machine comprising operative and supporting means for the machine, a tub, a revolvable water-agitator positioned within the tub adjacent its bottom, and a drive shaft for the agitator journalled in said bottom, a revolvable dolly carried by said water agitator, a dolly drive shaft journalled in the first named shaft, and a reversing mechanism for the dolly drive shaft.

In testimony whereof, I have affixed my signature.

LEROY R. McKERCHER.