

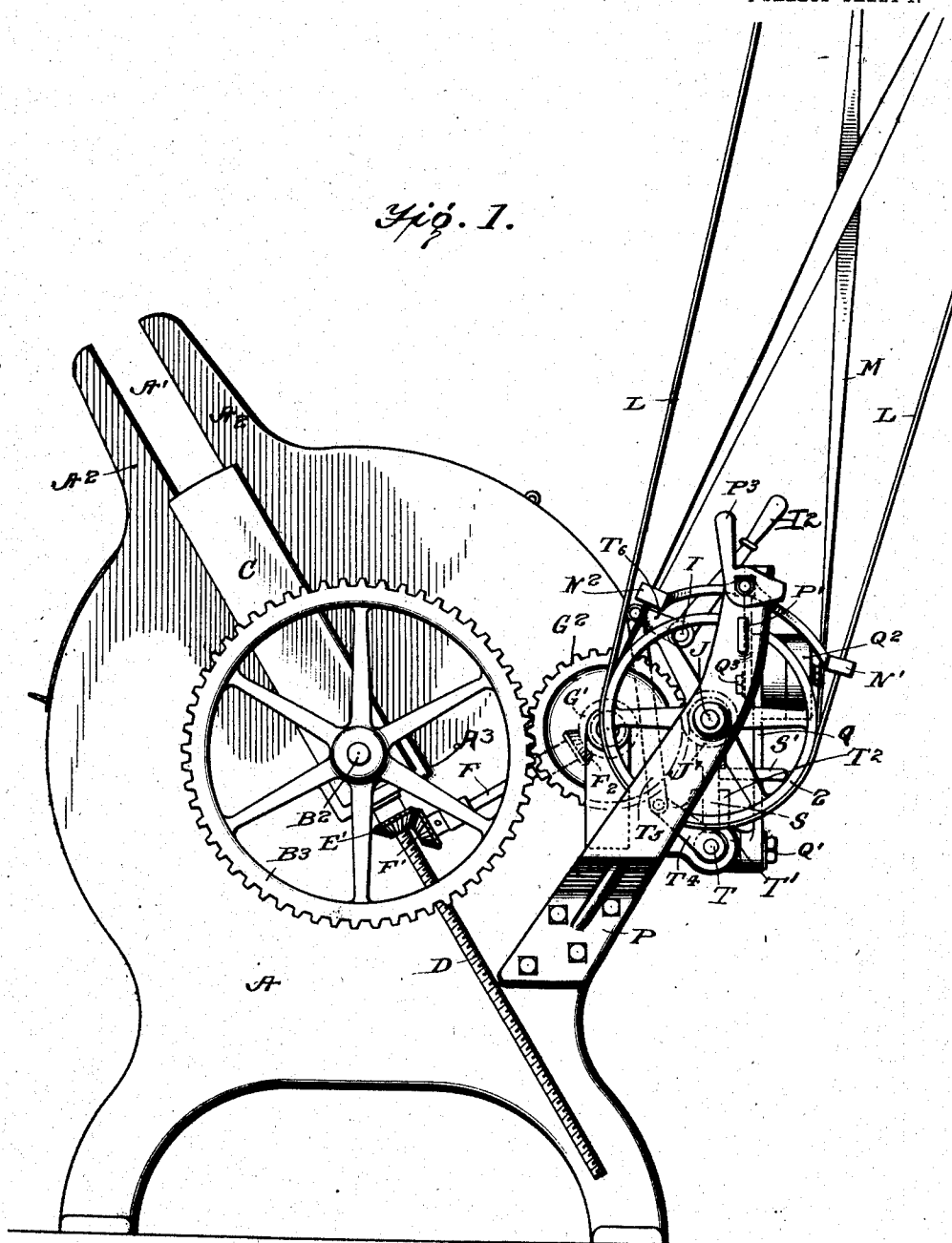
994,954.

J. C. ROSS.
WASHING MACHINE.
APPLICATION FILED MAY 18, 1908.

Patented June 13, 1911.

4 SHEETS—SHEET 1.

Fig. 1.



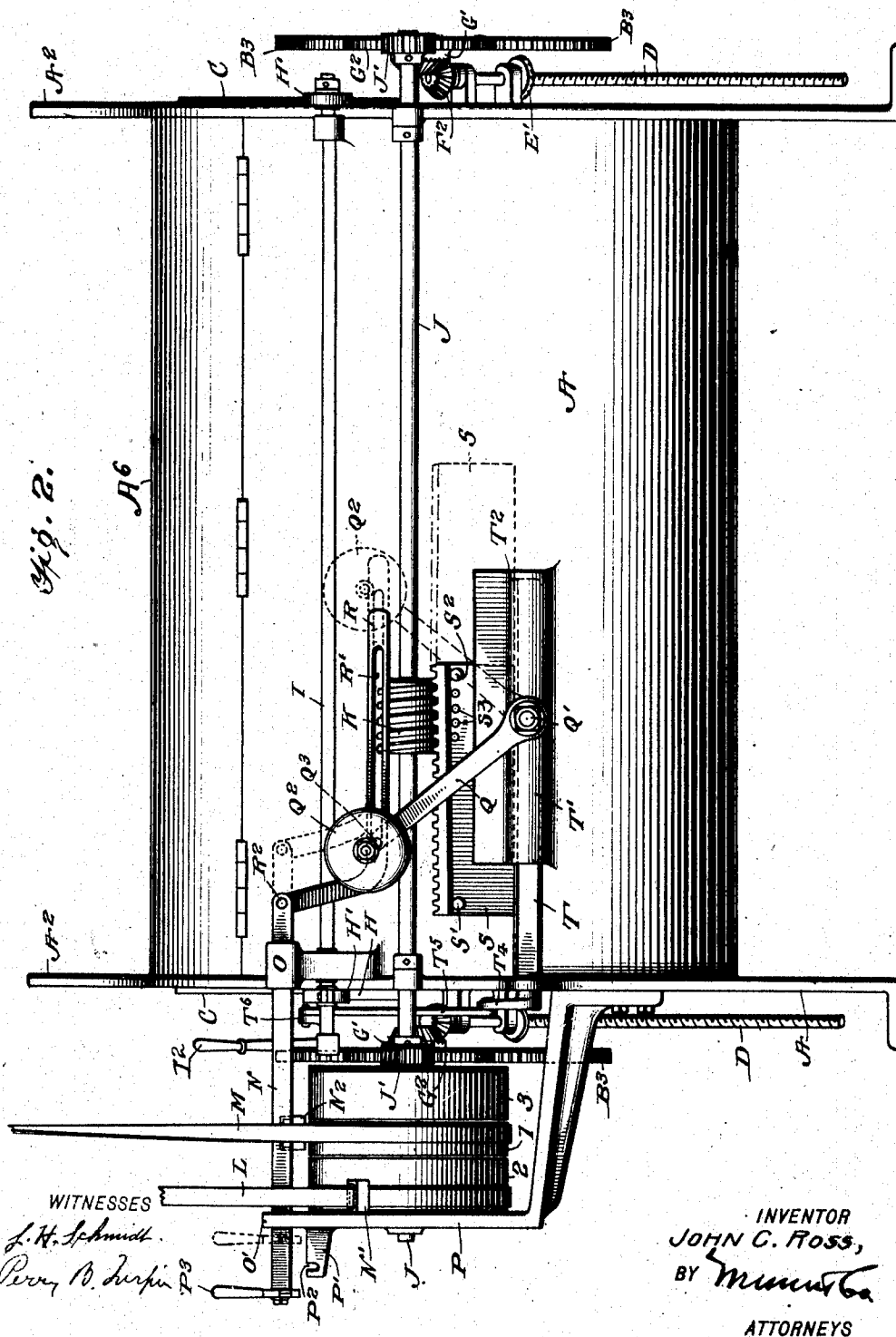
WITNESSES
L. H. Schmidt
Perry B. Durbin

INVENTOR
JOHN C. ROSS,
BY *Mann & Co.*

ATTORNEYS.

Patented June 13, 1911.

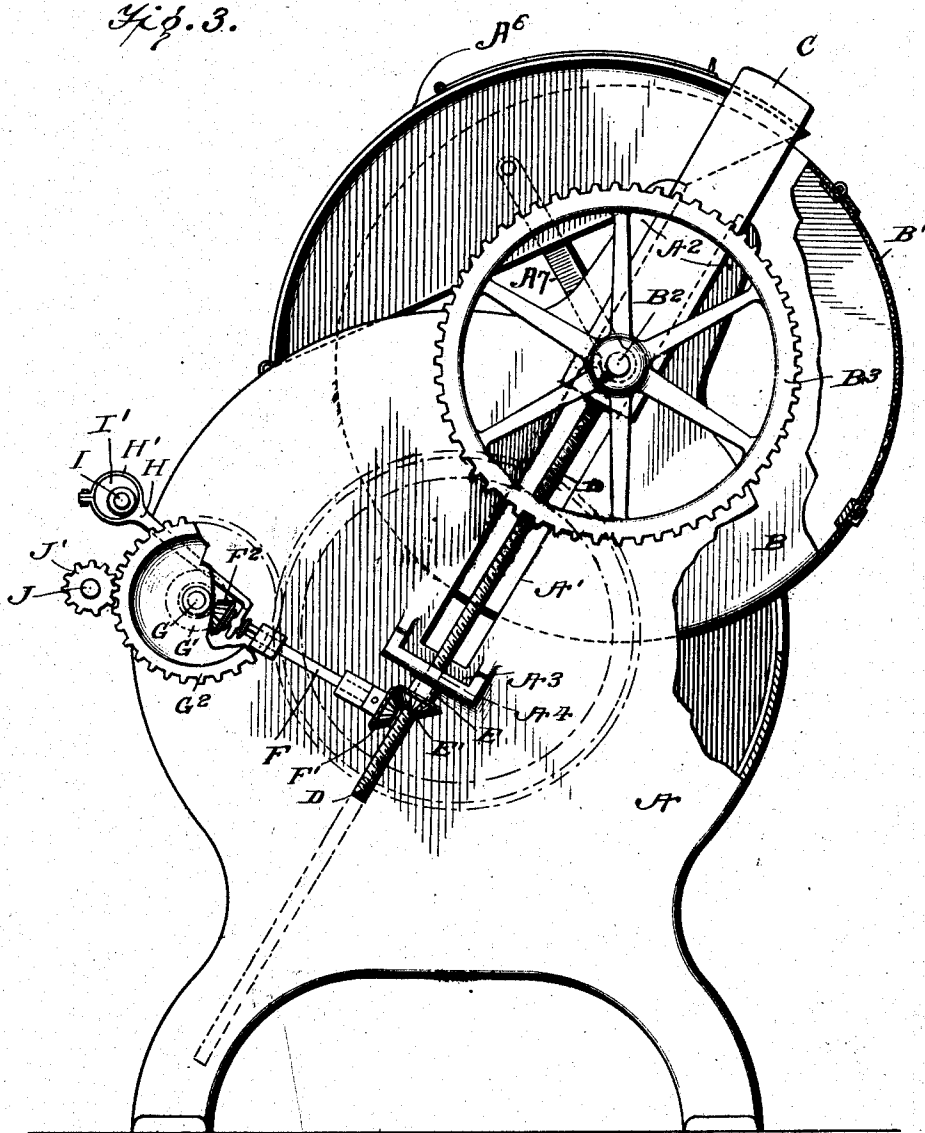
4 SHEETS-SHEET 2.



994,954.

J. C. ROSS.
WASHING MACHINE.
APPLICATION FILED MAY 18, 1908.

Patented June 13, 1911.
4 SHEETS—SHEET 3.

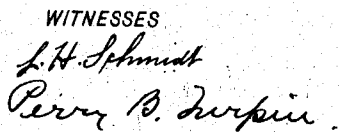


WITNESSES
L. H. Schmidt.
Perry B. Surpin.

INVENTOR
JOHN C. ROSS,
BY *Mum & Co.*
ATTORNEYS.

J. C. ROSS.
WASHING MACHINE.
APPLICATION FILED MAY 18, 1908.

4 SHEETS--SHEET 4.



INVENTOR
JOHN C. ROSS,
BY *Wm. H. H. H. H.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN C. ROSS, OF BUTTE, MONTANA, ASSIGNOR OF ONE-HALF TO THOMAS J. CASEY, OF BUTTE, MONTANA.

WASHING-MACHINE.

994,954.

Specification of Letters Patent. Patented June 13, 1911.

Application filed May 18, 1908. Serial No. 433,450.

To all whom it may concern:

Be it known that I, JOHN C. ROSS, a citizen of the United States, and a resident of Butte, in the county of Silverbow and State of Montana, have made certain new and useful Improvements in Washing-Machines, of which the following is a specification.

This invention is an improvement in washing machines and consists in certain novel constructions and combinations of parts as will be hereinafter described and claimed.

In the drawings—Figure 1 is a side view of a machine embodying my invention. Fig. 2 is a rear elevation thereof. Fig. 3 is a side view partly in section, the clothes drum being adjusted out of the casing so the clothing can be readily inserted in and removed from the said drum. Fig. 4 is a detail perspective view showing some of the driving connections detached, and Fig. 5 is a detail view showing the connection between the casing and one of the bearing bars C.

In carrying out my invention I employ a casing A, a clothes drum B and bearing bars C, in which the clothes drum is journaled. The bearing bars C are slidably supported in connection with the casing so they may slide in guide openings A' in the casing to the inner position shown in Fig. 1 for the washing operation and to the outer position shown in Fig. 3 for inserting or removing the clothes. The casing A is provided with a hinged cover or closure A² pivotally connected by a link A' with the movable bearing C adjacent to the pivot of the drum therein so as to effect an automatic opening and closing of the cover in the movement of the drum toward and from the casing.

The bearing bars C are preferably grooved at C' to engage with the casing, see Fig. 5, and the casing has its end plates extended at A² on opposite sides of the outer end of the slots A' to form a longer bearing for the bars C and to aid in supporting the same when adjusted to the position shown in Fig. 3. By this construction in connection with suitable operating means, the clothes drum may be adjusted within the casing as shown in Fig. 1 for the washing operation and then out of the casing or shell to the position shown in Fig. 3 for inserting and removing the clothes. This enables the operator to readily remove the clothing that has been

washed and refill the drum. In removing the clothing when the drum has been adjusted to the position shown in Fig. 3, its door B' may be opened on its hinge and the clothing easily withdrawn from the drum into a box or receptacle.

In the position shown in Fig. 1 the bearing bars C abut at their inner ends stops A³ provided on the side of the casing and these stops have openings A⁴ forming guides for screws D secured at one end to the inner ends of the bearing bars C and projecting thence through the guides A³ and receiving nuts E which being properly turned, operate upon the screws D to move the said screws longitudinally and thus adjust the bearing bars between the positions shown in Figs. 1 and 3 of the drawings. By preference the nuts E are provided with bevel pinions E' and the screws D are made one right hand and the other left hand as best shown in Figs. 2 and 4 of the drawings.

Gearing is provided for turning the nuts E and this gearing as shown includes connecting shafts F having bevel pinions F' meshing with their respective pinions E' and bevel pinions F², which mesh with bevel pinions G' on shafts G, when adjusted into engagement with the said pinions G' by the mechanism presently described. In this connection it will be noticed that the bevel pinions F² are secured against rotation upon and movable along their shafts F so they may be set into mesh with the pinions G' when the parts are in the position shown in Figs. 3 and 4, or may be adjusted out of mesh with said pinions G' when the parts are in the position shown in Fig. 1. Thus, in adjusting the clothes drum to and from the position shown in Fig. 3, it is desirable for the pinions F² to be in mesh with their pinions G', while when the clothes drum is in the position shown in Fig. 1, it is desirable to throw the pinions F² out of mesh, so the feeding of the drum into and out of the casing will not be carried on while the washing operation is being proceeded with. To this end I provide means for shifting the pinions F² along their shafts F comprising shifting bars H connected to pinions F² and having straps H' mounted on eccentrics I' on a rock shaft I, having a handle I², by which it may be conveniently turned

between the positions shown in Figs. 1 and 4 in order to set the pinions F^2 into and out of mesh with their pinions G' .

The shafts G are driven from a main shaft J by means of gears J' on the main shaft, meshing with gears G^2 on the shafts G and manifestly by turning the main shaft in one direction or the other, the shafts F may be operated in one direction or the other to turn the nuts E in the desired direction to either operate the clothes drum to the position shown in Fig. 3 out of the casing or back into the casing as will be understood from Fig. 1, and the means for turning the shaft J in one direction or the other will be presently described.

Gearing is also provided between the main shaft J and the journals B^2 of the clothes drum and this is preferably effected by providing gears B^3 on the journals B^2 , which gears B^3 are meshed with the gears G^2 when the drum is in washing position as shown in Fig. 1. By this construction I utilize the gears G^2 in turning the clothes drum first in one direction and then in the other as presently described, as well as in adjusting the clothes drum into and out of the casing.

For driving the main shaft, I provide in connection therewith, reversing mechanism which coöperates with the rock shaft I in the manner presently described. On the main shaft J I provide a worm wheel K and also provide on said shaft J a tight or drive pulley 1 and loose pulleys 2 and 3, which are operated by a straight belt L and a twisted belt M , and a shifter N is slidable longitudinally across the pulleys 1, 2 and 3 and has a belt loop N' for the straight belt L and a belt loop N^2 for the twisted belt M , so that as the bar N is adjusted from the full line position shown in Fig. 2 to the dotted line position shown in the same figure, it will move the twisted belt M from the drive pulley 1 on to the loose pulley 3 and will move the straight belt L from the loose pulley 2 on to the tight pulley 1, and as belts L and M are driven from the same drive pulley on the line shaft, it is obvious that one of the belts L and M when on the drive pulley I will turn the drive shaft in one direction and when the other belt is on said drive pulley, the shaft J will be driven in the opposite direction. The bar N is movable longitudinally in a guide O upon the casing and a guide O' on a frame P mounted at the end of the casing, and this bar is adjusted between its different positions by means of a rocking arm Q pivoted at its lower end Q' , weighted at its upper end Q^2 , and provided at its upper end Q^2 with a pin Q^3 , operating in a slot R' of a link R which connects pivotally at R^2 with the inner end of the shifter bar N . The lever is caused to move between its full and dotted line positions by the operation of a rack bar

S , which is movable into and out of mesh with the worm K on the shaft J and when meshed with the said worm K will be operated thereby in a longitudinal direction and caused to travel between the positions shown in full and dotted lines Fig. 2, and when so moved, the rack bar S will operate the arm Q by means of pins S' and S^2 projecting from the rear face of the rack bar in position to engage with the opposite sides of the rocking lever, as best shown in Figs. 2 and 4 of the drawings. In this operation of the rack S it will be noticed that if the parts be in the position shown in full lines Fig. 2, and the rack S be moved to the right toward the dotted line position, it will, after it has finished a portion of its stroke, engage by its pin S' with the arm Q and gradually turn said arm on its pivot Q' toward a vertical position and after it has passed the vertical position the arm Q will swing by gravity toward its dotted line position and striking the right hand end wall of the slot R' , see Fig. 2, will operate to forcibly move the shifter bar N to the dotted line position shown in Fig. 2, thus shifting the twisted belt M on to the idle pulley 3 and the straight belt L on to the drive pulley 1. The drive pulley 1 will then reverse its movement and the shaft J will be turned in the reverse direction and the direction of the clothes drum geared with the said shaft J will also be reversed. Then the rack bar S will begin to slowly move toward the left from the dotted toward the full line position shown in Fig. 2 and, as it continues its movement, its pin S^2 will engage with the arm Q and gradually turn same toward and past a vertical position, and when it turns past the vertical position the arm Q will swing to the full line position shown in Fig. 2 and by engagement with the end wall at the left of the slot R' , see Fig. 2, will readjust the shifting bar N to the full line position shown in Fig. 2, thus replacing the twisted belt M upon the drive pulley 1 and again reversing the direction of the several parts geared with the shaft J .

The rack bar is provided with a series of holes S^3 receiving the pin S^2 , so the said pin may be adjusted to vary the number of revolutions that will be given to the clothes drum before the latter reverses.

As before suggested the rack bar S is movable into and out of mesh with its worm K as it is advisable to dispense with the reversing operation while the clothes drum is being adjusted into and out of the casing and to this end I mount the rack bar S on a cam shaft T , suitably journaled at T' in a housing T^2 , which also forms a guide for the rack bar S and the shaft T is provided with a crank arm T^3 connected by a coupling link T^4 with a crank arm T^5 on the rock shaft I , so the said rock shaft I may operate

to throw the rack bar into mesh with the worm wheel K and to properly time such operation with the adjusting of the bevel pinions F² into and out of mesh with the bevel pinions G' as before described. When the rack bar S is out of engagement with the worm K it rests upon the flat face of the cam shaft T, as shown in Fig. 4, while a partial rotation of this shaft brings its curved portion beneath the bar and raises it into position, as shown in Fig. 2.

For locking the shifter N from movement when desired, I provide the frame P with an arm P' having a notch P² into which a latch P³ pivoted to the shifter N may be set when it is desired to so lock the shifter.

In the operation of the described construction it is manifest I provide for automatically reversing the direction of movement of the clothes drum so the latter may be turned first in one direction for a desired number of revolutions and then in the reverse direction and so on, and I also provide means operating in connection with said reversing mechanism whereby to adjust the drum into and out of the casing to aid in conveniently manipulating the clothes in placing and removing the same.

I claim—

1. The combination herein described, of a casing, a clothes drum movable into and out of the casing, bearing bars having bearings for the drum and slidably supported in connection with the casing, a gearing extending from said bars and means meshed with the gearing upon said bars whereby to move the same relatively to the casing in adjusting the drum between its different positions substantially as set forth.

2. The combination with a casing having guideways, of bearing bars slidable in said guideways, a clothes drum journaled in the bearing bars, and movable therewith into and out of the casing, screw shafts connected with the bearing bars, and nuts operating in connection therewith whereby to feed the screw shafts longitudinally in adjusting the bearing bars relatively to the casing.

3. The combination of a casing having slots forming guideways and extensions on opposite sides of the outer ends of the said slots, bearing bars slidable in the slots of the casing, screw shafts connected with the bearing bars and a clothes drum journaled in the bearing bars, and means operating upon said screw shafts whereby to feed the same longitudinally in adjusting the bearing bars in the slots of the casing.

4. The combination of a casing, a clothes drum, bars having bearings for the clothes drum, screws connected with said bars, nuts operating on the said screws, a drive shaft, and a gearing between the drive shaft and said nuts substantially as set forth.

5. The combination of a casing, a clothes

drum movable into and out of the casing, bearing bars having bearings for the drum, screws connected with said bearing bars, nuts on the said screws, a drive shaft, gearing between the drive shaft and the nuts, and a throw-out mechanism having devices for throwing said gearing into and out of operation substantially as set forth.

6. The combination with a casing, of a clothes drum movable into and out of the casing, a drive shaft, gearing from the drive shaft to move said drum into and out of the casing, means for reversing the direction of movement of said drive shaft, and a throw out mechanism for said reversing means connected to simultaneously adjust the drum moving gearing into and out of operation.

7. The combination of a casing, a clothes drum movable into and out of the casing, a drive shaft, intermediate connections between the drive shaft and the drum whereby to move the said drum into and out of the casing, a rock shaft, eccentrics on the rock shaft, and devices operated by the eccentrics whereby the drum moving means may be adjusted into and out of operation substantially as set forth.

8. The combination of a casing having slots, bearing bars fitted in said slots and grooved longitudinally to engage with the casing whereby the bars may slide longitudinally in the casing; a clothes drum movable into and out of the casing and journaled in the bearing bars, stops on the casing for limiting the inward movement of the bearing bars and provided with openings, screws connected with the bearing bars and guided in the openings of the said stops, nuts turning on said screws and provided with beveled gears, connecting shafts having beveled gears meshing with those of the nuts, a drive shaft, and gearing between the drive shaft and the connecting shafts substantially as set forth.

9. The combination of a casing, a clothes drum movable into and out of the casing, a drive shaft, gearing between the drive shaft and the drum whereby to revolve the latter when in the casing, and means operated from the drive shaft whereby to move the drum into and out of the casing substantially as set forth.

10. The combination in a washing machine, of a casing, a clothes drum movable into and out of the casing, a drive shaft, a gearing between the drive shaft and the drum to revolve said drum, intermediate connections between the drive shaft and drum to move said drum into and out of the casing, a reversing mechanism for reversing the motion of the drive shaft, and a throw out mechanism whereby the reversing mechanism may be adjusted into and out of operation.

11. The combination of a casing, a clothes

drum movable into and out of the casing, bearing bars slidable relatively to the casing and in which the drum is journaled, screws connected with the bearing bars, nuts turning on said screws to feed the same longitudinally, a drive shaft, gearing between said shaft and the screw operating nuts, means for revolving the clothes drum from the drive shaft, a reversing mechanism for the drive shaft, means for throwing the reversing mechanism into and out of operation, and means for throwing the nut operating gearing into and out of operation.

12. The combination of a casing, a clothes receptacle therein having a gear upon its shaft, a driving pinion meshing with said gear, a driving shaft geared to said pinion, and means for shifting said receptacle and its shaft gear into and out of mesh with said pinion.

13. The combination of a casing, a clothes receptacle therein having a gear upon its shaft, a driving pinion meshing with said gear, a driving shaft geared to said pinion, means for shifting said receptacle and its shaft gear into and out of mesh with said pinion, and connections from said drive shaft for actuating said shifting means.

14. The combination of a casing, a clothes drum movable into and out of said casing, a drive shaft, gearing between the drive shaft and the drum to revolve the same within the casing, intermediate connections between the drive shaft and drum to move the same into and out of the casing, a reversing mechanism for reversing the motion of the drive shaft, and a throw out mechanism having means for simultaneously adjusting the reversing mechanism and drum moving means into and out of operation.

15. The combination of a casing, a drum movable into and out of the casing, a drive shaft, intermediate gearing between said shaft and drum to move the same into and out of the casing, and means for reversing the direction of travel of said shaft and gearing in the movement of the drum into and out of the casing.

16. The combination with a casing, of a clothes receptacle rotatably mounted therein, a screw mounted upon the casing and connected to the bearing at one end of said receptacle and cooperating with an actuating gear upon said casing to move the receptacle toward and from the center thereof, and means for effecting a corresponding movement of the bearing at the opposite end of the receptacle.

17. The combination with a casing, of a clothes receptacle rotatably mounted therein, means mounted upon the casing and connected with said receptacle to move the receptacle toward and from the center of the casing, a driving shaft, power applying means, a shifter driving means upon said

shaft for automatically shifting said applying means to reverse the direction of movement of said shaft, and a shifting driving connection upon said casing movable into and out of driving connection with said shaft for actuating said receptacle moving means.

18. The combination with a casing, of a receptacle rotatably mounted therein, means for rotating the receptacle, driving means mounted upon said casing and cooperating with said rotating means, means to shift the receptacle toward and from the center of the casing, and power connections therefrom having a shiftable member for controlling the application of power to either said rotating means or said shifting means.

19. The combination with a casing, of a clothes receptacle rotatably mounted therein, means for rotating said receptacle, driving means mounted upon said casing and cooperating with said rotating means, means to shift the receptacle toward and from the center of the casing, means for automatically reversing the direction of travel of the driving means for rotating the casing, and power connections shiftable to actuate either said driving means or said shifting means.

20. The combination with a casing, of a rotatable clothes receptacle having bearings mounted for sliding movement upon said casing, a shaft and driving gears upon said casing connected to said bearings, a power shaft on said casing, a driving connection from said power shaft to said driving gears, gearing arranged to rotate said receptacle, and means for shifting said driving gear into operative relation with said power shaft and said rotating gearing out of operative relation with the power shaft.

21. The combination with a casing, of a clothes receptacle mounted for rotary movement therein and for sliding movement toward and from the center of the casing, a driving gear for rotating said receptacle, a gearing for sliding said receptacle, a power shaft, a driving connection therefrom for actuating said gear for rotating the receptacle, and a transmitting shaft having a member shiftable relative to said driving connection to actuate said gearing for moving said receptacle toward and from the center of the casing.

22. In a machine of the nature described, the combination of a relatively stationary hollow body, upright ways at each end of said body, a member slidably confined in each of said ways and provided with a bearing, a hollow, perforated, rotary cylinder located within said body and having journals resting in said bearings, mechanism for raising said slidable members, and a door for said body in operative relation with said slidable members.

23. In a machine of the nature described,

the combination of a relatively stationary
hollow body provided with an upper open-
ing, a hollow, perforated, rotary cylinder
located within said body, adjacent band pul-
leys, cylinder-rotating gearing in operative
5 relation with said cylinder and one of said
pulleys, and cylinder-hoisting mechanism in

operative relation with said cylinder and the
other of said pulleys, and a belt-shifter ad-
jacent said pulleys.

JOHN C. ROSS.

Witnesses:

DAVID P. O'CONNOR,
THOMAS J. CASEY.