Aug. 25, 1931. C. ROBERTS 1,820,032

CLOTHES WRINGER

Filed July 26, 1928 3 Sheets-Sheet 1

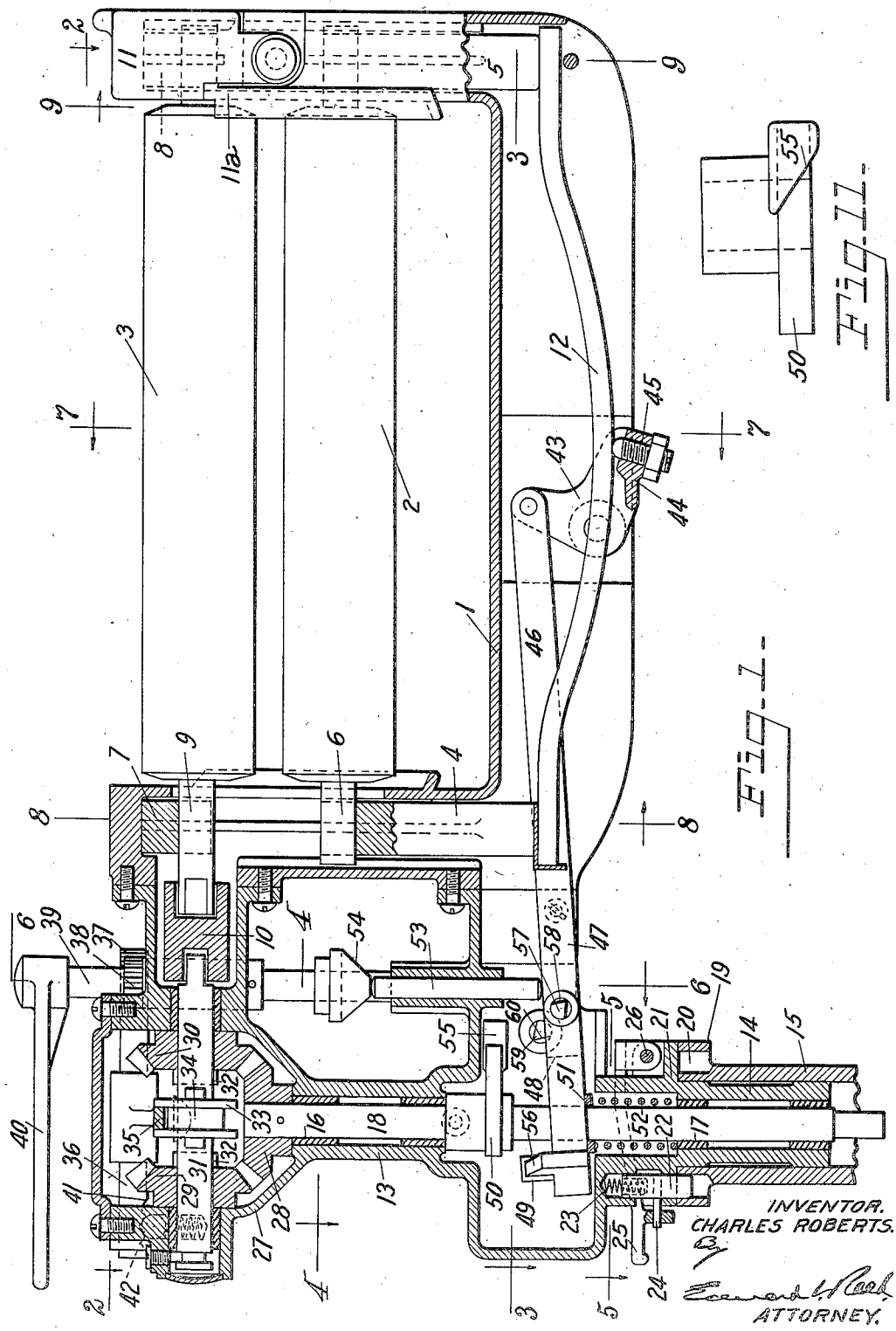


Fig. 1.

Fig. 11.

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CLOTHES WRINGER

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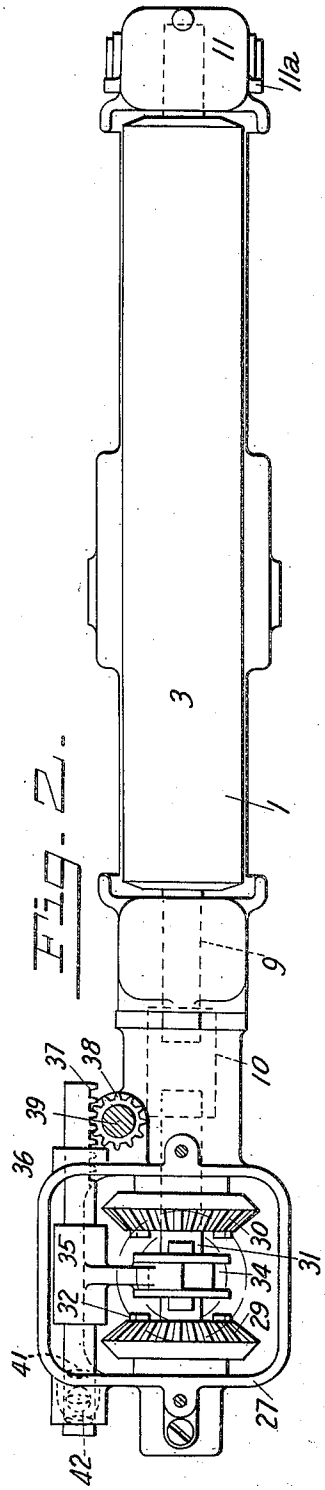


Fig. 2.

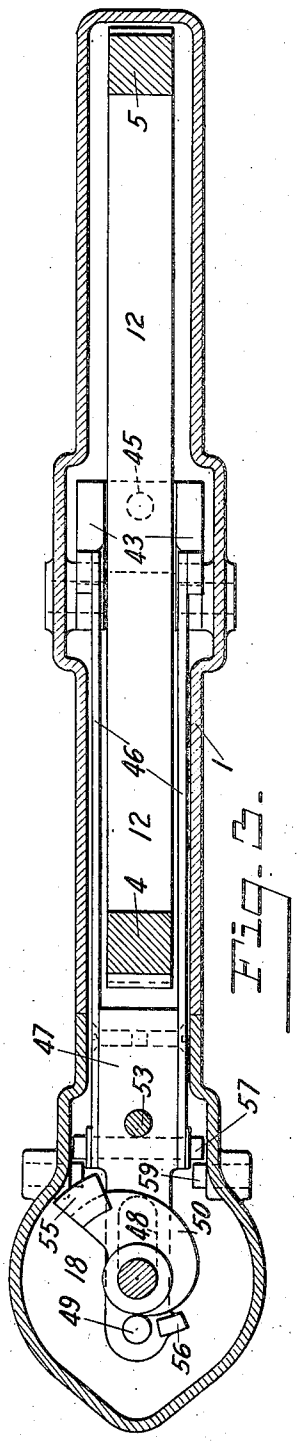


Fig. 3.

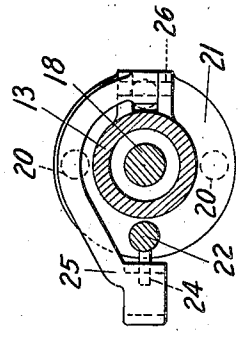


Fig. 5.

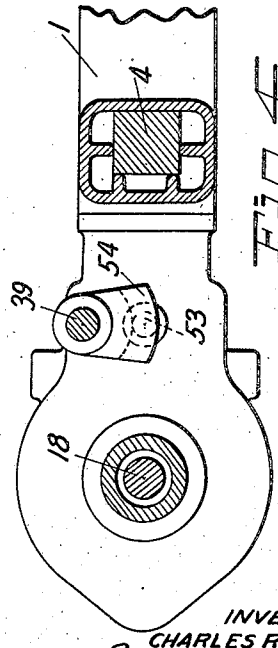


Fig. 4.

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CLOTHES WRINGER

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Fig. 6.

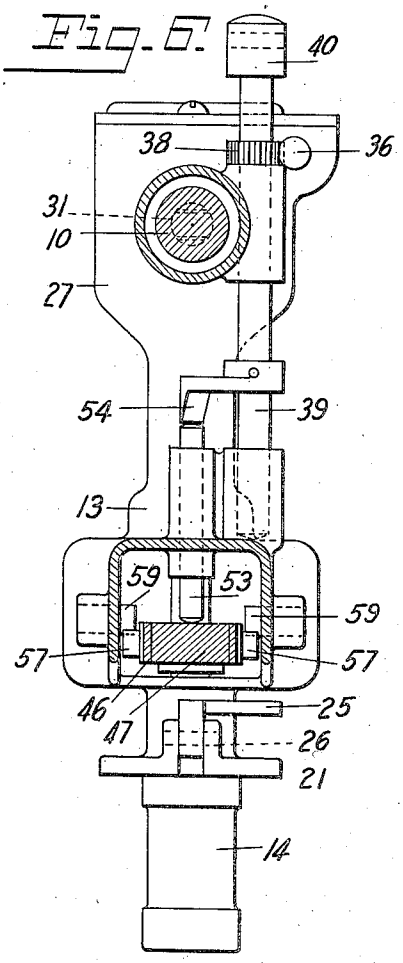


Fig. 7.

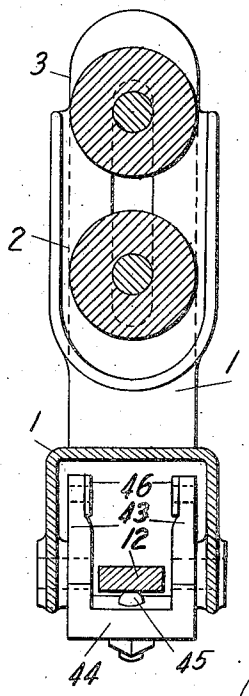


Fig. 8.

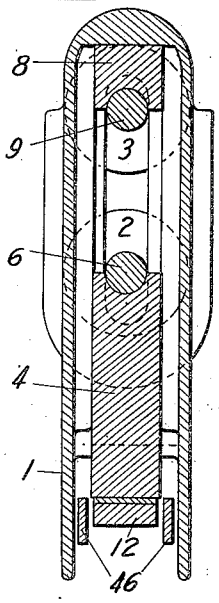


Fig. 10.

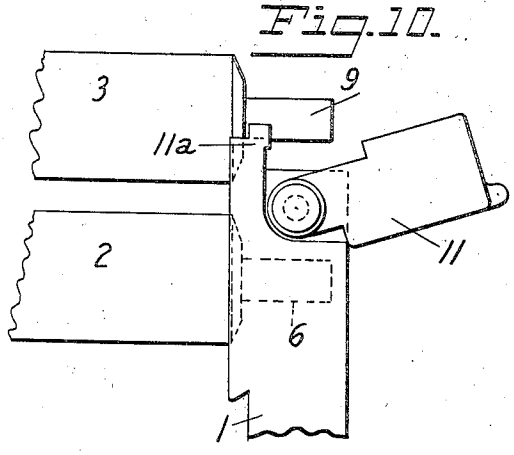
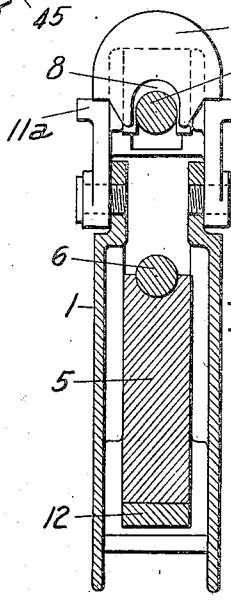


Fig. 9.



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UNITED STATES PATENT OFFICE

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CLOTHES WRINGER

Application filed July 26, 1928. Serial No. 295,538.

This invention relates to clothes wringers and more particularly to a power operated clothes wringer.

One object of the invention is to provide a clothes wringer with power operated means for controlling the application of pressure to the wringer rollers.

A further object of the invention is to provide a clothes wringer with automatically controlled means for causing pressure to be applied to the rollers when the latter are connected with the driving mechanism and for relieving that pressure when the rollers are disconnected from the driving mechanism.

A fur her object of the invention is to provide such a mechanism which will be simple in its construction and operation and will require no action on the part of the operator other than that normally required in the operation of the wringer.

A further object of the invention is to provide such a wringer from which the upper roller may be quickly and easily removed.

Other objects of the invention will appear as the invention is described in detail.

In the accompanying drawings Fig. 1 is a longitudinal sectional view taken through a wringer embodying my invention and showing one end of the frame in elevation; Fig. 2 is a section taken on the line 2—2 of Fig. 1; Fig. 3 is a section taken on the line 3—3 of Fig. 1; Fig. 4 is a section taken through the driving mechanism on the line 4—4 of Fig. 1; Fig. 5 is a section taken on the line 5—5 of Fig. 1; Fig. 6 is a vertical section taken on the line 6—6 of Fig. 1; Fig. 7 is a vertical section taken on the line 7—7 of Fig. 1; Fig. 8 is a section taken on the line 8—8 of Fig. 1; Fig. 9 is a section taken on the line 9—9 of Fig. 1; Fig. 10 is a detail view showing the movable bearing for the upper roller; and Fig. 11 is a detail view of the double cam.

In these drawings I have illustrated one embodiment of my invention but it will be understood that this particular embodiment has been chosen for the purposes of illustration only and that the mechanism may take various forms without departing from the spirit of the invention.

In that particular embodiment here illustrated the wringer comprises a main frame 1 which is preferably U-shaped in form and has its upper end open. As shown the frame is channel shaped in cross section, the bearings and operating mechanism being arranged within the channel. In the present arrangement the lower roller 2 is mounted for bodily movement toward and from the upper roller 3 and to this end I have slidably mounted in the channelled end members of the main frame bearing blocks 4 and 5 upon which the ends of the shaft 6 of the lower roller rest. Bearings 7 and 8 are carried by the respective ends of the main frame to receive the respective ends of the shaft 9 of the upper roller. The shaft 9 is connected with a driving mechanism by means of a coupling member 10 one end of which is shaped to receive the left hand end of the shaft 9 and to cause the same to rotate therewith. This coupling member serves to support the adjacent end of the roller shaft but the shaft may be readily withdrawn therefrom. The outer or right hand end of the upper roller is held against downward movement by a supporting member 11*a* carried by the main frame, so that this roller normally has but a limited downward movement and its upward movement is positively limited by the bearings 7 and 8. The bearing 8 is preferably movable into and out of operative relation to the adjacent end of the shaft 9 and, as here shown, it is carried by a yoke 11 which is pivotally mounted on the main frame so that it may be swung outwardly, to the position shown in Fig. 10, to release the shaft and permit the upper roller to be lifted from the frame.

The bodily movable roller is acted upon by a resilient device to press the same toward the other roller and thereby subject the two rollers to pressure. In the present instance, in which the lower roller is movable toward and from the upper roller, the resilient device is in the form of a bar spring 12 arranged in the channel-shaped transverse portion of the main frame and having its end

portions arranged to support the slidable bearing blocks, 4 and 5. Pressure is applied to the central portion of the spring 12 to lift the lower roller and to then place the spring under compression and cause a desired degree of pressure to be exerted on the two rollers.

The main frame further comprises a laterally extending portion 13 which, in the present instance, is formed separate from but rigidly secured to the U-shaped portion of the frame. This laterally extending part of the frame has a depending trunnion 14 which is rotatably mounted in the upper end of a hollow standard 15 upon which the wringer is mounted. The laterally extending portion of the frame has bearings 16 and 17 in which is journaled a driving shaft 18, the lower end of which projects below the trunnion 14 and is adapted to be operatively connected with a main shaft mounted within the hollow standard 15 but not here shown. The connection between the driving shaft 18 and the main shaft is a detachable one so that the wringer as a whole may be lifted from the standard 15. The wringer is swung about the axis of the trunnion 14 to properly position the same with relation to the work and it may be held in adjusted positions in any suitable manner. As here shown, the standard 15 has at its upper end a circumferential flange 19 provided with a series of apertures or sockets 20. The frame has a flange or head 21 arranged about the upper end of the trunnion 14 and resting upon the flanged upper end of the standard. Slidably mounted in this head is a bolt or pin 22 adapted to enter any one of the sockets 20 in the flange 19 and acted upon by a spring 23 which presses the same toward its operative position. A pin 24 secured to the bolt 22 extends through the slot in the side of the head 21 and is connected with a lever 25 near one end thereof, the other end of the lever being pivotally mounted, as shown at 26, on that side of the head 21 opposite the pin 24, thus giving that end of the lever to which the pin 24 is connected a relatively long movement and permitting the bolt 22 to be withdrawn from the socket in which it is seated, thereby releasing the wringer for movement about a vertical axis. When the lever 25 is released the bolt 22 will bear upon the upper face of the flange 19 until it is brought into line with one of the sockets and will then enter that socket.

The upper end of the laterally extending portion of the frame is in the form of a housing 27. Mounted in this housing is a beveled gear 28 which is rigidly secured to the upper end of the driving shaft 18. The beveled gear 28 meshes with two other beveled gears 29 and 30 rotatably mounted on a shaft 31 journaled in horizontal bearings in the housing 27 and having its right hand end connected through the coupling member 10 with the shaft 9 of the upper wringer roller 3, this coupling being of such a character and so connected with the two shafts as to form a flexible connection between the same. Each of the beveled gears 29 and 30 has on its inner side a clutch member 32 adapted to be engaged by a clutch member 33 splined on the shaft 31 and adapted to engage the clutch 32 on either of the beveled pinions 29 and 30, or to be moved to an intermediate position in which both beveled gears will be disconnected from the shaft, and the wringer will be idle. The clutch member 33 may be actuated in any suitable manner but, as here shown, the clutch has a circumferential groove 34 to receive the arms of a yoke 35 which is rigidly secured to a bar 36 slidably mounted in horizontal bearings in the housing 27. One end of the bar 26 extends beyond the housing 27 and is provided with rack teeth 37 which mesh with a pinion 38 on a vertical shaft 39 having secured to its upper end and operating handle 40 by means of which the pinion may be rotated in impart longitudinal movement to the clutch shifting bar 36. The bar may, if desired, be provided in one edge with a series of recesses 41 adapted to be engaged by a spring actuated detent 42, which thus serves to yieldably retain the bar and the clutch in their adjusted positions.

Any suitable means may be provided for controlling the action of the spring 12 on the movable lower wringer roller 2. In the present mechanism I have employed a bell crank lever 43 comprising two members arranged on the respective sides of the spring 12 and pivotally mounted on the respective side walls of the channel frame 1. The lower arms of the two members of the bell crank are rigidly connected by a transverse bar 44 having a part adapted to engage the lower surface of the spring 12 near the center thereof. As here shown, a stud 45 is screw threaded into the bar 44 and engages the spring, this stud being adjustable to vary the compression which will be imparted to the spring by a given movement of the bell crank. The upper arms of the two members of the bell crank are connected to a pitman which, in the present instance, comprises two parallel bars 46 spaced apart and pivotally connected at one end with the respective arms of the bell crank. The bars 46 are rigidly connected at their other ends with a plate 47 which is arranged between them and which extends beyond the ends of the bars and is provided with a slot 48 through which the driving shaft 18 extends. Secured to and extending upwardly from the plate 47 of the pitman beyond the shaft 18 is a stud 49 adapted to be moved into and out of the path of a cam 50 rigidly secured to the shaft 18 and so shaped that when it engages the stud 49 it will impart longitudinal movement to the pitman

46 and cause the bell crank to place the spring 12 under compression. A collar 51 mounted about the shaft 18 beneath the plate 47 of the pitman is acted upon by a spring 52 which tends to lift the pitman and move the stud 49 into the path of the cam 50. This upward movement of the pitman is controlled by the clutch shifting device which controls the connection between the driving mechanism and the wringer rollers. As here shown, a plunger 53 is slidably mounted in the laterally extending portion of the wringer frame and rests upon the plate 47 of the pitman. The shaft 39 of the clutch shifting device has rigidly secured to its lower end a cam plate 54 provided with oppositely inclined surfaces and so arranged that when the clutch 33 is in its neutral position the intermediate or high point of the cam 54 will be in contact with the end of the plunger 53, thereby holding that plunger and the pitman upon which it rests in their lowermost positions. When the clutch is shifted into operative engagement with either of the beveled pinions 29 or 30 the cam 54 will be moved out of line with the plunger, thereby releasing the pitman and permitting the same to be elevated by the spring 52 to move the projection 49 into the path of the cam 50. The action of the cam on the stud imparts the lengthwise movement to the pitman, rocks the bell crank about its axis and places the spring under compression. As the cam 50 completes its action on the stud 49 a second cam 55, which in the present instance is carried by the cam 50, engages a lug 56 on the pitman adjacent to the stud 49 and forces the pitman downwardly against the action of the spring 52, thus carrying the stud 49 out of the path of the cam 50 and permitting the cam to rotate with the shaft 18 without acting upon the stud or pitman. Means are provided for retaining the pitman in its depressed position and for holding the same against forward movement due to the pressure exerted thereon by the spring 12. As here shown, the pitman has projecting from the opposite sides thereof two detents or studs 57, the forward faces of which are flat and preferably slightly inclined, as shown at 58. Mounted on the main frame on opposite sides of the pitman are two similar studs 59 having their rear faces flattened and slightly inclined, as shown at 60. When the pitman is moved downwardly by the action of the cam 55 the flat faces 58 and 60 of the studs 57 and 59 will be brought into line and these studs will prevent any substantial forward movement being imparted to the pitman. Because of the inclined arrangement of the faces of the studs the stationary studs partially overhang the movable studs thus preventing the upward movement of the pitman by the spring 52. The parts remain in these positions so long as the wringer continues to operate. It will be noted that when the studs 57 and 59 are in operative engagement the pitman is located above its lowermost position. When the clutch shifting device is actuated to place the clutch in neutral the cam 54, through the plunger 53, will move the pitman downward far enough to permit the studs 57 thereon to pass beneath the stationary studs 59, thus releasing the spring 12. The expansion of the spring 12 moves the pitman forward until the studs 57 lie in a plane in front of the studs 59. The plunger 53 remains in engagement with the pitman but does not interfere with its longitudinal movement. The parts then remain in this position until the clutch is again shifted to connect the driving mechanism with the roller. This releases the plunger 53 and permits the pitman to move upwardly, the studs 57 pass upward in front of the fixed studs 59, and the stud 49 moves into the path of the cam 50. When the cam 50 engages the stud 49 and moves the pitman rearwardly the movable studs 57 pass above the stationary studs 59 to a position in the rear thereof and are again moved into operative engagement therewith when the pitman is depressed by the cam 55.

While I have shown and described one embodiment of my invention I wish it to be understood that I do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art.

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

1. In a clothes wringer, comprising a pair of rollers one of which is movable toward and from the other, and an operating device to drive one of said rollers, a normally inoperative spring to act on said movable roller and move the same toward the other roller, and means actuated by said operating device during the initial movement of said driven roller to render said spring operative.

2. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring acting on said movable roller, a driving mechanism, and means for connecting said driving mechanism with and disconnecting the same from one of said rollers, a power operated device to control the action of said spring on said movable roller, and means controlled by said connecting means to control the operation of said power operated device.

3. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring acting on said movable roller, and driving mechanism adapted to be connected with one of said rollers, a device to control the action of said spring on said movable roller, and means controlled by said driving mechanism to actuate said controlling device.

4. In a clothes wringer comprising a pair

of rollers one of which is movable toward and from the other, a spring acting on said movable roller, and driving mechanism adapted to be connected with one of said rollers, a device to control the action of said spring on said movable roller, means to establish an operative connection between said device and said driving mechanism and to interrupt said connection after said spring has been placed under compression, and means to retain said spring under compression after said connection has been interrupted.

5. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring acting on said movable roller, and driving mechanism adapted to be connected with one of said rollers, a device to control the action of said spring on said movable roller, an actuating device comprising a cam connected with said driving mechanism, connecting means, said cam being arranged to impart movement to said spring controlling device by said connecting means and also comprising means to interrupt the connection between said cam and said controlling device when said cam has completed a predetermined movement.

6. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring acting on said movable roller, driving mechanism, and means for connecting said driving mechanism with and disconnecting the same from one of said rollers, a device to control the action of said spring on said movable roller, means to operatively connect said device with said driving mechanism, and means controlled by the first mentioned connecting means for controlling the connection between said device and said driving means.

7. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring acting on said movable roller, driving mechanism, and means for connecting said driving mechanism with and disconnecting the same from one of said rollers, a device to control the action of said spring on said movable roller, a device connected with said driving mechanism to actuate said controlling device, one of said devices being movable into and out of operative relation to the other device, and means actuated by said connecting means to control the position of said movable device.

8. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring acting on said movable roller, driving mechanism, and means for connecting said driving mechanism with and disconnecting the same from one of said rollers, a device to control the action of said spring on said movable roller, a device connected with said driving mechanism to actuate said controlling device, one of said devices being movable into and out of operative relation to the other device, means actuated by said connecting means to control the position of said movable device, and means to cause said movable device to be moved to an inoperative position with relation to said other device when said actuating device has moved said controlling device to a predetermined position.

9. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring to press said movable roller toward said other roller, driving mechanism, means comprising a clutch to connect said driving mechanism with one of said rollers, and an actuating device for said clutch, a device to control the action of said spring on said movable roller, a device connected with said driving mechanism for actuating said controlling device, means controlled by said clutch actuating device to establish an opera ive connection between the last mentioned actuating device and said controlling device, and means actuated by said driving mechanism to interrupt said connection when said controlling device has been moved to a predetermined position.

10. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring to press said movable roller toward said other roller, driving mechanism, means comprising a clutch to connect said driving mechanism with one of said rollers, and an actuating device for said clutch, a device to control the action of said spring on said movable roller, a device connected with said driving mechanism for actuating said controlling device, means controlled by said clutch actuating device to establish an operative connection between the last mentioned actuating device and said controlling device, means actuated by said driving mechanism to interrupt said connection when said controlling device has been moved to a predetermined position, and means to hold said controlling device in the position to which it has been moved when said connection has been interrupted.

11. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring to press said movable roller toward said other roller, driving mechanism, means comprising a clutch to connect said driving mechanism with one of said rollers, and an actuating device for said clutch, a device to control the action of said spring on said movable roller, a cam connected with said driving mechanism, means controlled by said clutch actuating device to move a part of said controlling device into the path of said cam, and means controlled by said driving mechanism to move said part out of the path of said cam after said cam has

imparted movement to said controlling device.

12. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring to press said movable roller toward said other roller, driving mechanism, means comprising a clutch to connect said driving mechanism with one of said rollers, and an actuating device for said clutch, a device to control the action of said spring on said movable roller and having a part movable in either of two directions, a cam connected with said driving mechanism to move said part in a direction to operate said controlling device, means controlled by said clutch actuating device to move said part of said controlling device in another direction into the path of said cam, means controlled by said driving mechanism to move said part out of the path of said cam after said cam has imparted movement to said controlling device, and a detent carried by said part of said controlling device and movable by the last mentioned movement of said part into a position to retain said part out of the path of said cam.

13. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring to press said movable roller toward said other roller, a driving mechanism, a cam connected with said driving mechanism, a device to control the action of said spring on said movable roller and having a part to be engaged by said cam to impart operative movement to said controlling device, means to move said part of said controlling device into the path of said cam, and means controlled by said driving mechanism to move said part out of the path of said cam after said cam has imparted movement to said controlling device.

14. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring to press said movable roller toward said other roller, a driving mechanism, a cam connected with said driving mechanism, a device to control the action of said spring on said movable roller and having a part to be engaged by said cam to impart operative movement to said controlling device, means to move said part of said controlling device into the path of said cam, means controlled by said driving mechanism to move said part out of the path of said cam after said cam has imparted movement to said controlling device, and a detent carried by said part of said controlling device and so arranged that when said part has been moved out of the path of said cam said detent will hold said controlling device in the position to which it has been moved by said cam.

15. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring to press said movable roller toward said other roller, a driving mechanism, a cam connected with said driving mechanism, a device to control the action of said spring on said movable roller and having a part to be engaged by said cam to impart operative movement to said controlling device, means to move said part of said controlling device into the path of said cam, means controlled by said driving mechanism to move said part out of the path of said cam after said cam has imparted movement to said controlling device, a detent carried by said part of said controlling device and so arranged that when said part has been moved out of the path of said cam said detent will hold said controlling device in the position to which it has been moved by said cam, and means to render said detent inoperative and permit said part of said controlling device to be again moved into the path of said cam.

16. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring acting on said movable roller, and means for driving one of said rollers, a device to control the action of said spring on said roller comprising a pitman mounted for both longitudinal movement and transverse movement, a cam carried by said shaft to impart longitudinal movement to said pitman, a part carried by said pitman and movable into and out of the path of said cam by the transverse movement of said pitman, a spring tending to move said part of said pitman into the path of said cam, and means for moving said part of said pitman out of the path of said cam after said cam has imparted a predetermined longitudinal movement to said pitman.

17. In a clothes wringer comprising a pair of rollers one of which is movable toward and from the other, a spring acting on said movable roller, and means for driving one of said rollers, a device to control the action of said spring on said roller comprising a pitman mounted for both longitudinal movement and transverse movement, a cam carried by said shaft to impart longitudinal movement to said pitman, a part carried by said pitman and movable into and out of the path of said cam by the transverse movement of said pitman, a spring tending to move said part of said pitman into the path of said cam, means for moving said part of said pitman out of the path of said cam after said cam has imparted a predetermined longitudinal movement to said pitman, a fixed stop arranged adjacent to said pitman, and a detent carried by said pitman and arranged to be moved into line with said stop to hold said pitman in the position to which it has been moved by said cam.

18. In a clothes wringer comprising a pair of rollers one of which is movable toward

and from the other, a spring acting on said movable roller, a driving shaft, means comprising a clutch for connecting said shaft with one of said rollers, and means for actuating said clutch, a device to control the action of said spring on said roller comprising a pitman mounted for both longitudinal movement and transverse movement, a cam carried by said shaft to impart longitudinal movement to said pitman, a part carried by said pitman and movable into the path of said cam by the transverse movement of said pitman, a spring tending to move said part of said pitman into the path of said cam, means for moving said part of said pitman out of the path of said cam after said cam has imparted a predetermined longitudinal movement to said pitman, a stop arranged adjacent to said pitman, a detent carried by said pitman and arranged to be moved into line with said stop to hold said pitman in the position to which it has been moved by said cam, and means controlled by said clutch actuating device to disengage said detent from said stop and release said spring.

19. In a clothes wringer comprising a pair of rollers the lowermost of which is movable toward and from the upper roller, a spring acting on said lower roller to move it toward the upper roller, a vertical driving shaft, means comprising a clutch to operatively connect said shaft with one of said rollers, and means including a rotatable shaft for actuating said clutch, a pivoted member arranged to act on said spring to cause the latter to exert pressure on said lower roller, a pitman pivotally connected at one end with said member and having an upwardly extending stud near the other end thereof, a cam mounted on said driving shaft, a spring tending to impart vertical movement to said pitman and move said stud into the path of said cam, means actuated by said clutch actuating shaft to control the movement of said pitman by said spring, said cam having a part arranged to impart downward movement to said pitman to move said stud out of the path of said cam, a fixed stop arranged adjacent to said pitman, and a detent carried by said pitman and arranged to be moved into operative engagement with said stop when downward movement has been imparted to said pitman.

In testimony whereof, I affix my signature hereto.

CHARLES ROBERTS.