W. H. VOSS.

POWER MECHANISM.

APPLICATION FILED JUNE 29, 1910.

1,031,100.

Patented July 2, 1912.

2 SHEETS—SHEET 1.

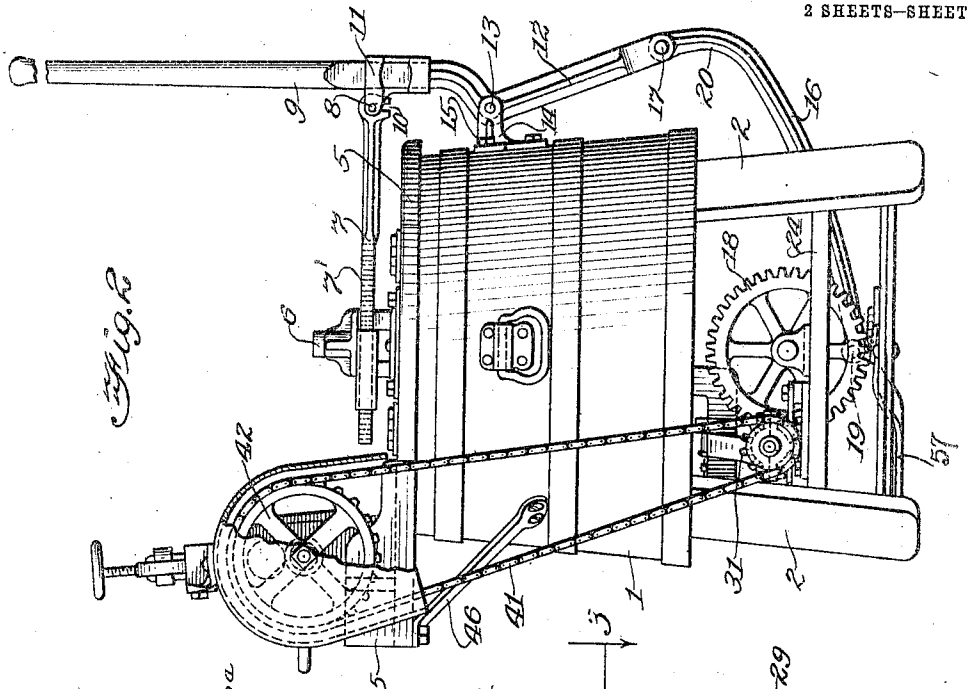

Fig. 2

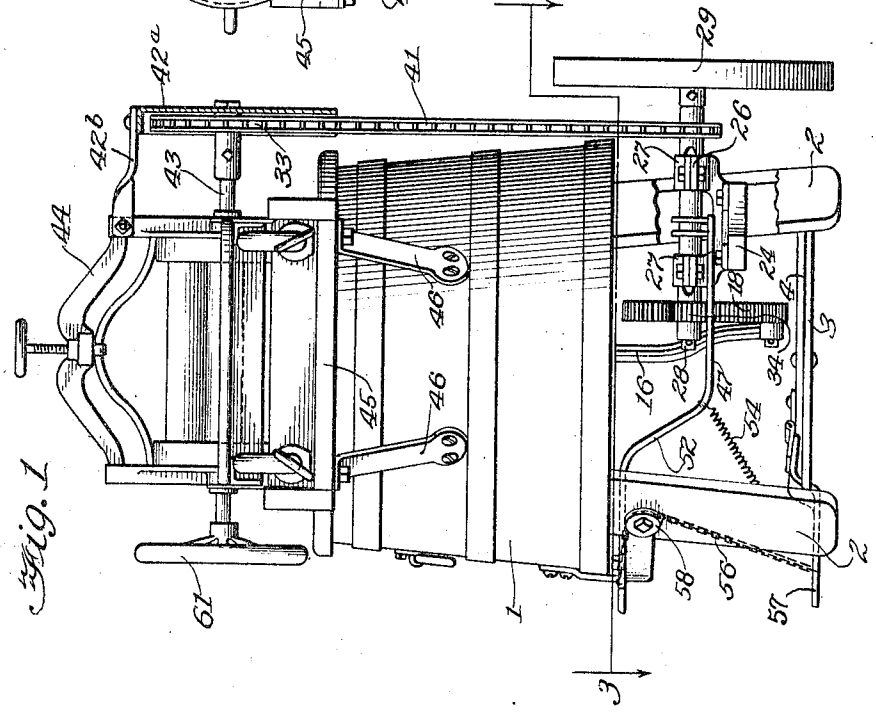

Fig. 1

Witnesses:-

Chas. H. Yagle

Adolph A. Thomas

Inventor:-

William H. Voss.

by Wallace R. Lane

Atty.

W. H. VOSS.

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Fig. 3

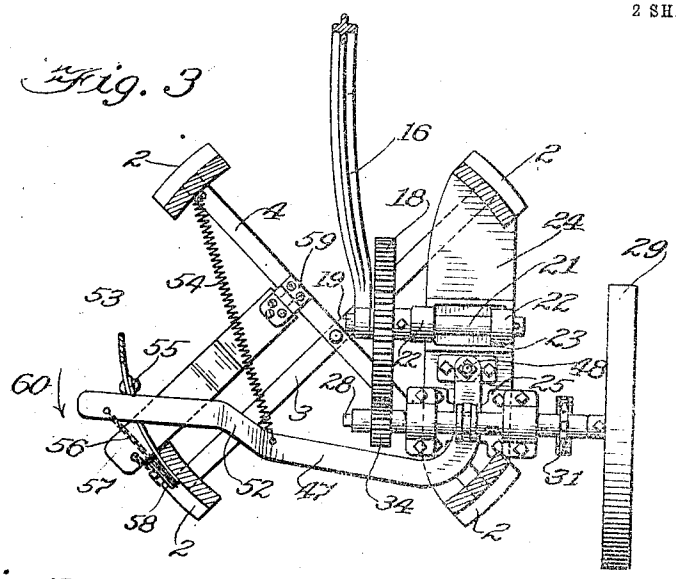


Fig. 5

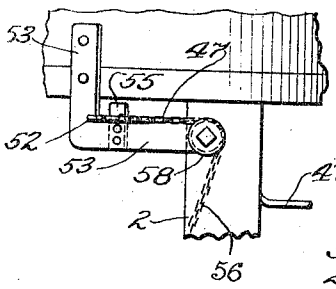
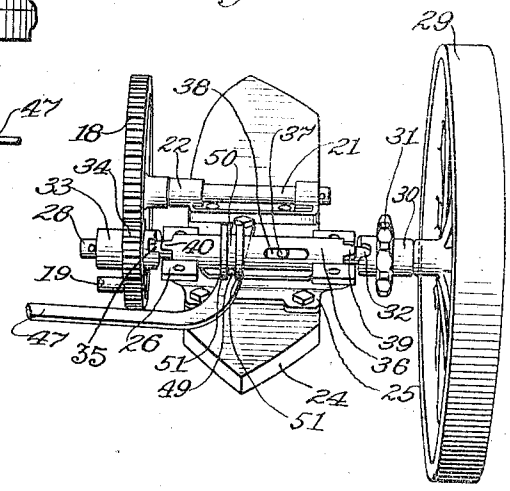


Fig. 4



Witnesses:-

Wm. H. Yagle.

Adolph A. Thomas

Inventor:

William H. Voss.

by Wallace R. Lane

Atty.

UNITED STATES PATENT OFFICE.

WILLIAM H. VOSS, OF DAVENPORT, IOWA.

POWER MECHANISM.

1,031,100. Specification of Letters Patent. Patented July 2, 1912.

Application filed June 29, 1910. Serial No. 569,461.

To all whom it may concern:

Be it known that I, WILLIAM H. VOSS, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented new and useful Power Mechanisms, of which the following is a specification.

This invention relates to power mechanisms and has for its object the provision of novel means for actuating and controlling suitable driving members.

More specifically considered, one object of my invention is to provide two separate and independent means for operating a suitable shaft—such as, for instance, the wringer shaft or agitator shaft of a washing machine—one of these means being motor driven and the other hand-operated. By means of this novel arrangement, it is possible to operate the shaft by hand, should the source of motive power for any reason be rendered unavailable or suddenly cut off.

Viewed from another aspect, my invention comprises foot-controlled clutch mechanism for throwing a suitable driving shaft into and out of operative connection with the source of motive power used for operating the shaft.

These and other objects and advantages of my invention will become apparent as the description proceeds.

Referring to the accompanying drawings, which form part of this specification, and which show my invention as applied, for the sake of illustration, to a washing machine,

Figure 1 is a view in elevation of a washing machine equipped with my invention; Fig. 2 is a side view of the mechanism shown in Fig. 1, looking toward Fig. 1 from the right; Fig. 3 is a plan view, partly in cross section, taken on line 3—3 Fig. 1, showing the foot-controlled clutch mechanism; Fig. 4 is a detached view of the clutch mechanism and the associated gearing; and Fig. 5 is a detail view showing the support for the outer end of the foot-operated arm or lever for controlling the wringer, as hereinafter described.

Referring now to the drawings in detail, the tub or body portion 1 of the washing machine is provided with supporting legs 2 which are, near their lower ends, connected by brace rods 3 and 4, as most clearly indicated in Fig. 3.

The top of the washing machine is provided with a hinged cover 5 which supports the agitator shaft 6. This shaft, as is well understood, extends vertically into the interior of the tub where it is provided with a suitable agitator. The shaft 6 is given oscillatory movement by means of the rack 7 which is, at its outer end, pivotally connected at 8 with the operating lever 9. The teeth of this rack are indicated by the dotted lines 7′ in Fig. 2 and are adapted to mesh with a pinion secured to the shaft 6. In order to render the connection between the rack 7 and the lever 9 readily detachable, I have shown the rack provided at its outer end with a slot 10 which is arranged to receive the pin 8 mounted in the socket 11 of the operating lever 9. The socket 11 is carried by the upper end of the bell crank lever 12 which is pivoted at 13 to the bracket 14, the latter being rigidly secured to the side of the tub, as by screws or bolts 15. The lower end of the bell crank lever 12 is preferably fork-shaped, so as to permit the connecting rod or pitman 16 to be readily pivoted to said lever 12 by means of the pin 17. The other end of the connecting rod 16 is pivotally connected to the large gear 18 by means of the pin 19 which is eccentrically carried by the gear 18, as best shown in Figs. 2 and 4. In order to prevent frictional contact between the connecting rod 16 and the body of the washing machine during operation, the connecting bar is curved at its upper end, as indicated at 20. The gear wheel 18 is fixedly mounted upon one end of the shaft 21 which is rotatably supported in bearings 22. These bearings are carried by the base plate 23 fixed to the supporting platform 24. This platform is secured to two of the legs by means of brackets or any other suitable devices. Also mounted upon this platform 24 is the base plate 25, which is provided with bearing portions 26. These bearing portions form the lower halves of bearings, the upper halves of which are formed by the bearing caps or covers 27, which are securely bolted to the lower portions so as to complete the bearings for the main power shaft 28. At its outer end this main power shaft has secured thereto the pulley or driving member 29, which is adapted to be connected with a suitable source of motive power, such as an electric motor, gas engine, etc.

Various other arrangements may be used for connecting the power shaft 28 with a source of motive power and I do not, therefore, wish to be understood as in any way limiting myself to any particular means for driving the shaft 28 by machine power. Broadly speaking, the wheel 29 may properly be considered as the source of machine power for driving the shaft 28. Mounted rotatably upon the shaft 28, adjacent to the pulley or wheel 29, is the sleeve 30 which carries the sprocket 31. The inner end of this sleeve is provided with clutch recesses 32, as shown in Fig. 4. Near the inner end of the power shaft 28 is rotatably mounted the sleeve 33 carrying the pinion 34, which is arranged to be always in mesh with the large gear 18. The sleeve 33, like the sleeve 30, is at its inner end provided with clutch recesses 35. The clutch surfaces of the sleeves 30 and 33 are preferably cam shaped, as indicated in Fig. 4.

Between the sleeves 30 and 33 there is mounted on the shaft 28 the clutch member 36 adapted to rotate with the shaft 28 but arranged to be longitudinally shifted on said shaft. This longitudinal movement of the clutch member 36 is permitted by reason of the pin 37 on the shaft 28 resting in the slot 38 formed in the clutch member 36. It is clear that this slot-and-pin connection between the main power shaft 28 and the clutch member 36 compels the latter to rotate always in unison with the shaft 28, but at the same time, permits it to be shifted along the shaft into operative engagement either with the sleeve 30 or the sleeve 33, to bring about a positive locking between the central clutch member 36 and the sleeves 30 and 33. These may be considered to be the side members of the clutch mechanism. I provide the central clutch member with end projections 39 and 40, which are adapted to enter into the clutch recesses 32 and 35, respectively, when the central clutch member is shifted from its normal position either to the right or to the left. The sprocket 31 is connected by a sprocket chain 41 with the large sprocket 42 fixed upon the wringer shaft 43. The wringer, which may be of any well known and approved construction, is as a whole indicated by 44 and is adapted to be operated by the shaft 43. The sprocket 42 may be surrounded by the housing 42^a supported from the wringer 44 by means of the arm or bracket 42^b. The wringer mechanism is suitably supported on a platform 45 extending from the top of the washing machine and held in place by the brackets 46. It will now be clear that when the clutch member 36 is shifted into engagement with the clutch sleeve 30, the wringer mechanism will be operatively connected with the power shaft 28. From what has been said before regarding the connection between the agitator shaft 6 and the gear wheel 18, it will be apparent that when the clutch member 36 is shifted into engagement with the clutch sleeve 33, the agitator shaft will be operatively connected with the power shaft 28 to oscillate back and forth as the power shaft is continuously rotated. This conversion of the continuous rotation of the power shaft 28 into the oscillatory movement of the agitator shaft 6 is accomplished by the eccentric connection between the pitman 16 and the gear wheel 18, as is obvious from a mere inspection of Fig. 2.

I come now to the description of the mechanism which has to do with controlling the position of the central clutch member 36. A lever 47, which is approximately L-shaped in plan, as may be seen from Fig. 3, is pivoted at its inner end to the platform 24 at the point 48. This lever is provided with a pin or stud 49 adapted to be held in the cylindrical groove 50, which is formed on the clutch member 36 by means of a pair of cylindrical flanges 51. The longer portion of the L-shaped arm 47 is bent upwardly at 52 and then extends outwardly beyond the body of the washing machine. The outer end of the arm 47 is adapted to rest upon the horizontal portion of the bracket 53. This bracket has a vertical arm secured to the tub and a horizontal arm secured to one of the legs 2. A spring 54, secured at one end to the arm or lever 47 and at its other end to one of the legs 2, is adapted to normally hold the lever 47 against the stop 55 which is fixed to the horizontal arm of the bracket 53, as most clearly shown in Fig. 5. One end of a chain or cord 56 is secured to the free or outer end of the lever 47, and the other end of the chain is secured to the treadle 57. The chain 56 passes over the pulley 58 rotatably journaled to one of the legs 2. The treadle 57 is, at its inner end, pivotally connected to the brace bar 4 by means of the hinge 59, as shown in Fig. 3. It is obvious that by means of this arrangement, a downward movement of the treadle 57 will result in a horizontal movement of the lever 47 about the point 48 in a direction indicated by the arrow 60 in Fig. 3. When the lever 47, which may properly be termed the clutch controlling lever, is thus moved by means of the treadle 57, the central clutch member 36 will be moved toward the right (as viewed in Fig. 4) into engagement with the sleeve 30, whereby the wringer is operatively connected with the power shaft 28. Upon release of the treadle, the spring 54 will move the lever 47 in the opposite direction against the stop 55. When the lever is in this position, which is its normal or inoperative position, the clutch member 36 will also be in its normal or inoperative position, as indicated in Fig. 4. In this nor-

mal position, the clutch member 36 will rotate with the power shaft but the sleeves 30 and 33, being loosely mounted on the shaft 28, will remain stationary until coupled to the shaft by means of the clutch member 36. The advantages of thus having the connection between the wringer and the power shaft controlled by a foot-operated mechanism instead of by a hand-operated contrivance, are obvious. For instance, the user has the wringer under full control all the time, is free to use both hands, and can start or stop the wringer operation by simply pressing with her foot down upon the treadle or taking her foot off.

In order to effect the reversing of the wringer—as when it is desired to unwind the clothes that have become tangled in the wringer—I provide the wringer shaft 43 with a hand wheel 61. This hand wheel may either be mounted on the same shaft which carries the sprocket 42 or it may be mounted upon a separate shaft which is operatively connected with the wringer rolls. If, during the operation of the wringer, it should become necessary to reverse the direction of rotation of the rolls, the operator simply releases the treadle, which automatically disconnects the wringer from the power shaft and then turns the wringer by hand by means of the wheel 61. It will be seen by this that the wringer is adapted to be operated by either one of two separate and distinct sources of power—namely, the motor-driven power shaft 28 and the hand-operated wheel 61. If for any reason the source of machine power should suddenly cease during the operation of the wringer, the latter may be actuated by the hand wheel 61.

The agitator shaft 6 may either be operated by the hand lever 9 or it may be driven from the main power shaft 28 by lifting the outer end of the lever 47 over the stop 55, so that the clutch member 36 will be moved to the left (as viewed in Fig. 4) into engagement with the clutch surface of the sleeve 33. When this is done the pinion 34 is operatively connected with the power shaft 28, and the agitator shaft 6 will therefore, be oscillated through the large gear 18, the connecting rod 16, the lever 12 and the reciprocating rack 7, which is in mesh with the pinion carried by the agitator shaft. The clutch controlling arm 47 is made sufficiently resilient to permit its being lifted over the stop 55.

While I have here described one specific embodiment of my invention, I will have it understood that the embodiment has been described and shown by way of illustration only, and that various changes and modifications may be resorted to without departing from the scope of my invention, as defined in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a power mechanism, the combination of a support comprising a body portion and supporting legs, a frame secured to said body portion so as to extend beyond the upper end thereof, a horizontal shaft journaled on said frame, a motor-driven power shaft horizontally journaled on said support beneath the body portion thereof, a driving member on said power shaft, a driving member fixed at one end of said horizontal shaft, an operative connection between said driving members, and a hand-operated member secured to said horizontal shaft for operating the same in either direction independently of said power shaft.

2. In a power mechanism, the combination of a frame-work having a main body portion and supporting legs, a rotatable member mounted on said body portion, a motor-driven power shaft supported beneath said body portion, driving connections between said member and said power shaft, said driving connections including a shiftable clutch, a horizontally moving lever pivoted at one end to the said frame work beneath the body portion thereof for shifting said clutch, a treadle mounted beneath said body portion for operating the lever and a spring connected at one end to said lever and the other end to said frame work for drawing the lever to normal position.

3. In a power mechanism, the combination of a frame-work, a horizontal shaft rotatably mounted on top of said frame-work, a motor-driven power shaft journaled in the lower portion of said frame-work, driving connections between said power shaft and one end of said horizontal shaft, a treadle for controlling said connections, and a hand-operated member secured to the other end of said horizontal shaft for actuating the same in either direction independently of said power shaft.

4. In a power mechanism, the combination of a frame-work having a main body portion and supporting legs, a horizontal shaft rotatably mounted on said body portion, a motor-driven power shaft supported beneath said body portion, driving connections between said member and said power shaft, said driving connections including a shifting clutch device, a treadle for operating said clutch device, and a hand-operated element connected with said horizontal shaft for actuating the same independently of said power shaft.

5. In a power mechanism, the combination of a frame-work having a main body portion and supporting legs, a support secured between said legs, a power shaft rotatably mounted on said support, a power-supplying wheel or pulley connected to said

shaft for actuating the same, a rotatable member supported on said body portion, driving connections between said power shaft and said member, said driving connections including a shifting clutch device, a horizontally movable lever pivoted to said frame-work for operating said clutch device, and a vertically movable treadle for operating said lever.

6. In a power mechanism, the combination of a frame-work having a main body portion and supporting legs, a support secured between said legs, a motor-driven power shaft mounted on said support, a rotatable member supported on said body portion, driving connections between said member and said power shaft, said driving connections including a shifting clutch device, a pivoted lever for operating said clutch device, a treadle hinged on said frame-work beneath the body portion, and a flexible connection between said treadle and the free end of said lever.

7. In a power mechanism, the combination of a frame work having a main body portion and supporting legs, a horizontal shaft rotatably mounted on said body portion, a motor-driven power shaft supported beneath said body portion, driving connections between said member and said power shaft, said driving connections including an adjustable clutch, a lever for operating said clutch device, and a hand-operated element connected with said horizontal shaft for actuating the same independently of said power shaft.

8. In a power mechanism, the combination of a frame-work having a main body portion and supporting legs, a rotatable member mounted on said body portion, a support between said legs, a motor-driven power shaft mounted on said support, driving connections between said member and said power shaft, said driving connections including a clutch device adjustably mounted on said power shaft, a horizontally movable lever pivoted to said support for operating said clutch device, a treadle pivoted to said frame-work beneath the body portion, a flexible connection between said treadle and the free end of said lever, and a spring for returning said lever to normal position when the treadle is released.

9. In a power mechanism, the combination of a frame-work having a main body portion and supporting legs, a rotatable member mounted on said body portion, a support secured between said legs, a motor-driven power member mounted on said support, driving connections between said member and said power shaft, said driving connections including a clutch device adjustably mounted on said power shaft, a horizontally movable lever pivoted to said support for operating said clutch device, a treadle pivoted to said frame-work beneath the body portion, a flexible connection between said treadle and the free end of said lever, a bracket secured to said frame-work for supporting the free end of said lever, a guide pulley over which said flexible connection passes to cause horizontal movement of said lever, and a spring for returning said lever to normal position when the treadle is released.

10. In a power mechanism, the combination of a frame-work having a main body portion and supporting legs, a rotatable member mounted on said body portion, a support secured between said legs, a motor-driven power shaft mounted on said support, driving connections between said member and said power shaft, said driving connections including a clutch device adjustably mounted on said power shaft, a pivoted lever for operating said clutch device, a treadle pivoted to said frame-work beneath the body portion, a flexible connection between said treadle and the free end of said lever, and means for locking said lever against operation by said treadle.

11. In a power mechanism, the combination of a frame-work having a main body portion and supporting legs, a rotatable member mounted on said body portion, a support secured between said legs, a motor-driven power member mounted on said support, driving connections between said member and said power shaft, said driving connections including a clutch device adjustably mounted on said power shaft, a horizontally movable lever pivoted to said support for operating said clutch device, a treadle pivoted to said frame-work beneath the body portion, a flexible connection between said treadle and the free end of said lever, a bracket secured to said frame-work for supporting the free end of said lever, a guide pulley over which said flexible connection passes to cause horizontal movement of said lever, a spring for returning said lever to normal position when the treadle is released, and a lug on said bracket for locking said lever against operation by said treadle.

WILLIAM H. VOSS.

Witnesses:
W. R. LANE,
EDWARD VOSS.