L. V. MARTEL AND P. METHOT.

WASHING MACHINE.

APPLICATION FILED MAY 4, 1920.

1,369,686. **Patented Feb. 22, 1921.**

4 SHEETS—SHEET 1.

Fig. 2.

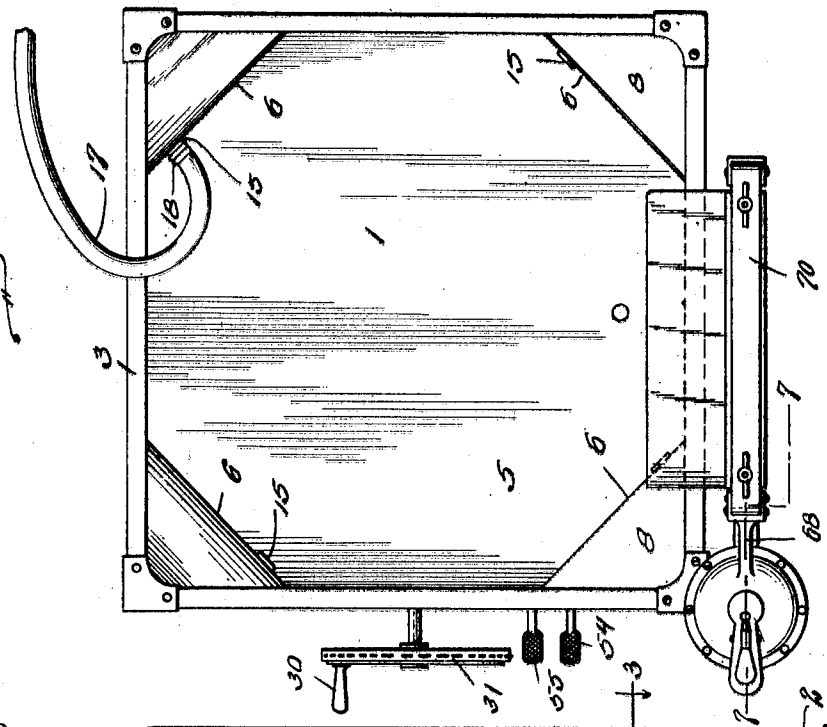
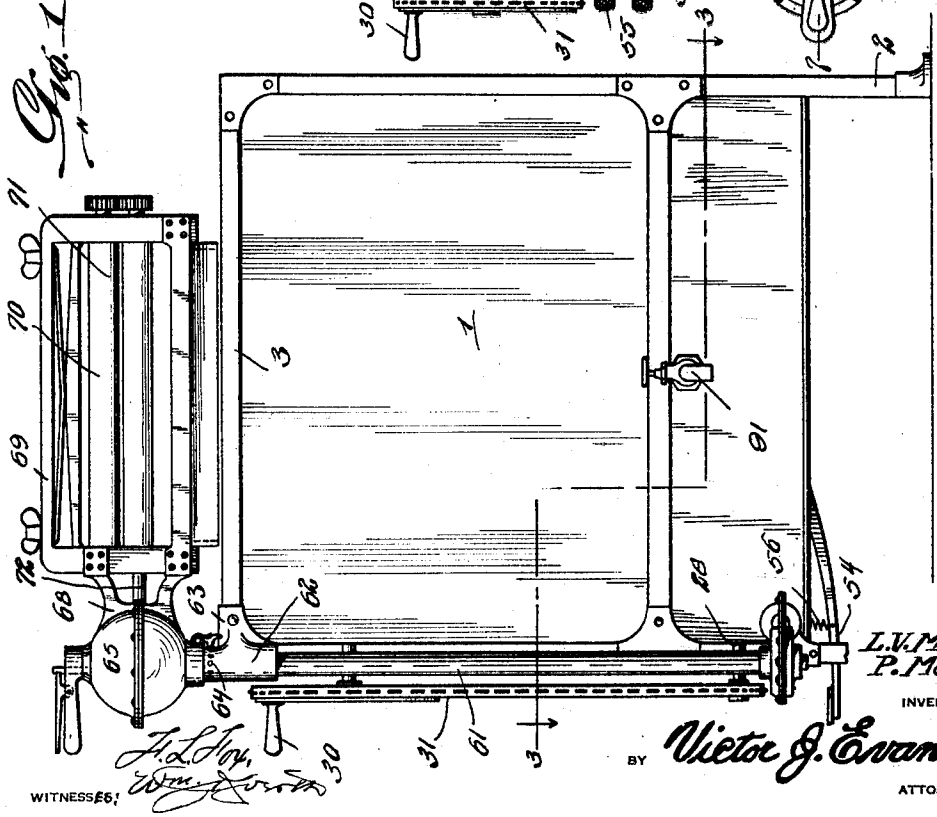


Fig. 1.



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4 SHEETS—SHEET 2.

Fig. 3.

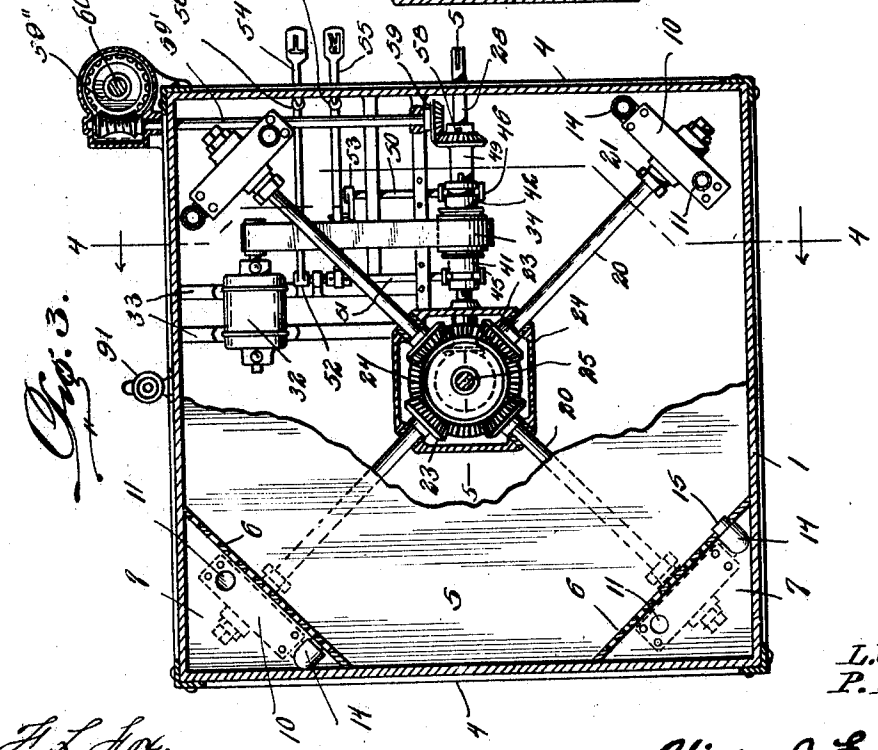
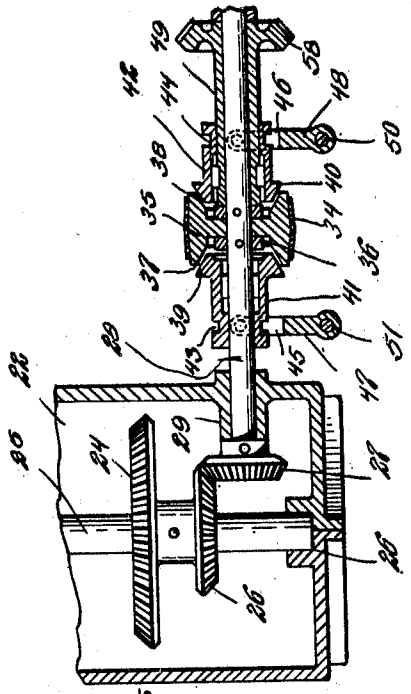


Fig. 5.



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4 SHEETS—SHEET 3.

Fig. 6.

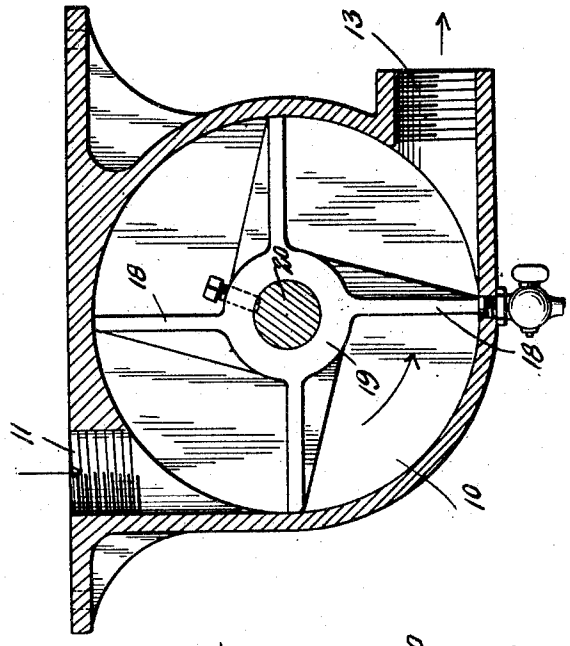
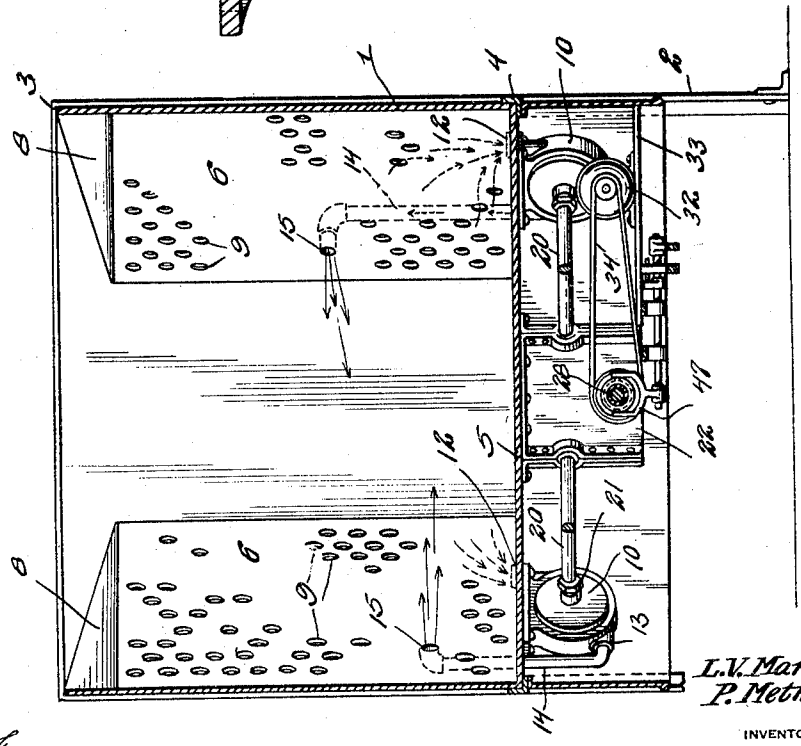


Fig. 4.



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4 SHEETS—SHEET 4.

Fig. 7.

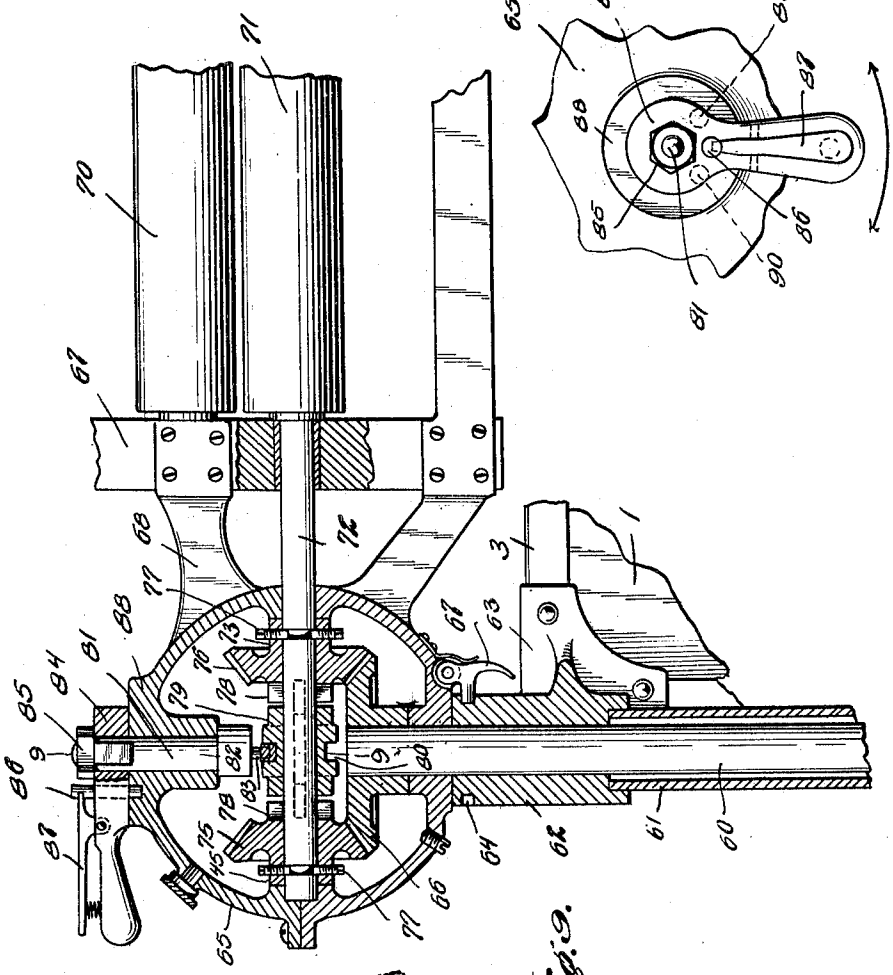
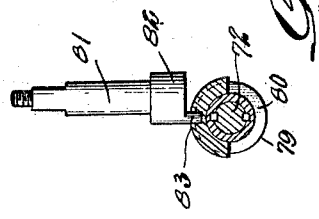


Fig. 8.

Fig. 9.



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UNITED STATES PATENT OFFICE.

LOUIS V. MARTEL AND PHILIP METHOT, OF MANCHESTER, NEW HAMPSHIRE.

WASHING-MACHINE.

1,369,686. Specification of Letters Patent. Patented Feb. 22, 1921.

Application filed May 4, 1920. Serial No. 378,899.

To all whom it may concern:

Be it known that we, LOUIS V. MARTEL and PHILIP METHOT, citizens of the United States, residing at Manchester, in the county of Hillsborough and State of New Hampshire, have invented new and useful Improvements in Washing-Machines, of which the following is a specification.

Our present invention has reference to an improved clothes washing apparatus.

Our primary object is to produce a machine of this character in which the employment of dashers, pounders, etc., is entirely obviated, and in which the clothes are subjected to a continuous whirling action by water delivered under pressure thereagainst, so that the clothes can be cleaned in an easy and expeditious manner, without danger of inflicting injury thereto.

A further object is to produce a washing machine in which a plurality of simultaneously actuated fluid pumps are employed, each having an outlet pipe provided with a nozzle that delivers to the body of the machine, and the nozzles being variously located with respect to the height of the machine, all of said nozzles being received in the inner reticulated plates of angularly disposed water chambers in the body of the machine, so that they cannot inflict injury to the clothes in the machine, the pumps receiving the soapy water with which the clothes are to be washed, and such water being directed forcibly against the clothes and at various angles with respect to the clothes, effect a rapid cleaning of the latter.

It is a further object of the invention to produce a washing machine, in which the soapy water for cleaning the clothes will be directed forcibly against the clothes from various angles and at different inclinations with respect to the height or the pile of clothes in the machine.

It is a still further object of the invention to produce a washing machine wherein the clothes to be washed are subjected to differently directed forcible sprays of saponaceous water, and in which the tub or body of the device may be readily filled with the washing fluid, the clothes to be cleaned and also whereby a surplus quantity of fluid may be directed from the machine and the entire amount of fluid drained from the machine after the washing operation has been completed.

It is a still further object of the invention to produce a washing machine in which the finest fabrics may be cleaned without danger of injury thereto, by being subjected to the force of contact with the saponaceous fluid which is delivered at various angles with respect to the clothes to impart a whirling action thereto, and also wherein a wringer is employed that is operated by the same means that operate the fluid injecting means.

The foregoing, and many other objects which will appear as the nature of the invention is better understood, may be accomplished by a construction, combination and operative arrangement of parts, such as is disclosed by the drawings. The nature of the invention is such as to render the same susceptible to various changes and modifications, and therefore we are not to be limited to the construction disclosed by the drawings, and are entitled to all such changes therefrom as fall within the scope of our claims.

In the drawings:—

Figure 1 is a front elevation of a washing machine constructed in accordance with this invention.

Fig. 2 is a top plan view thereof.

Fig. 3 is a sectional view approximately on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view approximately on the line 4—4 of Fig. 3.

Fig. 5 is a sectional view approximately on the line 5—5 of Fig. 3, on an enlarged scale.

Fig. 6 is a longitudinal sectional view through one of the pump casings.

Fig. 7 is a greatly enlarged sectional view approximately on the line 7—7 of Fig. 2.

Fig. 8 is a top plan view of a portion of the housing for the drive means for the wringer of the roller.

Fig. 9 is a detail sectional view approximately on the line 9—9 of Fig. 7.

In the construction disclosed by the drawings, we employ a substantially rectangular casing or tub 1 which forms the body of the improvement. The body 1 is supported on legs 2 that are preferably provided by the lower ends of angle irons that reinforce the corners of the body. The top or upper edge

of the body, as well as the sides thereof, adjacent to the lower end of the body is reinforced by suitable plates 3 and 4 respectively. The sides and ends of the body 1 extend a suitable distance beyond the bottom 5 thereof, and at the inner corners of the body there are arranged angularly disposed plates 6 connected with the end and side walls of the body and providing therebetween fluid compartments 7. Each of the compartments 7 has its upper end terminating a slight but suitable distance away from the top of the body but its said upper end is closed as at 8. Each of the plates 6 is reticulated or provided with suitably spaced orifices 9, and below each of the fluid compartments 7, there is secured a fluid pump casing 10. The inlet for each of the casings, is indicated by the numeral 11 and communicates with the fluid compartment through a suitable opening in the bottom 5, which also provides the bottom wall of the respective compartments. The pump casings are bolted or otherwise secured to the bottom 5, and the opening between the plates and the inlet of the respective casings may receive therethrough headed and threaded bushings 12 which assist in retaining the casings on the bottom of the respective compartments 7. The outlet for each of the casings is located adjacent to the lower end thereof, it being noted that the inlet is arranged at the upper end of the casing. The outlets are indicated by the numeral 13, and have connected thereto pipe members 14 that pass through suitable bushings or packings that surround openings in the bottom wall of the respective compartments 7. Each of the pipe members has at its upper end an angularly arranged nozzle 15, and these nozzles have their ends arranged in one of the orifices of the plates 6 of the respective fluid compartments 7. It is to be noted that the nozzles of the pipes for the respective fluid pumps are located one above the other, so that the saponaceous fluid delivered through the nozzles against the clothes in the body will not contact with the same level of the clothes.

The nozzle 15 which is located nearest the top of the body has interior threads for the reception of an exterior threaded coupling 16 provided upon one end of a flexible outlet hose 17. The hose, when detached may have its coupling member connected to the threaded mouth of a faucet, whereby water may be delivered from the faucet in the body 1.

The blades or propellers for the pumps are illustrated in detail in Fig. 6 of the drawings, and are indicated by the numeral 18. The blades are, of course, connected to and radiate from a hub 19, and in each of the hubs there is secured a shaft 20 that passes through a stuffing box 21 in the inner sides of the pump casings 10.

Each of the shafts 21 has its inner end journaled in the corners of a substantially rectangular lubricant containing box 22 which is secured, in any desired or preferred manner to the bottom 5 of the body 1, at the central portion thereof. On the end of each shaft 20, in the box 22, is a beveled gear 23. Meshing with the gears 23 is a larger beveled gear 24 that has its shaft 25 journaled in suitable bearings 26 which are disposed in vertical alinement in the box 22.

Keyed on the shaft 25, below the beveled gear 24 is a pinion 26 which is in mesh with a pinion 27 that is keyed or otherwise secured on the power imparting shaft 28. The shaft 28 passes through a bearing sleeve or box 29 that extends both inwardly and outwardly of the box 28 and has its outer end projecting through a bearing opening in one of the sides or end portions of the body 1.

If desired there may be arranged upon the projecting end of the shaft 28 a sprocket wheel, and also there may be journaled on a stub shaft secured on one of the sides or ends of the body 1, directly above the first mentioned sprocket wheel, a second and larger sprocket wheel that is provided with an operating handle 30, and around the referred to sprocket wheels there may be trained an endless sprocket chain 31. By this means the pumps may be operated manually, as will, of course, be understood.

However, we may prefer to employ a motor for driving the pumps and the wringer. Any desired construction of motors may be employed, but in Figs. 3 and 4 of the drawings, we have illustrated a small electric motor 32 that is suitably supported on a plate 33 that is secured to the body below the bottom 5 thereof. On the shaft of the motor is a pulley wheel around which is trained a belt 34 that is also trained around a pulley wheel 35 that is loose on the shaft 28. The pulley wheel 35 is held against movement longitudinally of the shaft by contacting engagement of the collars 36 with the sides of the said wheel 35. These collars are pinned to the shaft, as clearly illustrated in Fig. 5 of the drawings.

The pulley wheel 35 has its inner periphery, at the sides thereof beveled, as at 37 and 38 respectively. These beveled surfaces, may, if desired, be toothed and are designed to be engaged by beveled toothed or clutch heads 39 and 40 respectively that are formed upon the inner or confronting ends of sleeves 41 and 42 respectively, the said sleeves, of course, surrounding the shaft 28. Each of the sleeves 41 and 42 is provided with a continuous groove 43 and 44 respectively in which is received the yoked ends 45 and 46 respectively of rocker members 47 and 48 respectively. It is obvious that by tilting the rocker members 47 and

48 the clutch head 39 or 40 may be brought into frictional engagement with the clutch surface 37 or 38 of the pulley wheel 35, but, of course, both of the clutch heads are not designed to be brought into engagement with the clutch surfaces on the pulley wheel simultaneously.

Between the sleeve 41 and the shaft 28 there is a feather and groove connection, while the sleeve 42 is received on a longer sleeve 49 that surrounds the outer end of the shaft 28. Between the longer sleeve 49 and the sleeve 42 there is a feather and groove connection whereby, when the sleeve 42 has its clutch head 40 brought into frictional engagement with the clutch surface 48 of the pulley wheel 35 the sleeve 49 will be caused to revolve with the sleeve 42.

On each of the rocker arms 48 and 47 there is secured a rod or shaft 50 and 51 respectively. These shafts 50 and 51 are received in suitable bearings provided on cross bars which may be connected to the plate 35 and to one of the sides or ends of the body. The shaft 50 is of a less length than the shaft 51 and each of the said shafts has on its outer end a crank 52 and 53 respectively. The cranks are connected to pedal members 54 and 55 respectively. The pedals project through suitable openings in one of the sides or ends of the body 1, and are each influenced by a spring 56 and 57 respectively, whereby to retain the cranks on the shafts 50 and 51 in one position to hold the rocker members 47 and 48 in positions to bring or retain the friction heads 39 and 40 out of engagement with the friction surfaces 37 and 38 of the pulley wheel 35.

A pressure on the pedal 54 will actuate the clutch means associated therewith for bringing the clutch head 37 on the sleeve 41 in engagement with the clutch surface 37 of the pulley wheel 35, which will actuate the main shaft 28 and through the medium of its connection with the vertical shaft 25 in the box 22, will cause the latter to revolve the shafts of the pumps, and consequently suck the soapy fluid (which is arranged in the body for the washing of the clothes which are also therein) into the casings 10 through the inlets thereof and out of the pipes and the nozzles 15 connected with the said pipes. The saponaceous fluid will be injected into the casing at the various inclinations at which the nozzles are arranged, and if the clothes almost fill the body the hose section 17 may be disconnected from the upper nozzle. The fluid injected will forcibly contact with the clothes, imparting a whirling and rotary motion thereto. All of the saponaceous fluid is forced through the clothes, so that the same will be thoroughly cleaned in an easy and expeditious manner. No sharp corners are presented, so that the finest fabrics cannot be injured in the washing process. Of course, any desirable means may be employed for holding the pedal 54 (which is also true with respect to the pedal 55) in its lowered or active position.

On the loosely mounted member or sleeve 43 there is a beveled gear 58 that meshes with a similar gear 59 on a vertically disposed shaft 60. The shaft 60 is journaled in a suitable tubular casing 61 at one of the corners of the body 1. The upper end of the tubular casing 61 is received in the sleeve 62 of a bracket member 63 that is secured to the referred to corner of the body 1, and the said sleeve is provided with a series of angularly arranged notches 64. On the upper end of the sleeve rests the flat lower face of a spherical casing 65 in which the shaft 60 extends. The end of the shaft 60, received in the spherical casing 65 has keyed thereon a beveled toothed wheel 66.

The spherical casing 65 is in the nature of a two-part element, and the hollow body thereof is designed to receive therein a lubricant. The spherical casing is held at desired angular positions with respect to the shaft 60 and to the body 1, by the engagement of a spring pressed dog 67, pivoted on the said casing and designed to engage in any of the notches 64 on the sleeve 62.

The spherical casing has angle arms 68 to which is connected the frame 69 of the wringer 70.

One of the rollers, 71, of the wringer is provided with a shaft 72 that passes through a suitable bearing opening in the casing 65, between the arms 68 thereof and has its opposite end received in a suitable bearing on the opposite side of the casing. The shaft 72, at the portion thereof received in the spherical casing has spaced annular grooves over which are disposed the hub portions 73—74 of beveled gears 75 and 76 respectively. Passing through the hubs 73 and 74, and entering the referred to annular grooves of the shaft 72 are removable pins 77. The gears 75 and 76 are in mesh with the gear 66 on the shaft 60, and are freely mounted on the shaft 72.

The inner or confronting faces of the gears 76 and 77 have clutch surfaces 78. Splined for slidable movement on the shaft 72, between the clutch surfaces of the gears 76 and 77 is a member 79 that has both of its ends provided with clutch surfaces and that has its central portion preferably enlarged and provided with an annular groove 80.

Passing through a suitable bearing that extends inwardly from the top of the spherical casing 65 is a short shaft 81. This shaft has its inner end headed, as at 82, and its said head provided with a depending lug 83. The lug is received in the annular groove of the slidable clutch 79. The outer

end of the shaft is reduced and squared for the reception of the square bore of a handle member 84. Disposed for slidable movement through the handle 84 is a pin 86 that is loosely connected to a spring influenced lever 87 that is pivoted to the handle 84.

On the upper face of the spherical casing, on which the handle 84 rests, there is an outstanding boss 88 that provides an upper straight face for the casing. This boss has three spaced openings therein. When the handle is swung to permit of the pin 86 being received in the central opening the clutch 78 is held in neutral position, that is the clutch is not in engagement with the clutch surface 78 on either of the gears 76—77. When the lever is actuated and the handle 84 is swung so as to permit of the pin 86 entering one of the openings or notches to one side of the central notch, say the notch 89, the clutch member 79, through the medium of the turning of the short or stub shaft 81 with the handle, through the medium of the eccentrically mounted lug 83 contacting with one of the walls provided by the groove in the clutch 79, will move the said clutch to engage with the clutch face 78, on, say the gear 75. This will cause the shaft 72 to turn in one direction. When the handle is again turned to permit of the pin 86 entering the second outer notch 90, the clutch member will be moved so that the same will engage with the clutch face 78 on the gear 77, and thus, the shaft 72 and the roller carried thereby will be turned in a second direction.

The body may be provided with a suitable cover plate if desired. The wringer may be operated during the washing process or independently of the actuation of the turbines. The construction is comparatively simple and the device may be cheaply manufactured. The clothes to be washed are not contacted by any obstacle, such as a dasher, or the like, and after the same have been subjected to the angularly directed forcible sprays of saponaceous water, such water can be drained off through a suitable cock 91 in the bottom of the body 1 or the hose 17 can be attached to a faucet to allow clean water to enter the body. The device can be then operated as above described and thus the clothes are not only effectively washed but any saponaceous matter which might remain therein during the washing process may be wrenched therefrom by the fresh water which is forced through the nozzles of the turbines.

It is thought that the foregoing description when taken in connection with the drawings will fully set forth the advantages of the construction and the operation thereof to those skilled in the art to which such inventions relate.

The fluid compartments may be arranged in a stationary tub, the wringer positioned at one of the upper corners of the tub while the pumps and the operating means therefor and for the wringer may be arranged below the bottom of the stationary tub.

On the shaft 60 is a worm wheel 60′, which is in mesh with a worm 59″ on a shaft 59′ that is connected to the beveled gear 59.

The pump casings have their bottom walls provided with cock controlled openings, whereby water may be drained therefrom when the device is not in use.

Having thus described the invention, what we claim, is:—

1. In a clothes washing machine, a substantially rectangular body in which the clothes to be washed and rinsed are arranged, fluid compartments having inner apertured walls in the corners of the body, a fluid pump for each of the compartments, an outlet nozzle for each of the pumps flush with the inner face of the respective compartments located at varying elevations with respect to the compartments and with respect to the body, and means for simultaneously imparting motion to all of the pumps.

2. In a clothes washing machine, a substantially rectangular body, apertured fluid compartments in the corners thereof and having their inner walls arranged angularly with respect to the sides and ends of the body, a fluid pump below each of the compartments having an inlet communicating with the compartment, pipe members connected to the outlets of the pumps, and directed into the compartments, notches on the upper ends of the pipe members received in an aperture of the respective compartments and located at different heights with respect to the height of the compartments, motor operated means for simultaneously imparting motion to all of the pumps, and pedal actuated means for rendering the operative means active or inactive.

3. In a clothes washing machine, a substantially rectangular body, fluid compartments in the corners thereof having apertured faces which are arranged angularly with respect to the sides and ends of the body, a fluid pump beneath each of the compartments and communicating therewith, pipe members connected to the outlets of the turbines and directed into the respective compartments, nozzles on the ends of the pipes entering an aperture in the face of the respective compartments, and being positioned at varying elevations with respect to the body, means for simultaneously operating all of the pumps.

4. In a clothes washing machine, a substantially rectangular body, fluid compartments having angularly arranged reticulated face plates in the corners of the body, a fluid pump located below each of the com-

partments and having inlets communicating with the compartments, said pumps having pipes connected with their outlets and entering the respective compartments, said pipes being of different lengths and having their upper ends provided with nozzles which are directed through an aperture in the face plate of the respective compartments, shafts for the pump blades, said shafts having gear wheels on their ends, a lubricant box in which the ends of the shafts are journaled and the gear wheels received, a vertically directed shaft in the lubricant box having a beveled gear meshing with the gears of the turbine shaft, a second and smaller beveled gear on the said vertical shaft, a laterally arranged shaft therefor projecting through the box, means for operating the last mentioned shaft, clutch means between the shaft and the operating means for rendering the operative means inoperative, and pedal means for actuating said clutch means.

In testimony whereof we affix our signatures.

LOUIS V. MARTEL.
PHILIP METHOT.