

A. L. HOFFMAN.  
LAUNDRY MACHINE.

APPLICATION FILED APR. 13, 1914. RENEWED JULY 31, 1919.

1,371,091.

Patented Mar. 8, 1921.

3 SHEETS—SHEET 1.

Fig. 1.

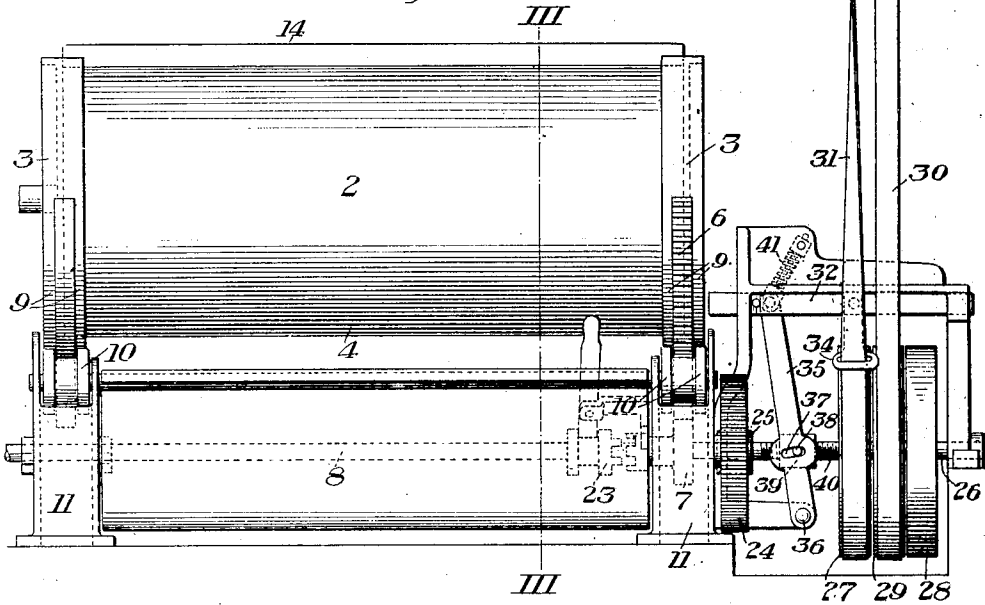
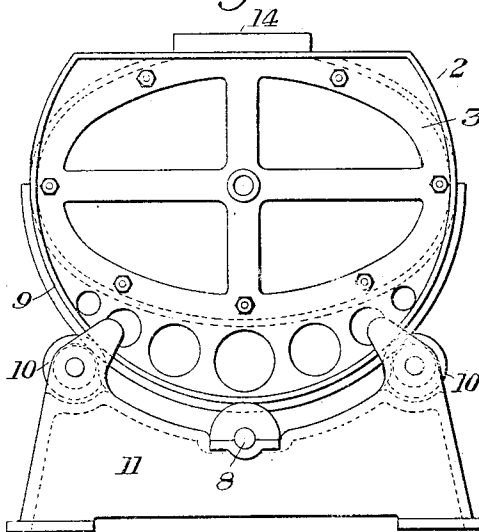


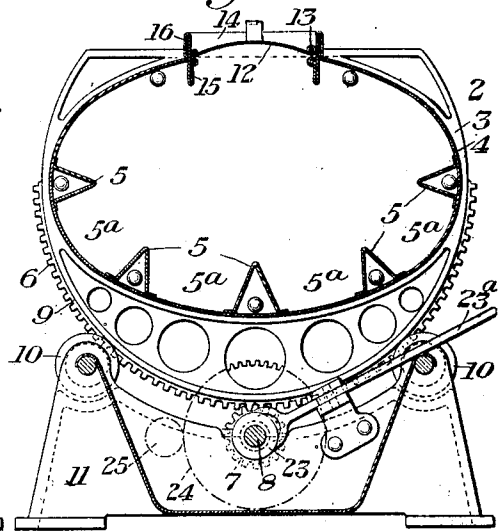
Fig. 2.



WITNESSES

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Fig. 3.



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3 SHEETS—SHEET 2.

Fig. 4.

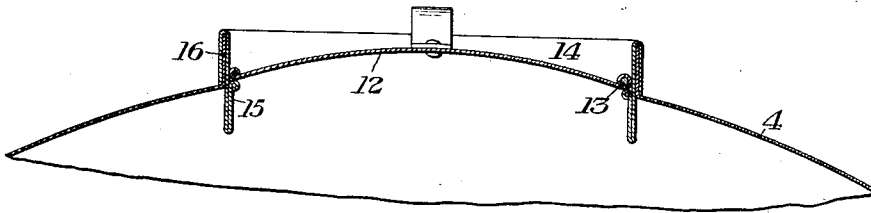


Fig. 5.

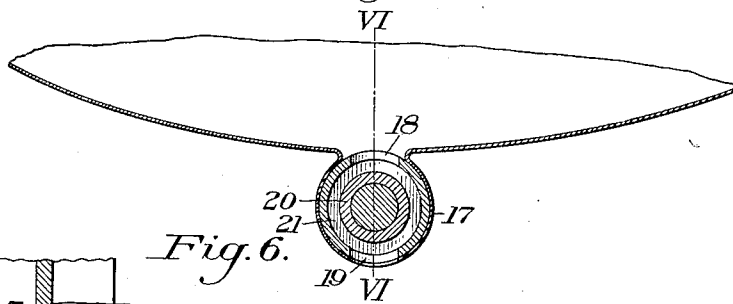


Fig. 6.

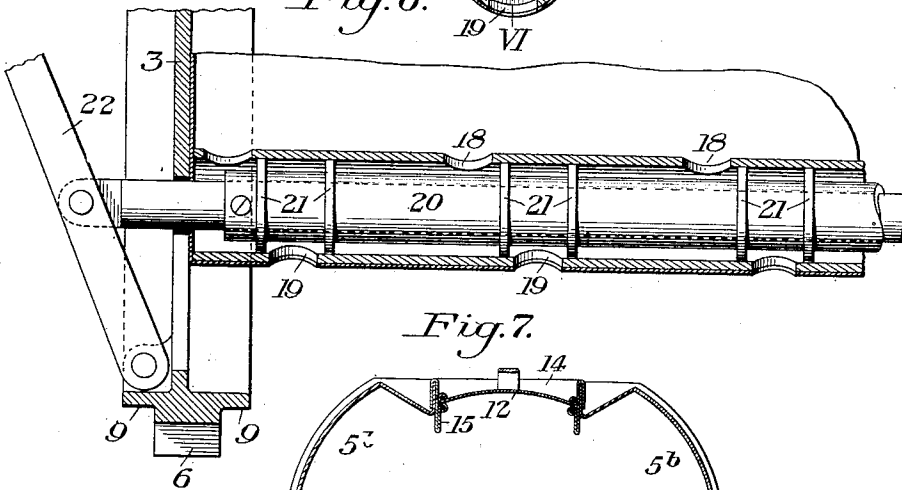
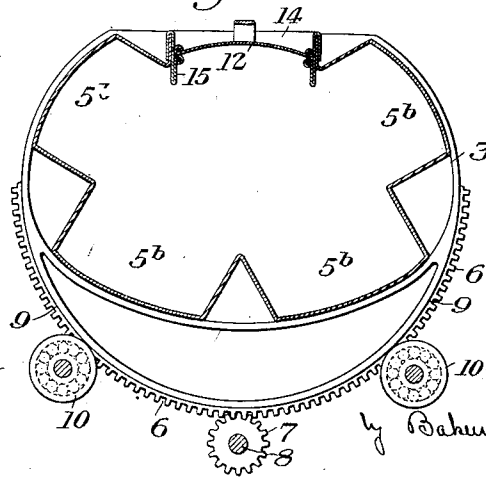


Fig. 7.



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3 SHEETS—SHEET 3.

Fig. 8

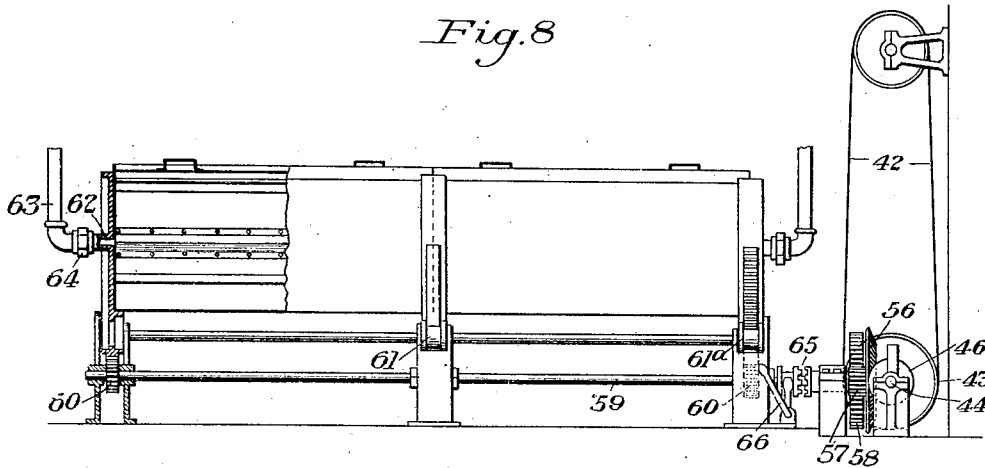


Fig. 11

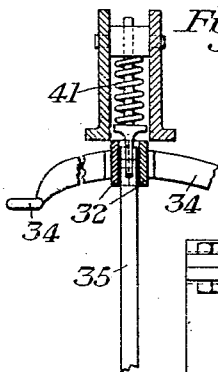


Fig. 9.

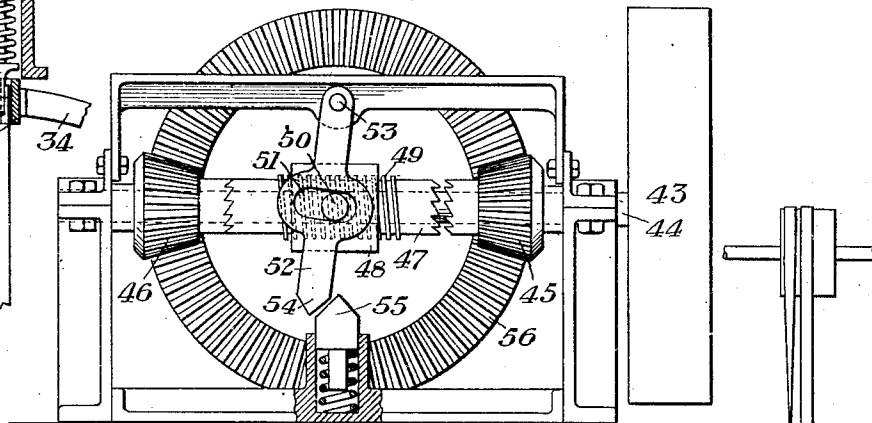
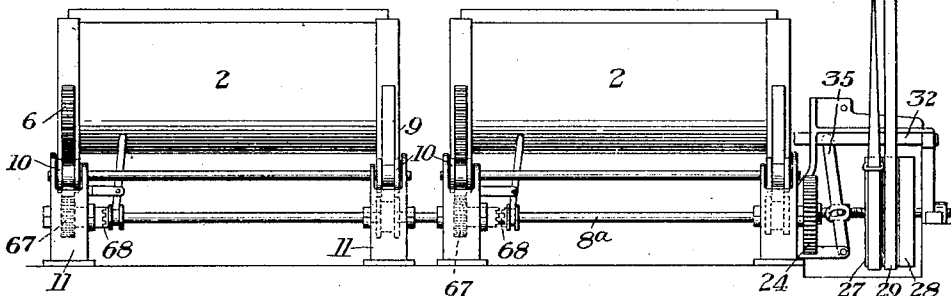


Fig. 10.



WITNESSES

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# UNITED STATES PATENT OFFICE.

ARTHUR L. HOFFMAN, OF PITTSBURGH, PENNSYLVANIA.

## LAUNDRY-MACHINE.

1,371,091.

Specification of Letters Patent.

Patented Mar. 8, 1921.

Application filed April 13, 1914, Serial No. 831,461. Renewed July 31, 1919. Serial No. 314,424.

*To all whom it may concern:*

Be it known that I, ARTHUR L. HOFFMAN, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Laundry-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of one form of machine embodying my invention.

Fig. 2 is an end view.

Fig. 3 is a section on the line III—III of Fig. 1.

Fig. 4 is a detail sectional view of a portion of the drum or tub and cover.

Fig. 5 is a detail sectional view of a portion of the bottom of the drum or tub, and showing a valved discharge thereof.

Fig. 6 is a section on the line VI—VI of Fig. 5.

Fig. 7 is a transverse section showing a modified form of the drum or tub.

Fig. 8 is a side view partially broken away showing another form of reversing mechanism.

Fig. 9 is an end view showing the reversing mechanism in detail.

Fig. 10 is a side view showing two of the machines connected in tandem, and

Fig. 11 is a detail sectional view of the belt shifter of Figs. 1 and 10.

My invention has relation to laundry machines for use in either wet or dry cleaning; and is designed to provide a simple and efficient machine of this character, and of a strong and durable construction.

My invention also provides a machine any number of which may be arranged in tandem to be driven from the same source of power, each machine having means whereby it can be thrown into and out of operation without reference to the other machines.

The nature of my invention will be best understood by reference to the accompanying drawings, in which I have shown different embodiments thereof, and which will now be described; it being premised, however, that various changes can be made in the details of construction and general arrangement of the parts, as defined in the appended claim.

Referring first to that form of my invention which is shown in Figs. 1, 2 and 3, the numeral 2 designates the oscillating drum

or tub within which are placed the materials to be cleaned. This may be conveniently constructed of metallic heads 3, and a sheet metal body 4 secured to and between the heads. The interior of the drum is preferably of oval or elliptical cross section, as shown in Fig. 3, there being a plurality of spaced inwardly projecting baffles 5 which form a series of pockets 5<sup>a</sup>. As the tub is oscillated, the clothes or other material are tumbled from one of these pockets to another, thus thoroughly agitating them and subjecting them to the action of the cleaning fluid. The tub is provided at either one or both ends (in the present instance at one end only) with a segmental gear ring 6 secured to the end head 3 and adapted for engagement with the teeth of a pinion 7 on a longitudinal driving shaft 8 journaled at the base of the machine. Each of the heads 3 is also provided with the bearing surfaces 9 which rest on the flanges of supporting rollers 10 which are journaled in the supporting base 11. The tub is supported wholly on these rollers. If it is desired to make the tubs of extreme length, any desired number of these roller supports may be provided at intervals. For the ordinary sizes of machines the support at each end portion is sufficient. The power is applied to oscillate the tub at the gear rings 6, giving a very powerful leverage. Each drum is preferably provided with one or more covers 12, each of which is hinged at 13 and which is arranged to fit tightly within the opening 14 which it closes. The covers are supported by means of the flange 15 bent over the neck flange 16 and depending sufficiently within the interior of the drum so that the lower portions thereof below the cover form baffles, as clearly shown in Figs. 3 and 4.

Where the machines are designed to be used with water, the bottom of the tub may be formed with the longitudinal cylindrical discharge portion 17 having inlet openings 18 and outlet openings 19. The inlet and outlet openings are out of alinement and are normally closed by valve member 20 having thereon valve disks 21. This member is capable of longitudinal movement by any suitable means, such as the lever 22. When in the position shown in Fig. 6, the valve collars 21 prevent the escape of any of the liquid; but such escape can be permitted by operating the lever 20 to move said valve member to the right a sufficient distance to

uncover the outlet portion 19. This forms a simple and convenient means for discharging and draining the liquid from the tubs.

In the modification shown in Fig. 7, instead of using inwardly projecting baffles to divide the interior of the tub into pockets, the body of the tub itself may be shaped so as to provide the plurality of pockets 5<sup>b</sup>. As the tub oscillates, the clothes or other material are pitched back and forth from one pocket to another in the same manner as in the form first described. The clothes also act in these pockets to produce a suction action which forces the cleaning fluid through the clothes to a much greater extent.

The driving pinion 7 is loosely sleeved on the shaft 8 and is arranged to be connected to and disconnected from said shaft by means of a suitable clutch, such as that indicated at 23. 23<sup>a</sup> shows an operating lever for this clutch.

Any suitable means may be employed for driving and reversing the shaft 8 to thereby oscillate the tub. In the drawing, I have shown this shaft as connected through the reducing gear 24 and pinion 25 with a driving shaft 26. This driving shaft carries two loose belt pulleys 27 and 28 and a central fixed pulley 29; and is designed to be driven in one direction by the straight belt 30 and in the other direction by the cross belt 31. By shifting these belts so that the straight and cross belts are alternately on the central pulley, the movement of the tub is automatically reversed. For this purpose I provide two belt shifter slides 32 (see Figs. 1 and 11) each having a belt shifter 34 engaging one of the belts; and both of them connected to the upper end portion of a lever 35. This lever is pivoted at its lower end at 36, and at its intermediate portion has a slotted engagement at 37 with a stud 38 of a nut 39 mounted on the threaded portion 40 of the shaft 26. The upper end of the lever 35 is also connected to a spring 41 which is arranged to throw and hold the lever to one side or the other of center.

The machine being started in one direction, the tub will continue to oscillate in that direction until the nut 39 has traveled far enough to throw the lever 35 to the other side of center. This shifts the belts and reverses the machine. The tub now continues to move in the reverse direction until the reverse movement of the nut again causes the shifting of the lever 35. The pulleys and belts are so arranged that the cross belt will come on to the middle pulley just at the time, or very slightly before, the straight belt leaves it and vice versa, so that power is always on the machine in one direction or the other and the tub cannot oscillate in either direction beyond certain fixed points.

In Figs. 8 and 9, I have shown another means for driving and reversing the machines. In this form, the power is furnished by a belt 42 which drives the pulley 43 on a transverse shaft 44. This transverse shaft has two bevel toothed pinions 45 and 46 loosely sleeved thereon and adapted to be alternately connected and disconnected from said shaft by a shiftable clutch member 47 fixed to the shaft, but capable of endwise movement thereon. This clutch member 47 has a nut portion 48 which engages a threaded portion 49 on said shaft. This nut also has a projecting stud 50 which engages a slot 51 in a dog 52, pivoted at 53 and having a double beveled lower end 54, which is adapted to cooperate with the baffled end of the spring pawl 55. The purpose of this last described device is to throw the clutch member to one or the other of its positions at the proper time and hold it in such position until the nut has been moved a proper distance to reverse the machine. In other words, this device insures a quick movement of the clutch member from one position to the other, so that one or the other of the pinions 45 or 46 will be substantially at all times in operation. These two pinions engage the teeth of a large bevel gear wheel 56 having attached thereto a pinion 57 which drives the gear 58 on the shaft 59 which carries the pinions 60 which engage the ring gears on the ends of the tub.

In Fig. 8, I have shown a longer form of tub having a central roller support at 61, as well as roller supports 61<sup>a</sup>, at its ends. In this figure, I have also shown the drum as having hollow pipe connections 62 at its ends to which may be attached supply pipes 63 by any suitable form of swivel joint 64 for the supply of liquid to the tub. I have also shown the connection between the gear 58 and the shaft 59 as being controlled by a clutch 65 and clutch lever 66, whereby the machine can be stopped without stopping the belt 42.

In Fig. 10, I have shown how two of the machines can be connected in tandem. These machines are shown as of the form illustrated in Fig. 1, the driving shaft 8<sup>a</sup> being extended through and common to both machines. Each driving pinion 67 is shown as having independent clutch connections 68 on the shaft 8<sup>a</sup>, whereby either machine may be stopped and started independently of the other. By providing sufficient power any number of machines can be placed in tandem and connected to the same driving shaft.

My invention provides a very simple and efficient form of laundry machine adapted for use in large establishments and capable of being built in any desired size. The parts are simple and not liable to get out of order; the machines when once started re-

quire very little attention so far as their mechanical operation is concerned and have proven extremely satisfactory in actual use.

I claim:

- 5 A laundry machine comprising a base having a plurality of roller supports journaled thereon, an oscillating tub mounted on said rollers, said tub having heads and an intermediate body portion, there being a plurality of supports connected to the tub hav-  
10 ing arc-shaped portions seated on the rollers, the bottom of the tub being eccentric with

relation to the arc-shaped supports, said arc-shaped supports together with the rollers forming bearings for the tub, an arc-shaped 15 rack connected to the tub, and gearing connected to said rack arranged to oscillate the tub; substantially as described.

In testimony whereof I have hereunto set my hand.

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Witnesses:

H. M. CORWIN,

GEO. H. PARMELEE.