Feb. 24, 1931. J. A. DUBORD 1,793,845

POWER WASHING MACHINE

Filed Nov. 26, 1927 3 Sheets-Sheet 1

Fig. 1.

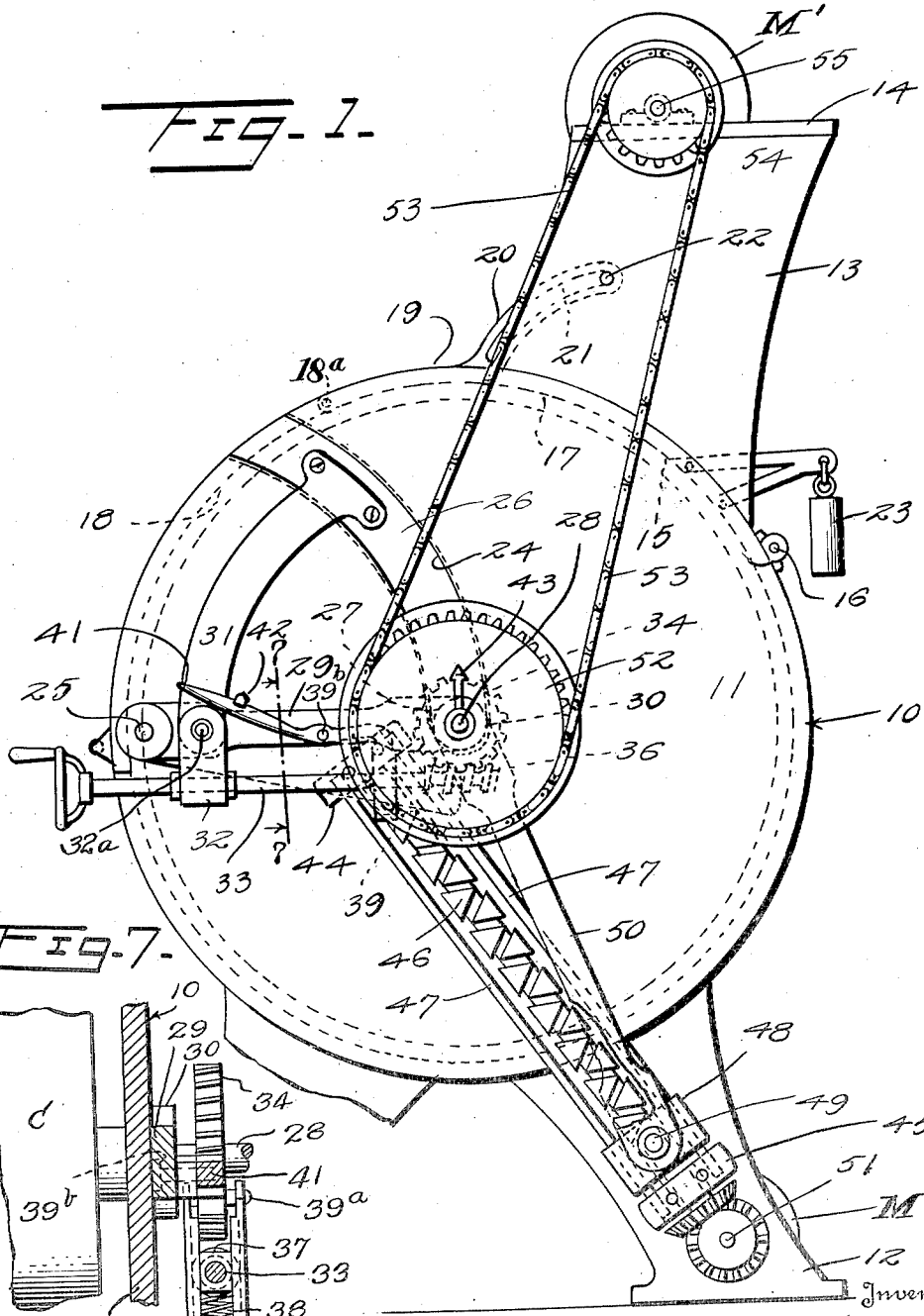
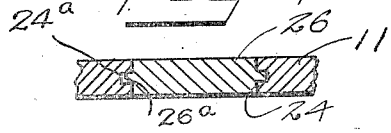


Fig. 7.

Fig. 4.



Inventor

J. A. Dubord

By Watson E. Coleman

Attorney

Feb. 24, 1931. J. A. DUBORD 1,793,845

POWER WASHING MACHINE

Filed Nov. 26, 1927 3 Sheets-Sheet 2

Fig. 2.

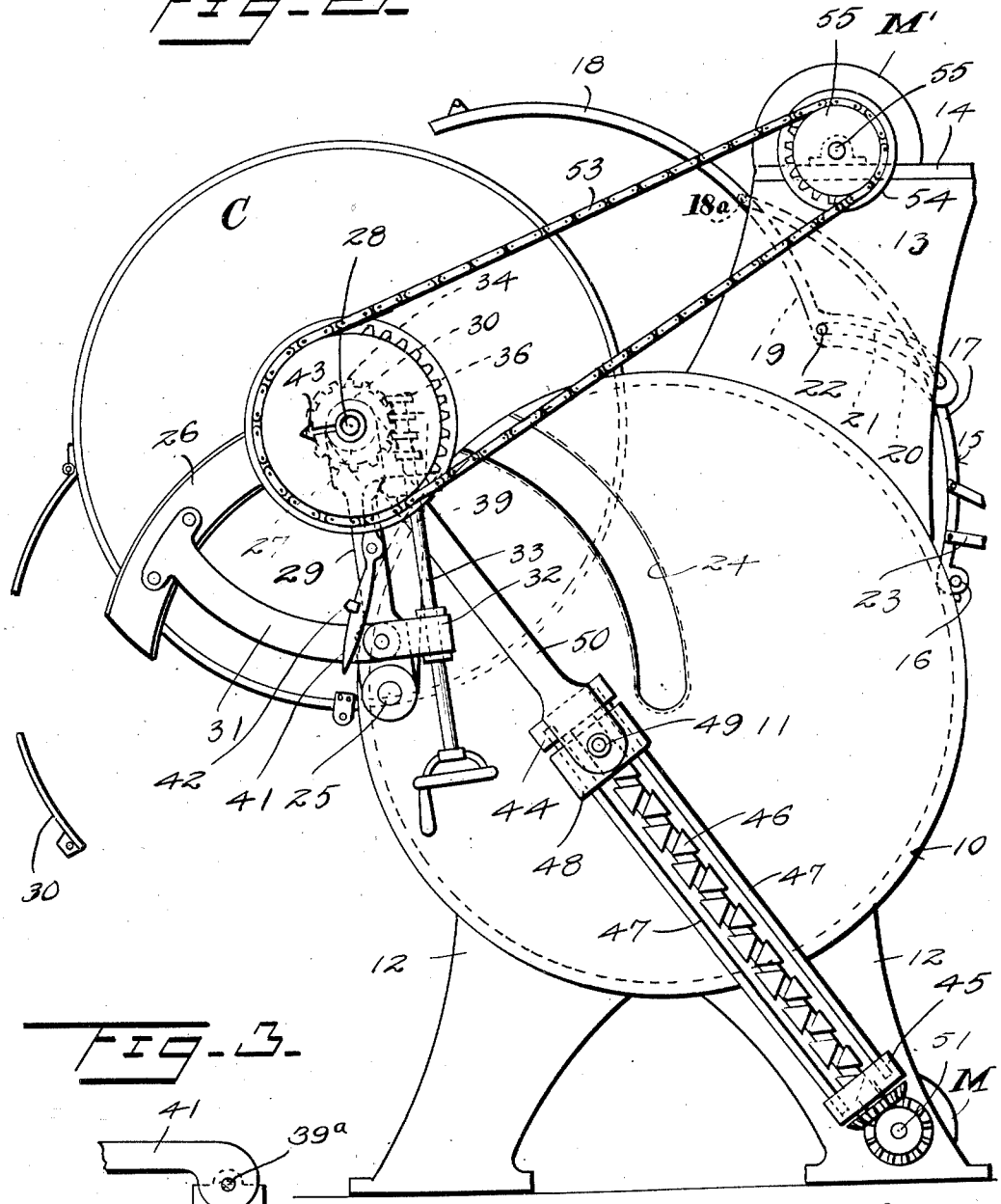
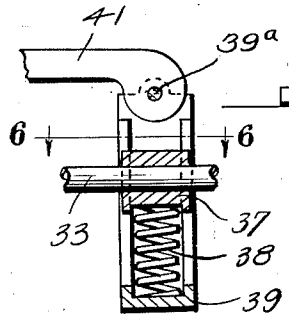


Fig. 3.



Inventor

J. A. Dubord

By Watson E. Coleman

Attorney

Feb. 24, 1931. J. A. DUBORD 1,793,845

POWER WASHING MACHINE

Filed Nov. 26, 1927 3 Sheets-Sheet 3

Fig. 5.

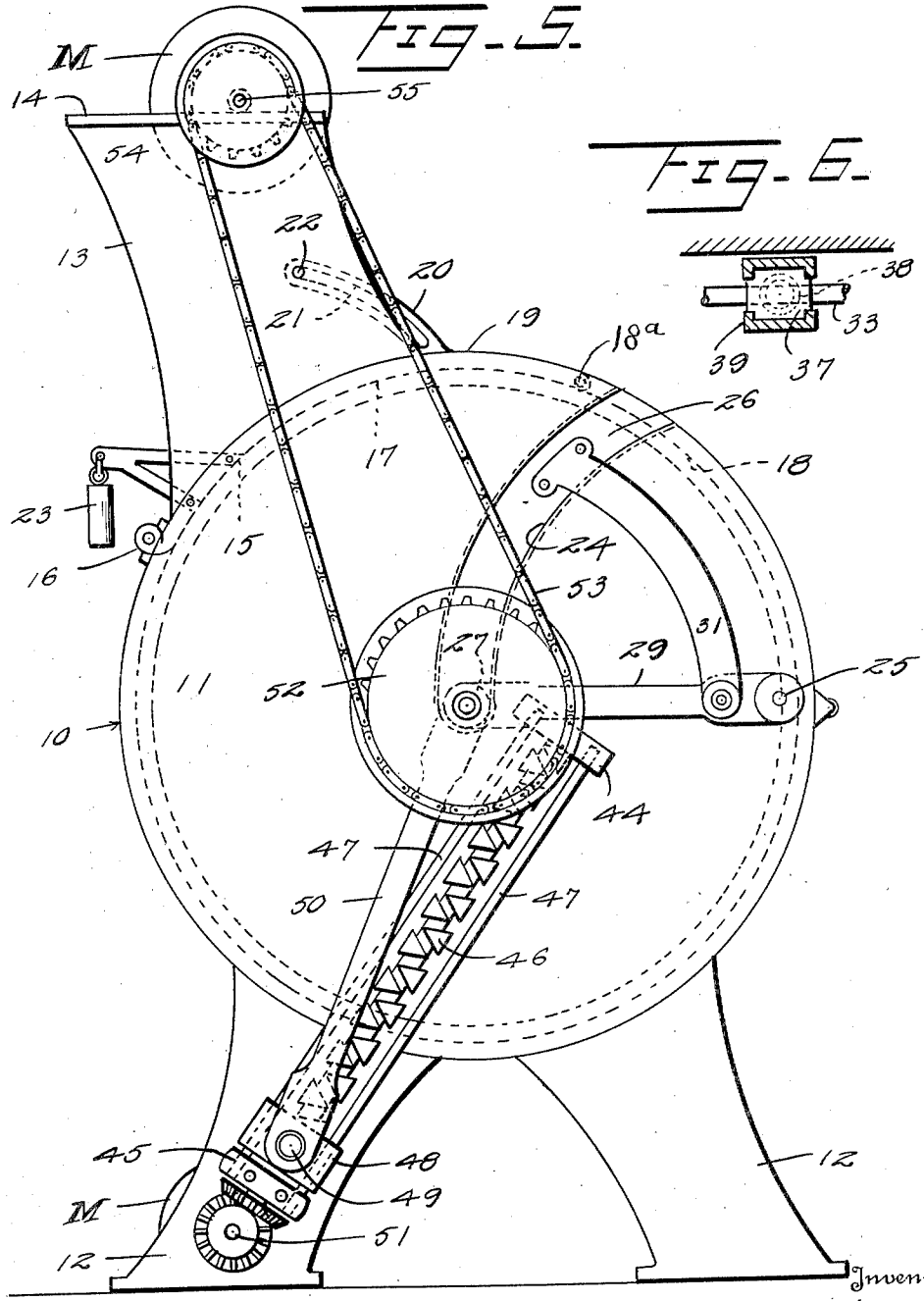


Fig. 6.

Inventor

J. A. Dubord

By Watson E. Coleman

Attorney

Patented Feb. 24, 1931

1,793,845

UNITED STATES PATENT OFFICE

JOSEPH A. DUBORD, OF NEW BEDFORD, MASSACHUSETTS

POWER WASHING MACHINE

Application filed November 26, 1927. Serial No. 235,983.

This invention relates to power washing machines and has for an important object thereof the provision of a washing machine embodying an outer casing and an inner washing cylinder, the construction being such that the inner washing cylinder may be connected to the power to be either rotated thereby or to be projected from the outer casing to permit discharge of the contents thereof without the difficulty and back-breaking operation ordinarily necessary.

A further and more specific object of the invention is to provide a structure of this character, wherein the inner cylinder is mounted upon bearings which are movable, so that this cylinder may be positioned either interiorly or at least partially exteriorly of the main casing, and in which means are provided for sealing the openings in the outer casing necessary to admit of the shifting movements of the inner cylinder.

A further object of the invention is to provide means for properly aligning the door of the inner cylinder with the door of the outer cylinder prior to opening of the door of the outer cylinder and to further provide means, whereby the position of the inner cylinder may be accurately determined at the exterior of the casing.

These and other objects I attain by the construction shown in the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein:—

Figure 1 is an end elevation of one end of a washing machine constructed in accordance with my invention, parts being illustrated in position for shifting of the inner cylinder to the discharge position;

Figure 2 is a similar view with the inner cylinder in its discharge position;

Figure 3 is a detail sectional view showing the construction of the inner bearing of the manual control shaft;

Figure 4 is a detail sectional view showing the mounting of the bars in the slots;

Figure 5 is a view of the opposite end of the washing machine from that shown in Figures 1 and 2, the parts being in the position illustrated in Figure 1;

Figure 6 is a section on the line 6—6 of Figure 3;

Figure 7 is a detailed sectional view taken on the vertical plane indicated by the line 7—7 of Figure 1.

Referring now more particularly to the drawings, the numeral 10 generally designates an outer casing which is in the form of a cylinder having end walls 11. The casing is supported by legs 12, which are preferably four in number, and arranged in pairs at opposite ends thereof. The end walls 11 have at their upper edges and toward the rear portions of these upper edges extensions 13, forming supports for a shelf 14, the purpose of which will presently appear. The upper half of the casing is in the form of a door, generally designated at 15. This door is pivoted at the rear edge of the opening, as at 16, and is formed in two sections 17 and 18, which are pivotally connected to one another at 18ª. The section 18 or front section has at the ends of its rear edge lever connections 19, each sliding against the inner face of one of the supports 13 and each having an arcuately curved angularly extending end portion 20 having a slot 21 formed therein for the passage of a pin 22 carried by the shelf supporting wall. The section 17 is preferably counterweighted, as indicated at 23. This counterweight, after the door has been partially opened, tends to move the door to its fully open position, but when the door is fully closed, tends to hold it in its closed position. As the door moves to the open position, the portion 20 of the arm moves upon the pin and when the pin engages the end of the slot, the section 18 moves to an angle to the section 17, so that a greatly increased door opening over that ordinarily provided results.

Each end of the casing has formed therein an arcuate slot 24 having as its center a gudgeon pin 25 located adjacent the forward edge of the door opening of the cylinder. Slidable in these slots are arcuate bars 26. As best shown in Figure 4, the bars 26 are provided with tongues 26ª engaging in grooves 24ª formed in the side walls of the slots 24. The bars 26 are provided

at their inner ends with bearings 27 for the reception of the trunnions 28 of the inner cylinder C, which may be of any usual or preferred type and has a door 30 through which its contents may be removed.

Pivoted upon the gudgeon pins 25 are arms 29, each having at its inner end a bearing 30 for the passage of the associated trunnion 28. A brace 31 rigidly connected to each arm 29 adjacent the pivoted end thereof and to the associated arcuate bar 26 adjacent the outer end thereof maintains the arms and arcuate bar in fixed relation to one another. One arm 29 has pivoted thereto a bearing 32 engaging a shaft 33 adjacent the outer end thereof, the bearing being pivoted to this arm as shown at 32^a in Figure 1. The outer end of the shaft 33 has a hand wheel or some similar provision permitting manual rotation thereof. The trunnion 28, journaled in the arm 29 to which the bearing 32 is connected, is provided at the exterior of the casing 10 with a worm gear 34, while the inner end of the shaft is provided with a worm 36. A second bearing 37 is provided for the shaft 33 adjacent the inner end thereof, this bearing being supported by a spring 38 within a case 39. With the case 39 is engaged as shown at 39^a one end of a lever 41 pivotally mounted as at 39^b upon the arm 29 carrying a bearing 32, the opposite end of this lever being formed as a handle and having engaged therewith the catch 42 mounted upon the arm. When the handle end of the lever is in engagement with this catch, the casing is so positioned that the bearing is urged upwardly by the spring a distance sufficient to bring the worm 36 into engagement with the gear 34, so that upon rotation of the shaft 33, the worm will be rotated and the inner drum accordingly rotated. The catch 42 may be of any well known or appropriate construction, and is so connected to the arm 29 carrying the lever 41 that it may be moved into and out of engagement with the handle end of the lever. When it is desired to disengage the worm 36 from the worm gear 34, the catch 42 is moved out of engagement with the handle end of the lever 41, with the result that the lever 41 and the shaft 33 are freed for swinging movement about the pivot 39^b and the pivot of the bearing 32 in a direction to carry the worm 36 downwardly and forwardly out of engagement with the worm gear 34. As the case 39 is pivoted to the rear end of the lever 41, and as the bearing block 37 is slidably mounted in the case 39, the relative locations of the pivot 39^b of the lever 41 and the pivot of the bearing 32 will not interfere with the downward and forward swinging of the rear ends of the lever 41 and shaft 33 when the lever 41 is released. The outer end of the trunnion has a pointer 43 or other indicator for showing the position of the cylinder, so that the door 30 thereof may be properly positioned when the cylinder is moved from the outer casing.

Mounted upon the opposite end walls 11 of the casing 10 are journals 44 coacting with journals 45 carried by the legs 12 for the rotatable support of traversing screws 46. In addition to supporting the traversing screws, the journals provide supports for the ends of rods 47, which guide shifting blocks 48. The shifting blocks 48 have shutters 49 engaging the grooves of the traverse screws and are provided with pivots receiving the lower ends of links 50, the upper ends of which are engaged with the trunnions 28 of the inner cylinder C. The lower ends of the traverse screws have driving connections with a shaft 51 operated from a motor or other suitable source of power.

It will be obvious that by continuous rotation of this shaft, the traveling block 48 will first move to the upper end of the screw and then return to the lower end thereof. The shaft 51 is preferably driven by a motor M, the operation of which may be controlled through a suitable switch (not shown) to check motion of the inner cylinder when in desired positions. Assuming that a washing operation has just been completed, the apparatus is employed as follows: The lever is manipulated to bring the worm 36 into engagement with the worm gear 34 and the hand wheel rotated until the pointer 43 indicates that the door of the inner cylinder is in the proper position. The door 15 of the outer casing is then given an initial opening impulse, the opening thereof being completed by the counterweight 23. The motor M is started, causing the thrust blocks to move longitudinally of the traversing screws and through the links 50 to shift the inner cylinder through an arc and through the opening provided by the opening of the door 15. During this time, the worm 36 being in engagement with the worm gear 34 will lock the inner cylinder against rotation, so that the position of the door of the inner cylinder may not be changed and when the cylinder is properly positioned, may be opened to permit the contents thereof to drop into a receptacle. When the inner cylinder is emptied, it may be either returned to the casing before refilling or may be rotated through the shaft 32 to a position where the door 30 thereof is upwardly arranged and the cylinder may accordingly be refilled. In returning the cylinder to its normal position, it is merely necessary to restart the motor M and the traversing screw will cause the traveling block 48 to move downwardly, permitting the arcuate bars 26 to move through the slots to their normal position. When in their normal position, these bars seal the end walls of the casing, preventing the escape of steam or water therefrom. Any suitable drive may

be provided for the inner cylinder. In the present instance, one trunnion 28 of this cylinder is shown as having secured thereto a sprocket gear 52 connected through a chain 53 with a sprocket gear 54 mounted upon a shaft 55 driven by the motor M' mounted upon the shelf 14. The sprocket chain is of such length and the shaft 55 so disposed that the chain is taut when the inner cylinder is in either of its extreme positions. The chain thus acts in a measure to relieve the links of any tendency on the part of the inner cylinder to shift with the link as a radius. This is an advisable precaution at this time, as it is desirable that the cylinder be shifted through such a distance that the bar 26 is freed from the walls of the groove and accordingly unsupported, except by the linkage provided by the arm 29 and links 50.

Since the construction hereinbefore set forth is capable of a certain range of change and modification without materially departing from the spirit of the invention, I do not limit myself to such specific structure except as hereinafter claimed.

I claim:—

1. In a washing machine an outer casing having end walls provided with slots curving upwardly and forwardly from the centers of said walls and open at their upper ends, a cylinder in the casing and provided at its ends with trunnions, arcuate bars mounted in said slots and provided at their lower ends with bearings receiving the trunnions, the bars being slidable in said slots so that the cylinder may be withdrawn from and returned to the casing, means engaged with the trunnions for withdrawing the cylinder from and returning it to the casing, arms arranged at the outer sides of said end walls and provided at certain of their ends with bearings for the reception of the trunnions and having their other ends pivoted to said end walls at points constituting the centers of the circles of which said slots are parts, and a brace fixed to the bar and arm at each end of the casing.

2. In a washing machine, an outer casing having end walls provided with slots curving upwardly and forwardly from the centers of said walls and open at their upper ends, a cylinder in the casing and provided at its ends with trunnions, arcuate bars mounted in said slots and provided at their lower ends with bearings receiving the trunnions, the bars being slidable in said slots so that the cylinder may be withdrawn from and returned to the casing, the side walls of the slots being provided with grooves extending longitudinally thereof and the bars being provided with tongues extending longitudinally thereof and slidably engaged in the grooves, means engaged with the trunnions for withdrawing the cylinder from and returning it to the casing, arms arranged at the outer sides of said end walls and provided at certain of their ends with bearings for the reception of the trunnions and having their other ends pivoted to said end walls at points constituting the centers of the circles of which said slots are parts, and a brace fixed to the bar and arm at each end of the casing.

3. In a washing machine, an outer casing provided with a door, a cylinder within the casing and provided with a door, means rotatably supporting the cylinder within the casing, means carrying said first means and pivotally connected to the casing so that the cylinder may be withdrawn from and returned to the casing, a gear fixed to the cylinder, a shaft pivotally and rotatably connected to said second means, a gear fixed to the shaft and meshing with said first gear so that the cylinder may be turned by said shaft to aline the door of the cylinder with the door of the casing, and means carried by said first means and engaging the shaft to releasably hold the gear carried by the shaft in engagement with said first gear.

In testimony whereof I hereunto affix my signature.

JOSEPH A. DUBORD.