No. 672,318. Patented Apr. 16, 1901.

W. DREVER.

WASHING MACHINE.

(Application filed July 7, 1899.)

(No Model.) 2 Sheets—Sheet 1.

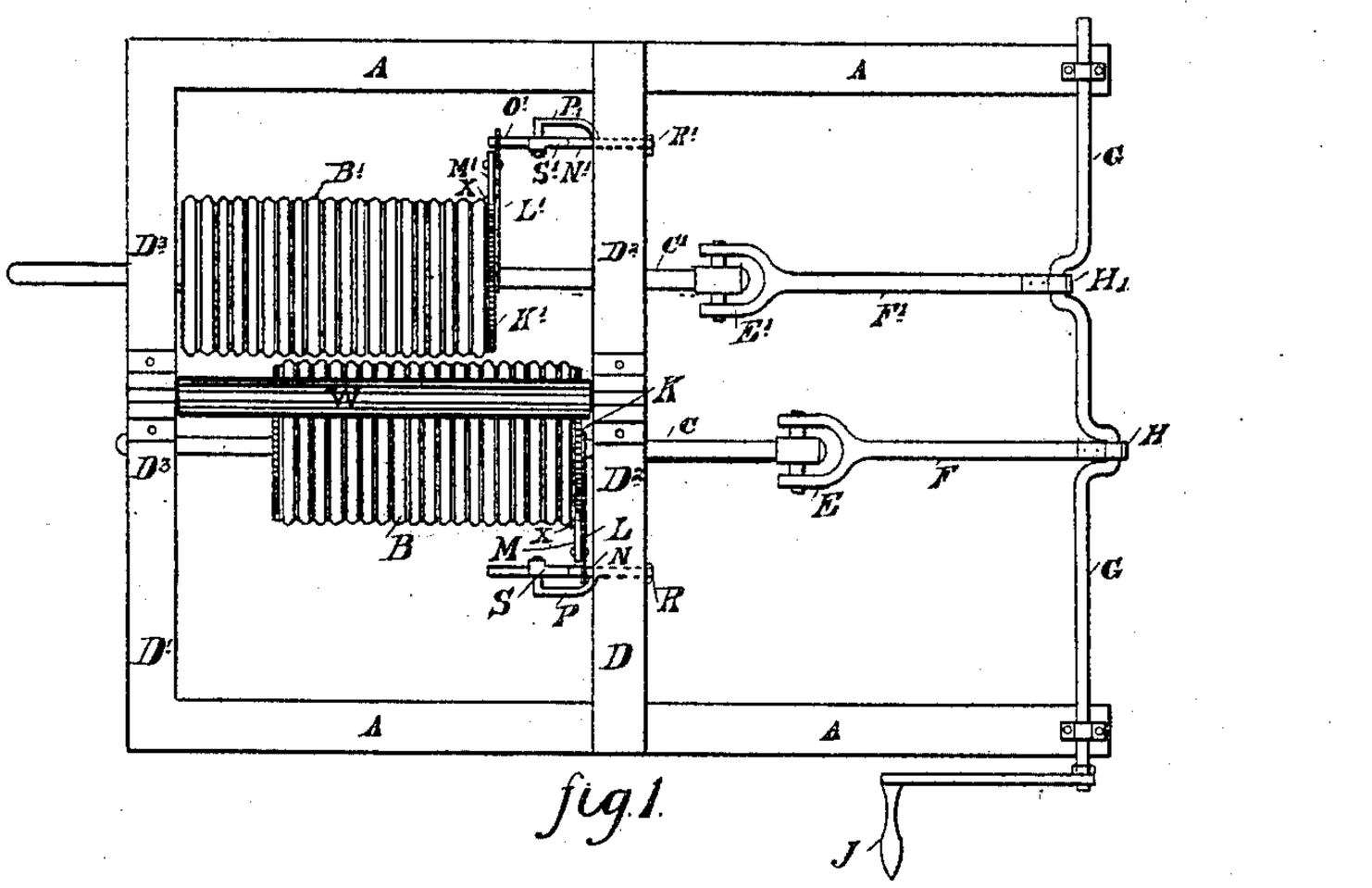
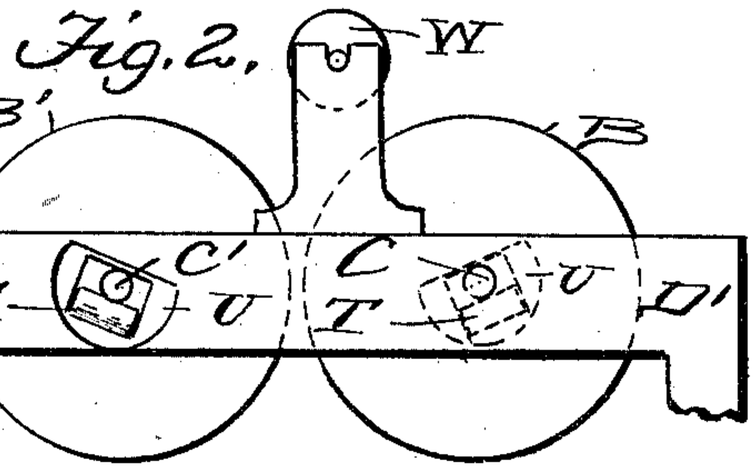
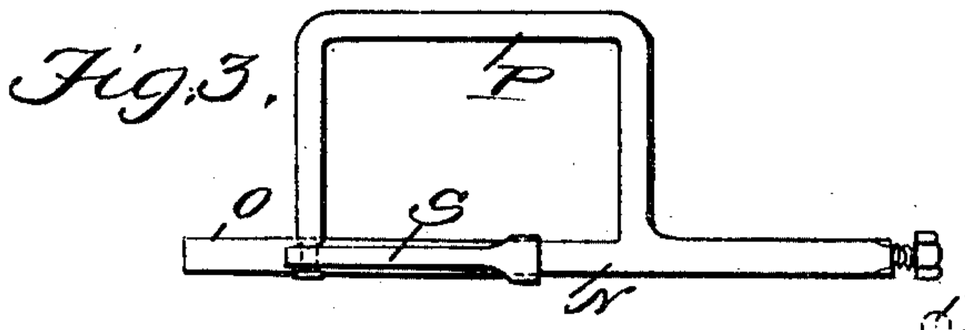
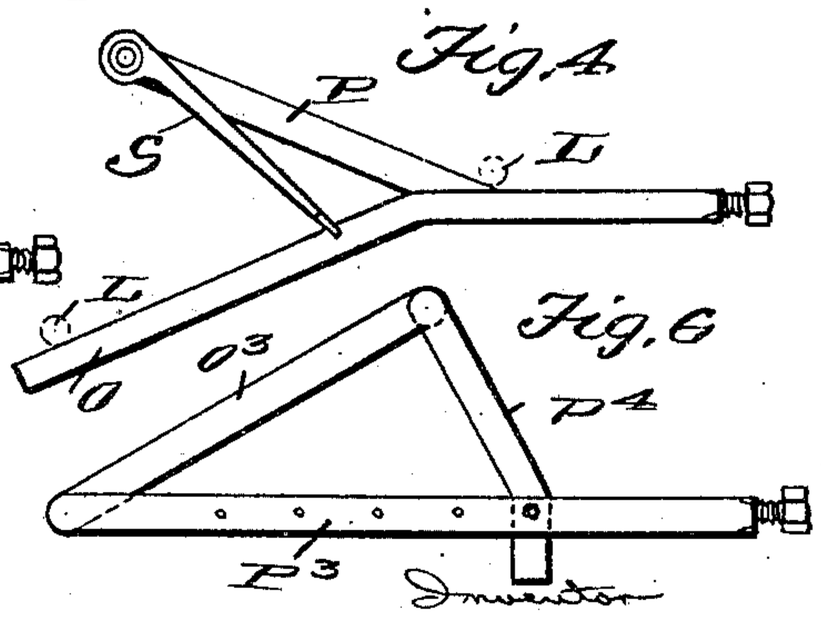
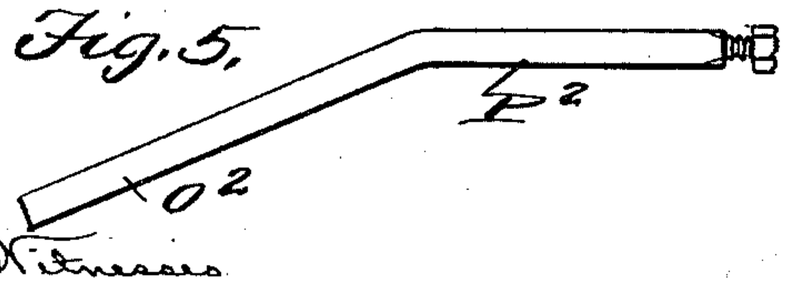


fig. 1.









Witnesses.
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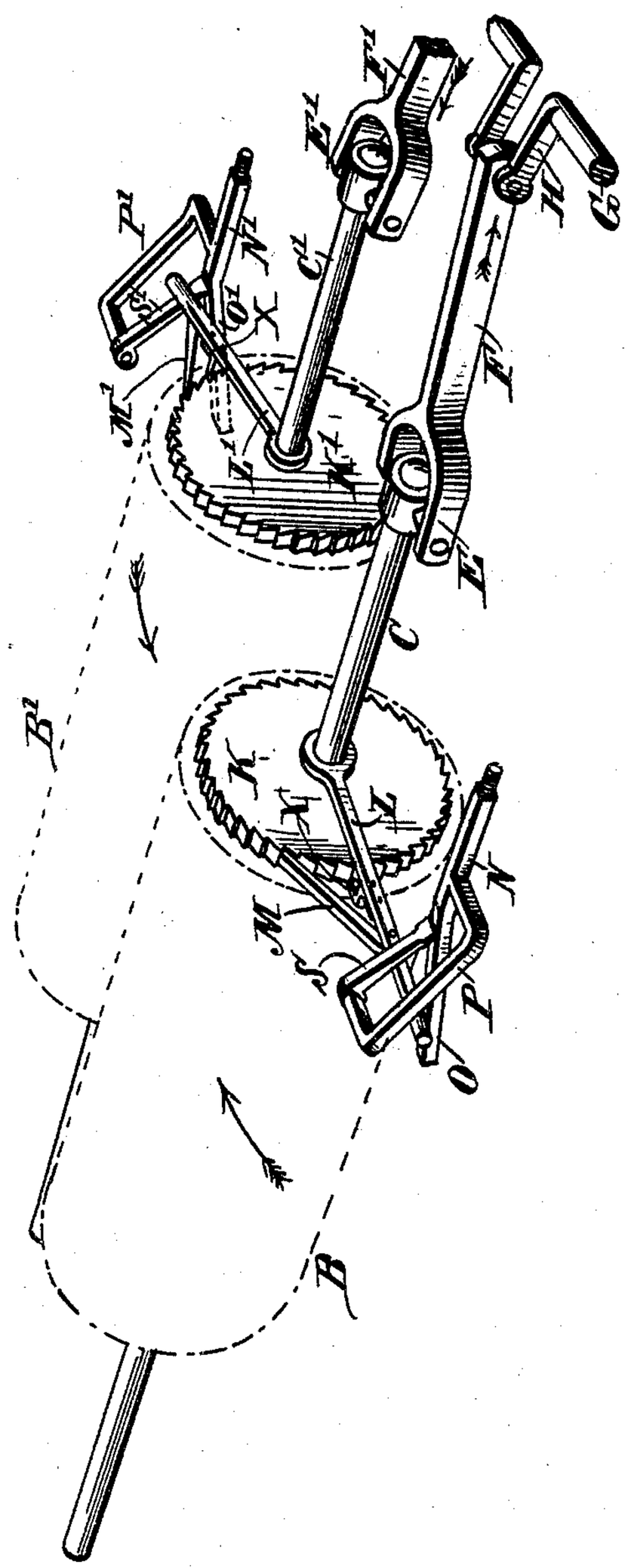

Fig. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM DREVER, OF KAURIHOHERE, NEW ZEALAND.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,318, dated April 16, 1901.

Application filed July 7, 1899. Serial No. 723,100. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DREVER, farmer, a subject of Her Majesty the Queen of the United Kingdom of Great Britain and Ireland, and a resident of Kaurihohere, in the county of Whangarei, provincial district of Aukland, and Colony of New Zealand, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification.

The invention aims to construct a machine of this character which is particularly adapted for washing clothes, cotton goods, woolen goods, flax material, whether manufactured or in course of being prepared from the raw article, and every class of goods capable of being washed or treated by the same.

Briefly described, the invention consists of a pair of reciprocating and step-by-step or intermittent rotary corrugated rollers mounted in a suitable frame, having their shafts journaled upon small friction-rollers angularly arranged while their inner ends are connected to drive-rods attached to a crank-shaft which when operated imparts to the rollers a reciprocating motion, while the step-by-step or intermittent rotary movement is obtained by ratchet-wheels secured to the end or ends of the corrugated rollers and which are actuated by means of suitably-disposed pawls carried by levers operating upon guide-bars.

The invention further consists in the novel combination and arrangement of parts hereinafter more specifically described, illustrated in the accompanying drawings, and particularly pointed out in the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, wherein similar letters of reference indicate corresponding parts throughout the several views thereof, and in which—

Figure 1 is a top plan view of the machine. Fig. 2 is an end view thereof, showing the friction-rollers and the shafts of the corrugated rollers journaled upon the same. Figs. 3 and 4 are a plan and a side view, respectively, of one of the guides. Figs. 5 and 6 are side views of modified forms of guides. Fig. 7 is a perspective view of the reciprocating rollers and their operating mechanism, the frame being removed therefrom.

Referring to the drawings by reference-letters, A indicates a suitable supporting-frame, within which is arranged the rollers B and B′, having their peripheries corrugated and each provided with a shaft C C′, respectively, which are journaled in the transversely-extending supports D D′ upon the frame A. The shafts C and C′ are respectively connected to the yokes E E′ of the drive-rods F F′, attached to the crank-shaft G, as at H and H′.

J denotes an operating-handle for the shaft G.

The rollers B and B′ have respectively connected to their inner ends the ratchet-wheels K and K′, which are engaged and operated by means of the pawls M M′, pivoted at one end to the levers L and L′, mounted upon the shafts C and C′. The free ends of the levers L and L′ project beyond the pivoted ends of the pawls M and M′ and operate upon the longitudinally-extending and inclined guide-bars N N′ and O O′, respectively, the former being suitably secured to the transverse support D and having formed integral therewith the outwardly-extending upwardly-inclined yoke-shaped guide-supports P and P′, carrying the downwardly-extending pivoted guide-arms S S′. These guide-arms S and S′ are inclined in an opposite direction to the inclination of the guide-bars O and O′.

The shafts C C′ operate through suitable stuffing or packing boxes (not shown) and which are connected in any desirable manner to the transverse supports D and D′. One end of each of the shafts C and C′ rests upon angularly-arranged friction-rollers T, located in the frames U. Ordinarily this frame U will be inserted into the supports D or D′, as shown in Fig. 2. I do not, however, limit myself to the form of the frame U, nor the particular manner in which it is secured in the transverse support D. Said frame U has its center cut out, so that the roller T can be fixed within it and journaled to its sides in any suitable way that will permit the roller T to rotate with the action of the shafts C and C′, sufficient space being left between the roller T and the frame U to allow the shafts C and C′ to pass freely through, while they partly

rest upon the inclined roller T, as shown. A smooth roller W is journaled on the top of the frame A above one of the rollers B and B'. Brackets X are fastened to the levers L and L', as shown in Figs. 1 and 7, which contact with the ratchet-wheels K and K' to retain the levers in position.

The machine when adapted for use may rest upon or be connected to washtubs or troughs, or it may be secured to a post or bracketed to a wall or placed in any desirable position that will permit the operation thereof. To operate the machine, the handle J is turned. This rotates the crank-shaft G and imparts an alternating reciprocating movement to the drive-rods F and F', causing thereby an alternating reciprocating movement of the shafts C and C' and the rollers B and B'. While the roller B is reciprocated the outer end of the lever L moves along the guide-bar N, then along the guide-arm S, from the top of which it drops over onto the guide-bar O just as the back stroke of the roller B is finished. Then as the roller B is reciprocated forward the lever L moves up the guide-bar O, lifts up the lower end of the guide-arm S, and passes along the guide-bar N until the forward movement of the roller B is discontinued, when it again moves with the back movement of the roller on the guide-bars N O and guide-arm S, as heretofore described, continuing such movement upon the guide bars and arms as long as the roller B is reciprocated. The result of this operation of the lever L is that the pawl M engages and presses against the teeth or notches of the ratchet-wheel K, causing thereby the roller B to rotate inwardly, which gives it a step-by-step or intermittent rotary movement in addition to the reciprocating motion which it receives from the drive-rod F. The roller B' alternates in its operation with that of the roller B, which is exactly the same, and rotates inwardly in the same manner as roller B, so that when one is moved forward the operation of the other is just the reverse. While these two movements are given to the rollers B and B' the clothes, flax fiber, or other material are passed over the roller W and in and between the corrugated rollers B and B' and are thoroughly cleansed by the double movement and action of the corrugated rollers. The roller W serves as a guide to the material passing between the corrugated rollers, and it may also be used to support the material while some portion of the latter is being specially dealt with.

The object of journaling the shafts C and C' on the friction-rollers T is to enable the corrugated rollers B and B' to open out from each other to suit the pressure of different thicknesses of material that may be passing between them.

With large machines or even small machines the system of guide-bars may be modified by having only one guide-bar, (see Fig. 6,) which is constructed in the same manner as the bars N and N' and its inclined portions O O'. This will be as indicated by the reference character O^2 P^2; or the form of guide-bar may be employed as shown in Fig. 7, which is constructed with an adjustable slope or incline, as at O^3, to increase or decrease the ratchet motion, and which may be regulated by a support or strut P^4, hinged to and beneath the upper end of the guide-bar and suitably adjusted to the guide-bar frame P^3.

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

1. In a washing-machine, the combination of a pair of reciprocating rollers, operating means therefor, a lever-and-pawl mechanism engaging said rollers for intermittently rotating the same, and guide mechanism arranged in suitable relation to said rollers and engaged by said lever for operating the latter, imparting thereby a rotary movement to the said rollers.

2. In a washing-machine, the combination with a suitable frame, of the corrugated rollers journaled in said frame, a crank-shaft, rods connected to said shaft and said rollers for reciprocating the latter, ratchet-wheels secured to said rollers, levers suitably connected to said rollers, guide means arranged in suitable relation to said rollers, and pawls carried by said levers for engaging the ratchet-wheels for intermittently rotating the corrugated rollers, substantially as described.

3. In a washing-machine, the combination of intermittently-rotating reciprocating rollers, means for reciprocating said rollers, levers connected to said rollers, a pawl carried by each of said levers and engaging said rollers for intermittently rotating the same, and guides for the levers, each comprising an oppositely-inclined guide yoke and bar and an arm pivotally connected to the upper end of said yoke.

4. In a washing-machine, the combination of intermittently-rotating reciprocating rollers, a lever carried by each roller and having a propelling-pawl adapted to engage a ratchet of the roller, and an inclined guide arranged in the path of the longitudinal movement of said lever and adapted for engagement therewith, substantially as set forth.

5. In a washing-machine, a pair of reciprocating rollers, operating means therefor, a ratchet-wheel suitably connected to each of said rollers, a lever suitably carried by each of said rollers, and carrying means adapted to engage in the said ratchet-wheels for rotating said rollers, guide-bars arranged in suitable relation to said rollers and adapted to be engaged by the said levers, a yoke formed integral with each of the said guide-bars, and a guide-arm pivoted to the free end of each of the said yokes and adapted to be engaged by the said lever, substantially as set forth.

WILLIAM DREVER.

Witnesses:
GEORGE WILLIAM BASLEY,
PERCY HERBERT BASLEY.