S. A. Bailey.
Wringing Mach.

No 62,805. Patented Mar 12. 1867.

Fig. 1.

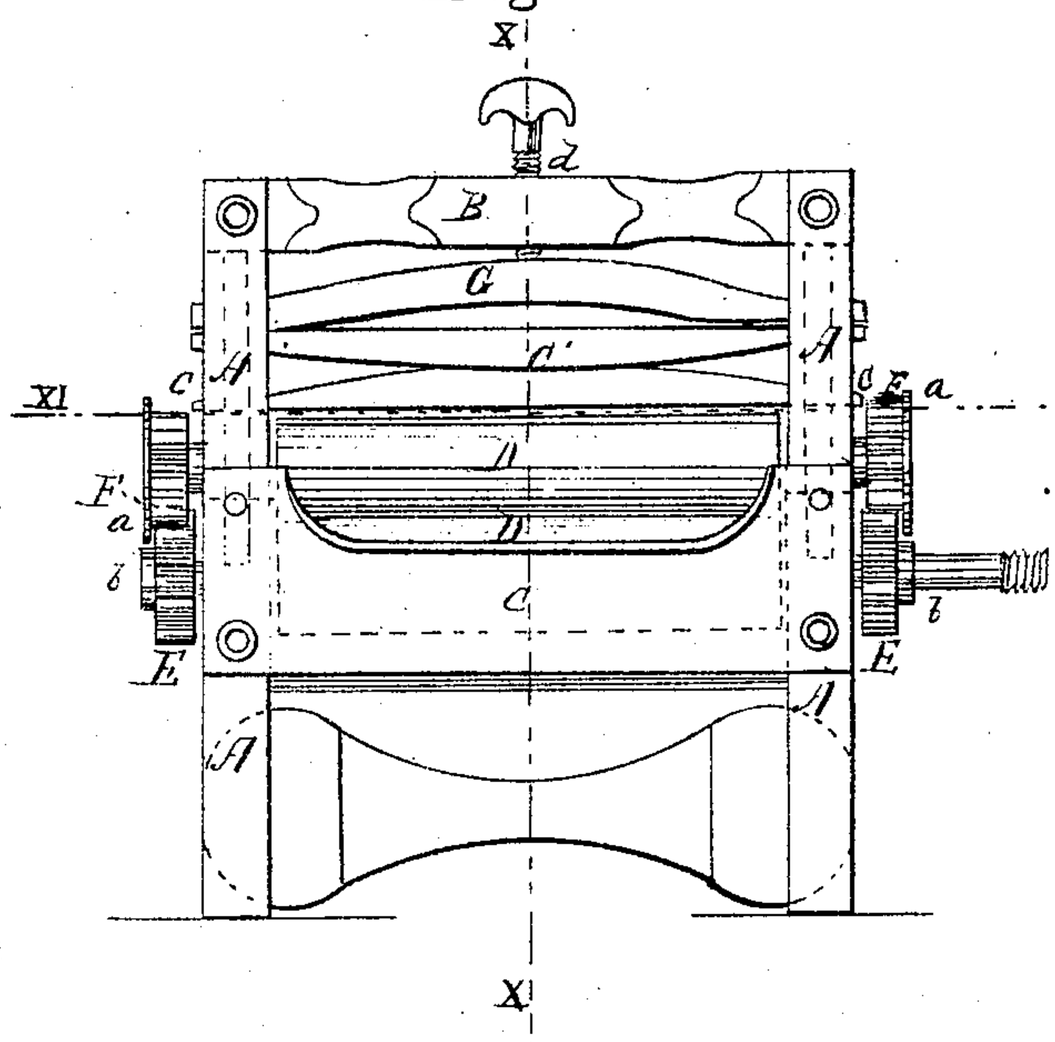


Fig. 2.

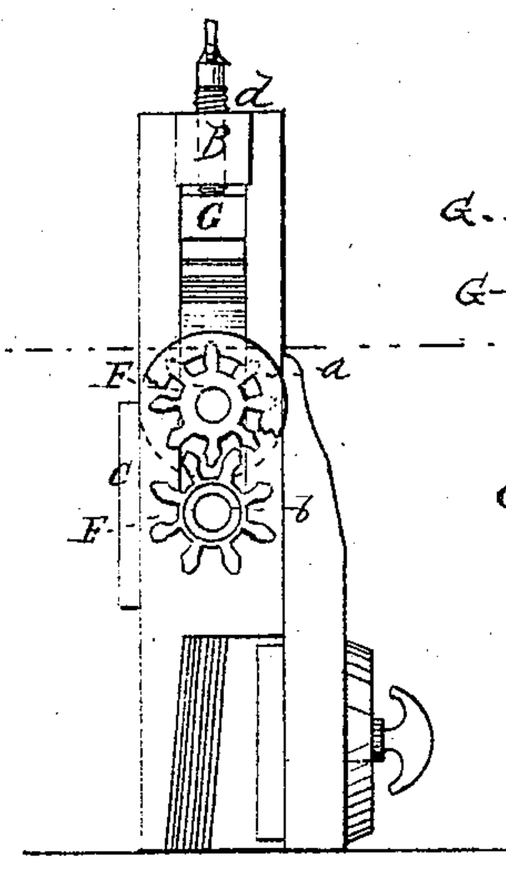


Fig. 3.

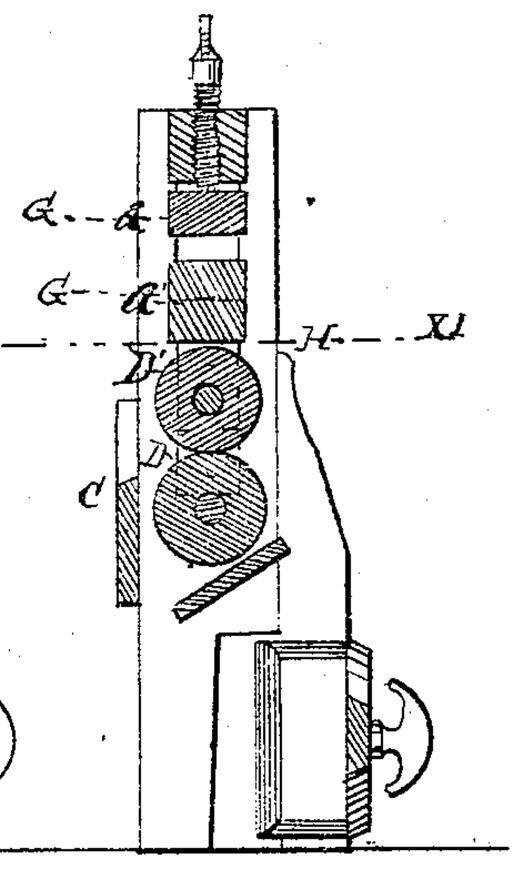


Fig. 4.

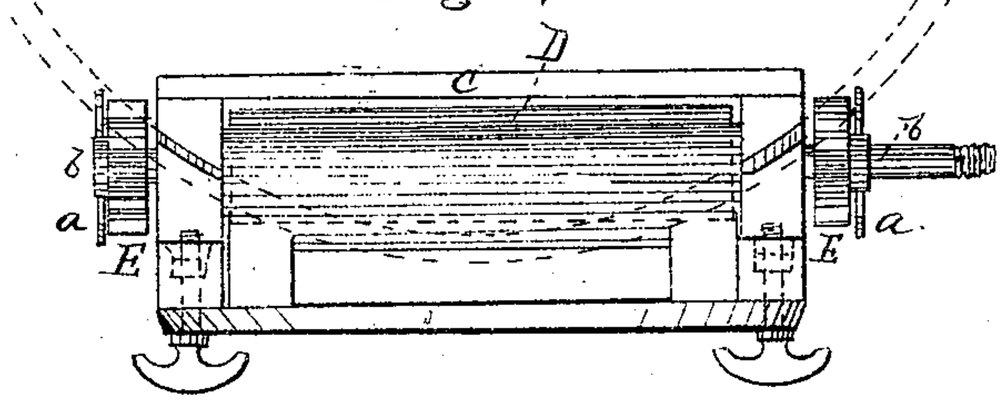


Fig. 5.

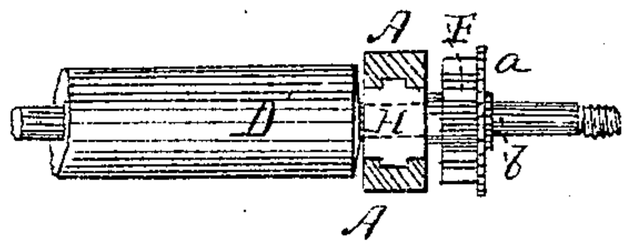


Fig. 6.

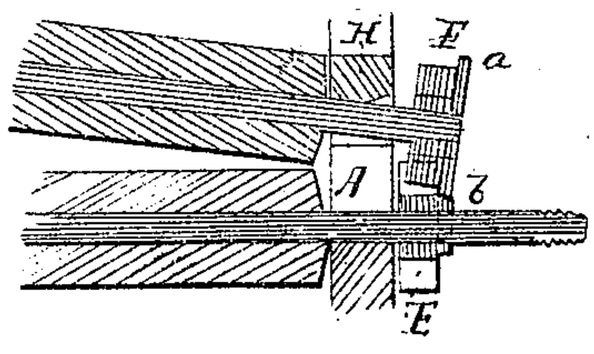
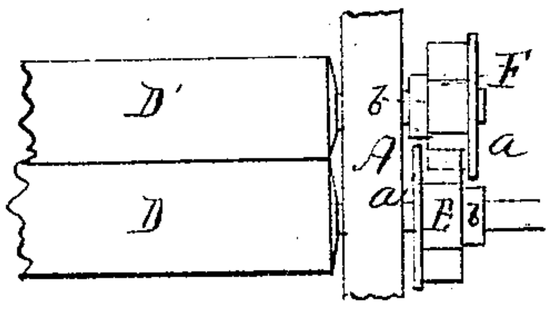


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

SELDEN A. BAILEY, OF WOONSOCKET, RHODE ISLAND, ASSIGNOR TO BAILEY WASHING AND WRINGING MACHINE COMPANY, OF SAME PLACE.

IMPROVED WRINGING-MACHINE.

Specification forming part of Letters Patent No. **62,805**, dated March 12, 1867.

To all whom it may concern:

Be it known that I, SELDEN A. BAILEY, of Woonsocket, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in Washing and Wringing Machines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a front elevation, Fig. 2 an end elevation, and Fig. 3 a vertical central section on the line X X of Fig. 1, of my improved washing and wringing machine. Fig. 4 is a view of the bottom, showing the manner in which it is secured to the wash-tub; and Figs. 5, 6, and 7 show parts in detail that will be more particularly referred to hereinafter.

In all the figures like parts are indicated by the same letters of reference.

In most, if not all, of the washing and wringing machines that have been patented and brought into use, one of the many objections found against them has been the great amount of labor required to turn the rolls after the springs have been set with the degree of pressure needful to produce a useful and profitable result. Another has been found in the fact that one roll will drag upon the other, wearing the clothes, and subjecting the rolls themselves to a wear and tear that soon makes them ragged and unfit for service, involving thereby the purchase of a new machine, or, which is nearly as expensive, the substitution of new rolls. Still another cause of complaint is, that where the rolls are, by inequalities in the thickness of the clothes to be wrung, forced so far apart at one end as to be out of gear, the teeth of the gears at the other end are grinding and cutting each other on one-half or less of their bearing-surfaces, and are, moreover, so jammed together as to lock themselves, and be extremely difficult to turn—a result never contemplated for what should be, as represented, a true labor-saving machine. In my improvements all these objections, and many others, are removed, and the machine is made to be what it should be—a really desirable and profitable utensil for the housekeeper.

In the drawings, A A are the uprights of the machine. They support the bearings of the lower roll at each of its ends, and are connected together at top by a cross-piece, B, bolted strongly to them. They are still further braced by being bolted to the breast-board C, over which the clothes are passed in between the rolls to be wrung. D D′ are the rolls. These are geared together at each end by long-leaved pinions E F, as shown in Fig. 2, the pinions at one end of the rolls being so set as to have their teeth or leaves opposite the spaces between the leaves of the pinions at the other end of the rolls. This is in order that the pinions at one end of the rolls may be always engaged before the pinions at the other end can be disengaged, thereby insuring continuity of action when the rolls are not separated so as to be out of gear at one end, and insuring immediate action as soon as they fall into gear again after having been so separated.

Either of the rolls may be the driving-roll, or that one to whose axis is applied the power to turn them, which may be by hand or otherwise. In the drawing I have represented the lower roll D as the driver, and as it is constant in its bearings, these are fitted to receive its journals without adjusting devices.

The friction of the journals of the rolls in their bearings is necessarily great from the degree of pressure required for the rolls to properly perform their office upon the clothes which are passed between them, and this friction, due to such pressure, causes a tendency on the part of the driven roll D′ to drag upon the clothes and be retarded in its rate of revolution, which, theoretically, should correspond with that of the driving-roll D, and be in accordance with the difference, if any, in the diameters of the two rolls.

In order that the driven roll D′ may be eased in its movement when lifted up from the driving-roll by the thickness of the clothes, I make the driving-roll D a little larger in diameter than the driven roll D′, as, when the clothes are thin between the rolls and the driven roll D′ drags a little upon them, the labor of turning is not quite so great as when the clothes are thicker and the pressure on the journals is

greater. The increase of speed in the roll D′, due to the greater diameter of the driving-roll D—the clothes acting as the partial agent of communication between the rolls—will relieve the clothes of the drag upon them through the pressure on the journal-bearings, until the thickness of the clothes shall have become so great as to bring into action the pinions E and F.

If the diameter of the gearing-pinions be equal, there will be a slight degree of "backlash," or a more rapid rotation of the driven than the driving pinion, less the distance lost in the drag from the pressure on the bearings of the roll D′. This backlash of the driven pinion F against the driving-pinion E is of so little consequence, when the rolls are nearly in contact and the pressure on their bearings is comparatively light, that I have found it in practice to be of advantage to allow more backlash when the rolls are near each other, by making the diameter of the driving-pinion E greater than that of the pinion F, giving both pinions the same number of teeth, but arranging their forms so that when the rolls are separated by an extra thickness of clothes, the backlash shall be lost and the pinion E shall drive the pinion F, and actually overcome the drag due to the increased pressure on the journals of the rolls D′.

If the clothes be so unequal in thickness that one end of the driven roll D′ shall be lifted out of gear with the corresponding end of the driving-roll D, the other ends of the rolls shall be brought together, so as to insure the proper action of the pinions, while at the same time all end play is prevented, and the pinions E and F are kept from being so closely meshed as to be jammed together, by means to be now described.

The pinions F are each cast with a flange, *a*, (shown in Fig. 2 as partially broken away,) which may extend to some distance beyond the ends of the teeth, and which acts as a guard to prevent either of the rolls from slipping endwise, and to prevent the teeth of the pinions from becoming too closely meshed, the flange *a* in this case resting with its edge either against the shaft of the roll D or against the hub *b* of the pinion E, as seen in Fig. 6.

The pinions E and F may be so constructed that each shall have a flange, *a*, on one of its faces, and a hub, *b*, on the other, and be so arranged that there shall be a flange and hub opposite each other on both faces of the pinions, as shown in Fig. 7. The relative diameters of the flanges and hubs may be such as to allow space enough between them to permit the pinions and rolls to have the necessary vertical play, and yet allow the flanges and hubs to come in contact with each other, so as to prevent the teeth of one pinion from entering too deeply between the teeth of the other and jamming when the rolls are so pressed together that in their elasticity they yield enough to bring the pinions too closely in connection, if not prevented by the contact of the flanges and hubs, as above set forth.

G G′ are the two parts of a compound spring, the ends *c c* of which rest upon the journal-blocks H of the rolls D′. The journal-blocks H are fitted to slide freely up and down in grooves in the uprights A A, (see horizontal section, Fig. 5, on line XI XI of Figs. 1 and 2,) and have that portion of their inner surfaces which rests on the journals slightly curved, as seen in Fig. 6, to allow for obliquity of the bearing when the roll is lifted at one end. The upper member G of the spring has in its center a shallow socket to receive the pivot-point of a set-screw, *d*, passing through the center of the cross-piece B, which is threaded or has a nut keyed in it to receive the screw.

It will be seen that when the screw *d* exerts pressure enough on the part G of the spring to cause such a uniform bearing of the ends *c c* on the journal-blocks H as will be required to have the rolls perform their office properly, the point of the screw *d* becomes a pivot, acting like the knife-edge of a scale-beam, for the spring and roll, so that if one end of the roll D′ be lifted by any force applied beneath it, there will be no difference in the pressure of the spring G G′ upon the ends of its axis, as the resolution of forces will be always in a straight line from the pivot-point of the screw *d* to a point in the axis of the roll midway between its bearings. This condition is not changed by any increase of pressure, nor by any increased obliquity of the roll and springs that ordinary use of the machine may produce.

The pressure of the rolls upon the clothes between them will thus be always uniform throughout their lengths. This uniformity of pressure is of but little apparent importance in itself, but becomes a marked feature of superiority in my machine over all others, when taken in connection with the peculiarity in construction of rolls and pinions, as hereinbefore described, securing ease of movement and facility of operation, the two features combined rendering by their action the chance of throwing both ends of the roll D′ out of gear almost, if not quite, an impossibility.

The device of securing the machine to a wash-tub or other vessel is described in Letters Patent issued to D. F. Williams, January 2, 1866, and will be understood on reference to the drawing, Fig. 4.

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

1. The manner of assisting the increased rapidity of the driven roll D′ and easing the movement of the machine, as set forth, by making the diameter of the driving-pinion E

greater than that of the driven pinion F, both pinions having the same number of teeth, substantially as described.

2. The combination of the flanges *a* on the pinions E or F, or on both of them, with the shafts of the opposite rolls, as and for the purpose set forth.

3. The combination, substantially as described, of the flanges *a* and hubs *b* with the pinions E and F, for the purpose set forth.

4. The springs G G′ and set-screw *d*, or their equivalents, with the journal-blocks H, operating together substantially as set forth, in combination with the pinions E and F, arranged and operating substantially in the manner and for the purpose described.

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Witnesses:

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GUY C. HUMPHRIES.