(No Model.)

P. DIXON & P. McLAUGHLIN.

WASHING MACHINE.

No. 502,851. Patented Aug. 8, 1893.

Fig. 1.

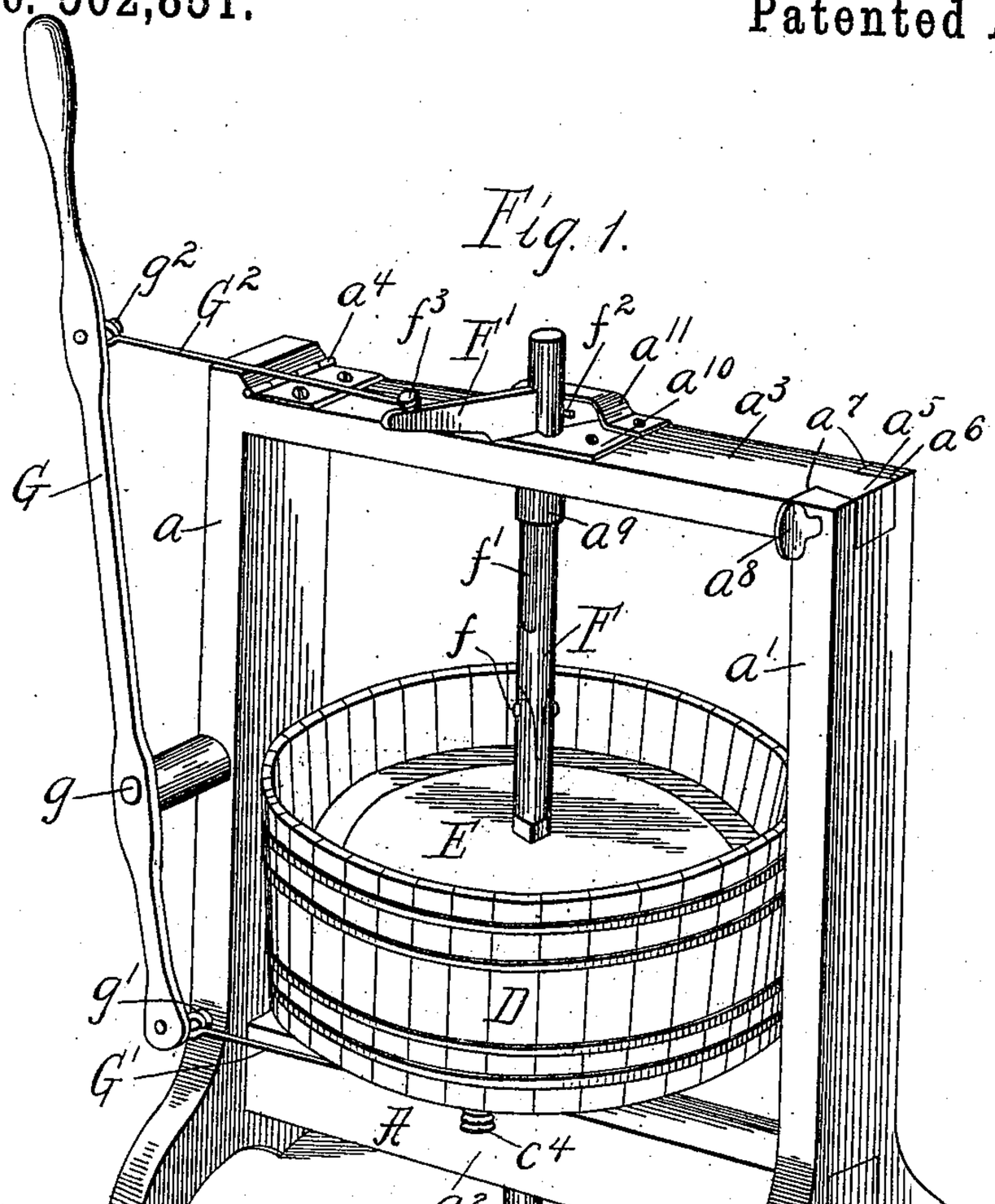


Fig. 2.

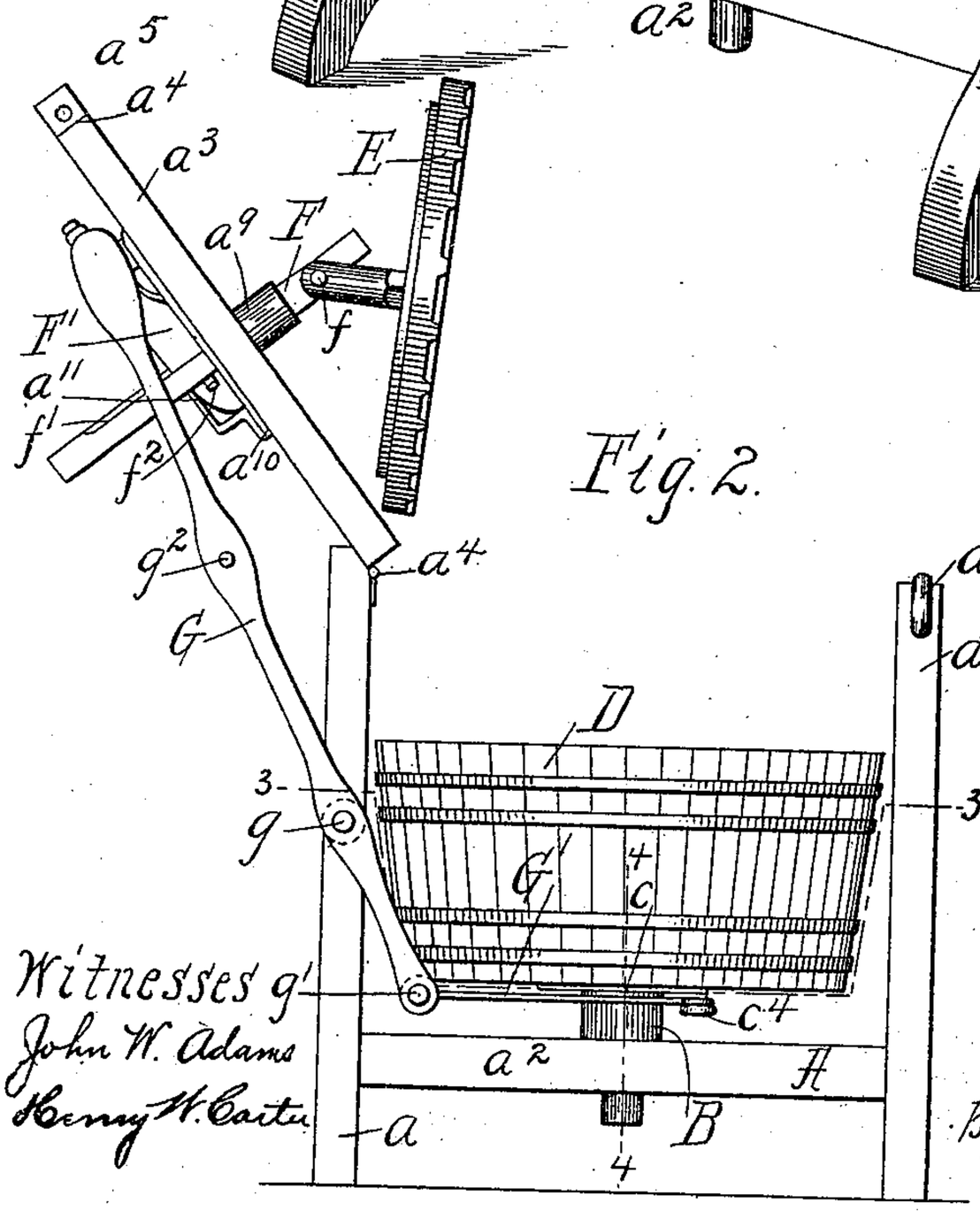


Fig. 4.

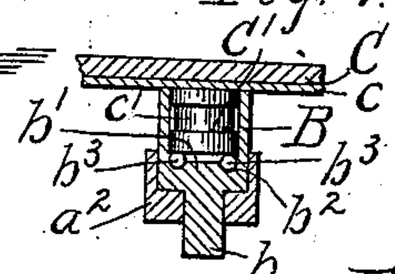
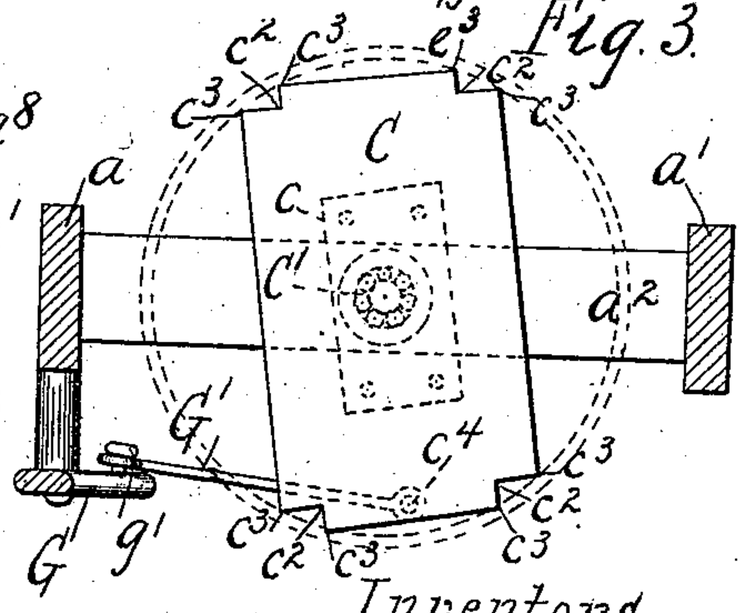


Fig. 3.



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UNITED STATES PATENT OFFICE.

PATRICK DIXON AND PATRICK McLAUGHLIN, OF BLOOMINGTON, ILLINOIS.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 502,851, dated August 8, 1893.

Application filed November 7, 1891. Serial No. 411,127. (No model.)

To all whom it may concern:

Be it known that we, PATRICK DIXON and PATRICK MCLAUGHLIN, of Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in Washing-Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in washing machines and has for its object to provide a simplified and efficient machine for this purpose, having certain advantageous features which will be hereinafter pointed out; and to this end the invention consists in the matters and things hereinafter described and specified in the appended claims.

In the accompanying drawings: Figure 1 is a perspective view of a machine embodying the invention, the parts being shown in position for the operation of washing the clothes. Fig. 2 is a side elevation of the machine. Fig. 3 is a plan section, taken on the line 3—3 of Fig. 2, with the tub removed but partly indicated in dotted lines. Fig. 4 is a detail vertical view of the bearing, taken on the line 4—4 of Fig. 2.

In the said drawings A represents the supporting frame of the machine, composed of two uprights a and a', a fixed lower cross-bar a^2, and a hinged outswinging upper cross-bar a^3. This latter member is hinged at one of its ends to the upper end of the upright a, as shown at a^4, the other end of said cross-bar a^3 being provided with or formed into a dovetailed projection a^5, which is adapted to fit into a correspondingly shaped notch or open recess a^6, in the top of the upright a'. By reason of this construction the upper cross-bar a^3, when in the position shown in Fig. 1 of the drawings, will prevent separation of the upper ends of the upright, serving as a tie-bar for this purpose. The cross-bar a^3, also has a shoulder a^7, at its free end on each side of the dovetail projection a^5, which shoulders bear against the inner face of the upright a', when the cross-bar is in the position just referred to, thereby preventing the upper ends of the uprights from approaching each other, the cross-bar acting as a strut for this purpose. A pin a^8, passing through suitable apertures in the upright and projection a^5, may be employed as an additional means for securing the two members a' and a^3 together.

Upon the fixed lower cross-bar a^2, there is mounted a cylindrical cup B, which forms a step-bearing for certain parts, as hereinafter set forth. In the present instance this cup-bearing is shown as partly sunk in the cross-bar a^2, and provided with a stem b, extending downward through the same, but it may be connected with the cross-bar in any suitable manner. The bottom of the interior of the cup is provided with a central raised boss, b', thus forming an annular groove, b^2, in which are placed a plurality of anti-friction balls or spheres, b^3.

C is the tub-carrier or support, consisting of a flat board, frame or plate, having a central journal C', secured to its under side in any suitable manner. In the present instance the journal is provided with a flat base plate, c, secured to the under side of the part C. This journal C' is adapted to fit loosely within the cup B, and rest upon the balls b^3 therein, as shown in Fig. 4, and the said journal may desirably be cut away or reduced in diameter, as shown at c', to lessen the friction due to lateral contact between the wall of the cup and the journal.

The carrier or support is of the general rectangular form shown in Fig. 3, and is rabbeted at each of its corners, as shown at c^2, thus forming at each corner two sharp angles or teeth, c^3. The tub, D, rests on the carrier or support C, and the under side of the tub bottom requires no cleats or other special devices for connecting the two parts, for the reason that the sharp angles or teeth c^3 of the carrier engage the chine of the tub as indicated in dotted lines in Fig. 3, and cause the tub to move with the carrier in the manner hereinafter described. The tub may be of any approved construction, but is desirably provided with a bottom roughened or ribbed on its upper side, as is usual in washing machines of this class.

E indicates a dasher or rubbing disk, secured to the lower end of a shaft F. This dasher is adapted to fit loosely within the tub D, and has its under face roughened or ribbed as indicated in Fig. 2. The shaft F is made in two parts connected by a flexible joint, f,

the joint shown in the present instance being an ordinary knuckle-joint. The shaft F extends upward through a suitable bearing aperture in the upper cross-bar a^3, which is provided with a fixed sleeve, a^9, to receive the same. The upper portion of the shaft F is slotted longitudinally as shown at f', and there extends loosely through this slot a crank arm F', which rests upon the upper cross-bar a^3, or upon a suitable bearing plate a^{10} thereon. Vertical movement of the arm F' is prevented by means of a guard plate a^{11}, on the top cross-bar a^3, which plate extends over the rearwardly projecting portion of the said arm, and holds it down upon the cross-bar, or, in the construction shown, upon the bearing plate a^{10}. A pin f^2 prevents the arm F' from slipping lengthwise out of the slot f'.

Oscillating movement in opposite directions is imparted to the tub D, and dasher E, by means of a lever G, fulcrumed at g on the upright a, and having pivoted to its lower end one end of a connecting rod G', the other end of which is similarly connected with the tub carrier C; in the present instance these connections are shown as effected by means of pins, g' and c^4, on the lever and carrier respectively, the rod G', being provided with an eye at each end, through which the said pins respectively pass.

G^2 represents a second connecting rod, having one of its ends connected with the lever G near its upper end, and by a pin g^2, or other suitable means, its other end being connected with the crank arm F' by a pin f^3 or the like. It will be noted that these rods are connected with the lever on opposite sides of its fulcrum g, and that the distance from the said fulcrum to the pin g^2 is greater than the distance from said fulcrum to the pin g', so that a vibratory motion given to the lever G will impart a differential oscillating movement in opposite directions to the tub D and dasher E.

The operation is as follows, it being premised that the clothes are placed in the tub between the bottom thereof and the dasher, the tub being suitably supplied with water and soap or other cleansing medium: The lever G is vibrated, thus imparting, as hereinbefore pointed out, a differential movement of oscillation in opposite directions to the tub and dasher, between which the clothes are thoroughly rubbed and thereby cleaned. The dasher moves faster and farther than the tub, by reason of the fact that its connecting rod G^2 is connected with the lever G at a point farther from the fulcrum of said lever than is the connecting rod G' which operates the tub carrier C. The dasher shaft F is free to move vertically, and the dasher presses downward upon the clothes in the tub with the combined weight of the dasher and shaft. The tub carrier C, which supports not only the weight of the tub and its contents, but also that of the dasher and dasher shaft, is itself supported by the anti-friction step-bearing in such a manner as to reduce to a minimum the power required to operate the machine, a feature of advantage of particular importance in a device of this class, adapted for household use and usually operated by women.

The machine requires neither any special construction of tub nor the application to the bottom of the tub of any form of connecting device, the carrier engaging the tub in the manner hereinbefore set forth, and actuating the same by reason of such engagement. The connection between the dasher shaft and its driving crank arm dispenses with the complicated sleeve mechanism heretofore employed at this point, and thus materially simplifies and cheapens the construction of this portion of the device. After the clothes have been sufficiently rubbed, the cross-bar a^3 is swung up into the position shown in Fig. 2, to give access to the contents of the tub and permit the wringer to be placed in operative position. When this upward movement of the said cross-bar takes place, the dasher E hangs vertically, swinging freely by reason of the flexible connection between the two portions of the dasher shaft, so that the dasher will swing clear of the top of the upright a', and will not, by its contact therewith, prevent the raising of the cross-bar.

It will be noted that the tub is not positively connected with its carrier, and may therefore be readily removed and replaced, or another tub may be substituted therefor.

What we claim is—

1. An improved washing machine comprising a frame provided with a tub support and a cross-bar above said tub support, a dasher having a shaft extending loosely through the cross-bar and provided with a longitudinal slot, a crank arm passing loosely through said slot and a guard for preventing vertical movement of the crank arm, substantially as described.

2. An improved washing machine comprising a frame provided with a tub support and two uprights rising above said tub supports, a cross bar pivotally attached at one end to one upright and adapted to be detachably connected at its other end to the other upright, a dasher having a dasher shaft extending loosely through the cross bar and comprising two parts connected by a flexible joint whereby the dasher may clear the second upright when the cross bar is raised, a longitudinal slot provided in the upper part of said shaft, a crank arm passing loosely through said slot and a guard for preventing vertical movement of the crank arm, substantially as described.

In testimony that we claim the foregoing as our invention we affix our signatures in presence of two witnesses.

PATRICK DIXON.
PATRICK McLAUGHLIN.

Witnesses:
E. O'CONNELL,
E. H. MINER.