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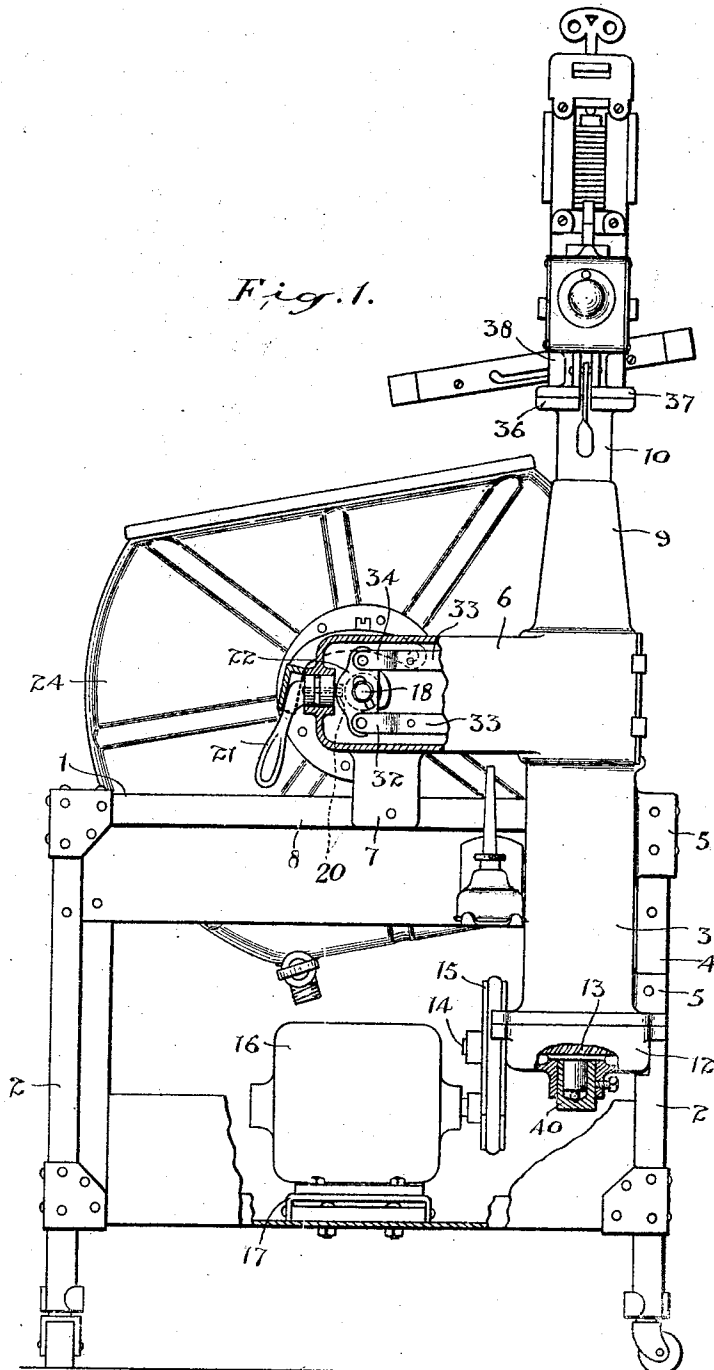
1,582,674

WASHING MACHINE

Filed Jan. 24, 1924

2 Sheets-Sheet 1

Fig. 1.



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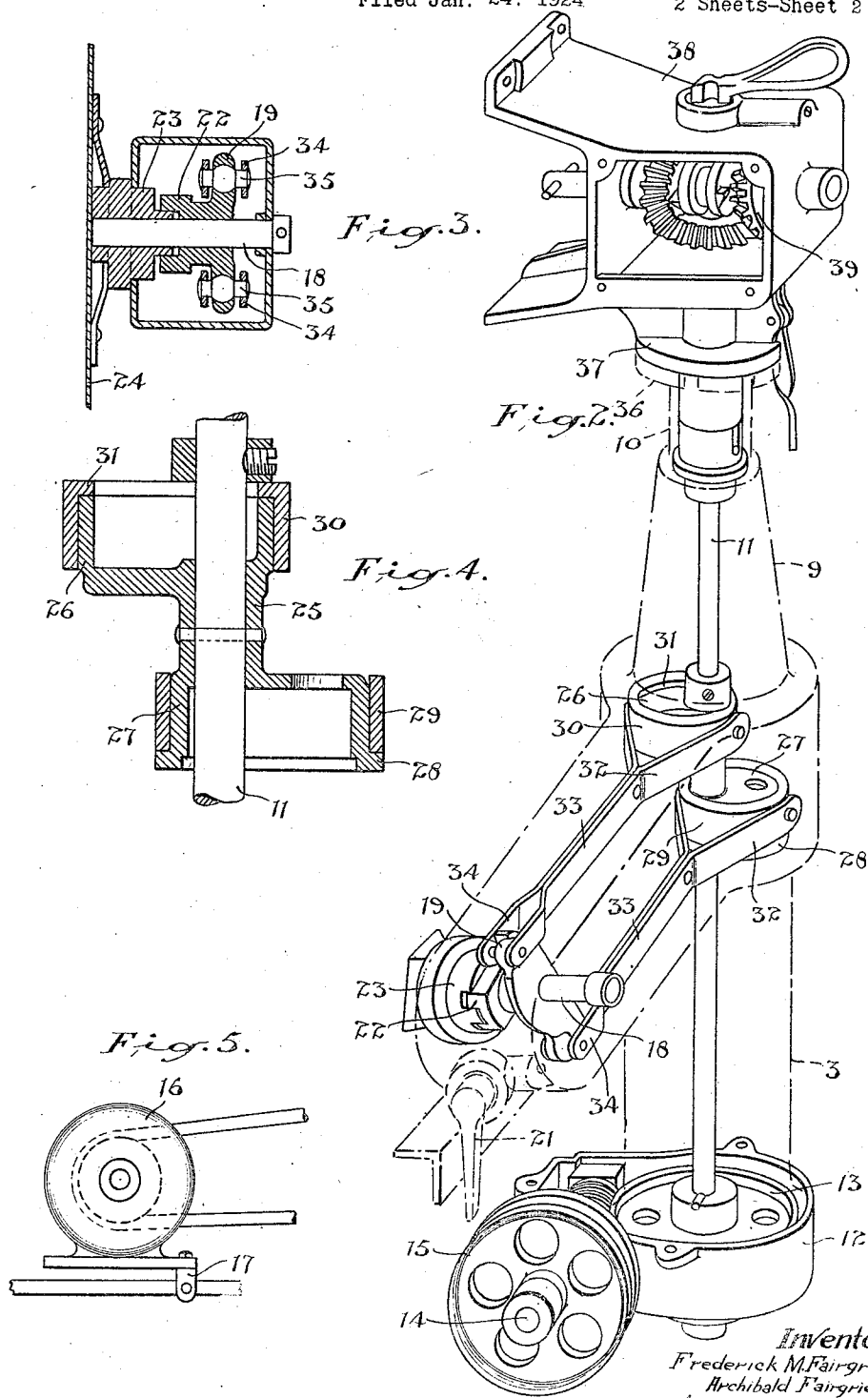
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UNITED STATES PATENT OFFICE.

FREDERICK MACDONALD FAIRGRIEVE AND ARCHIBALD FAIRGRIEVE, OF TORONTO,
ONTARIO, CANADA.

WASHING MACHINE.

Application filed January 24, 1924. Serial No. 688,278.

To all whom it may concern:

Be it known that we, FREDERICK MACDONALD FAIRGRIEVE and ARCHIBALD FAIRGRIEVE, subjects of the King of Great Britain, and residents of the city of Toronto, county of York, Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Washing Machines, as described in the following specification, and illustrated in the accompanying drawings, that form part of the same.

The principal objects of this invention are, to completely enclose the mechanism for operating the oscillating tub, thereby reducing the possibility of accident to the operator, and to devise an operating mechanism in which vibration is reduced to the minimum.

A still further object is to produce a mechanical structure of very simple construction and which is balanced in its operation.

The principal feature of the invention consists in the novel construction and arrangement of parts, whereby an oscillating member for operating the tub is operated by a pair of arms connected to a rocker member and operated by a pair of eccentric members oppositely disposed in a balanced arrangement on a driving shaft, and whereby said parts are supported in a unitary structure.

In the drawings, Figure 1 is a side elevational view of our improved washing machine.

Figure 2 is an enlarged perspective skeleton view of the tub driving mechanism, the casing being shown in its relative position thereto in dotted lines.

Figure 3 is a sectional detail showing the rocker shaft for oscillating the tub.

Figure 4 is an enlarged vertical sectional view through the eccentric member.

Figure 5 is an elevational detail showing the preferred arrangement of the driving motor.

On reference to the drawings, the frame structure of the washing machine for supporting the tub may be of any desirable shape but is here shown as a rectangular frame 1 supported on legs 2 and to this frame is secured at one corner of its outer side a vertically arranged casing 3.

The lower portion of the casing 3 is of cylindrical form and is secured to the corner upright 4 of the frame by integral lugs 5.

Intermediate of the height of the casing it is formed with a horizontal extension 6 from which a lug 7 projects downwardly and is secured to the top bar 8 of the frame. The upper end of the casing tapers to a reduced cylindrical portion 9 in which is carried the upper journal 10 of the vertical drive shaft 11.

A cap 12 is secured to the lower end of the casing 3 and in this cap is journaled a worm wheel 13 in which the bottom end of the shaft 11 is stepped.

A worm shaft 14 is journaled transversely of the cap 12 and is provided with a pulley 15 on its outer end to which the motor 16 is connected by a suitable belt.

It will be noted that the motor is carried on a hinged support 17 so that the weight of the motor is used to apply and maintain a uniform tension on the belt.

A pin 18 is mounted transversely of the horizontal extension 6 adjacent to its outer end and on this pin is rotatably mounted the rocker member 19. This rocker arm is provided with a notch 20 in its forward side which is engaged by an eccentric lever 21 to slide it on the pin 18 so as to move the clutch member 22 upon the inner end thereof into engagement with a clutch member 23 journaled in the inner side of the casing.

The member 23 is provided with a key stone shaped member having dove tailed sides to engage and support the correspondingly recessed holder of the tub 24.

A correspondingly pivoted support is arranged at the opposite side of the frame to support the other side of the tub.

Upon the vertical shaft 11 is mounted a sleeve member 25 held in place opposite the horizontal portion 6 of the casing and upon the upper end of this sleeve is formed an eccentric sheave 26 and upon the lower end is a corresponding sheave 27 arranged diametrically opposite to the sheave 26.

The sheave 27 is provided with an annular flange 28 at its lower end and a ring 29 is rotatably mounted on said sheave and is supported by said flange.

A ring 30 encircles the sheave 26 and is provided with an inwardly extending flange 31 which supports the sleeve in place.

To each of the rings 29 and 30 is pivotally secured the forked end 32 of the connecting rods 33 which are here shown formed of two flat steel bars connected together and

formed with forks 34 at the outer ends to extend each side of the ends of the rocker member 19.

Pins 35 with ball centres are secured in the forks 34 and extend through the ends of the rocker 19 which are shaped to allow latitude of lateral movement between the rocker and the connecting rod.

The upper end of the casing 3 is provided with a notched flange 36 upon which the flange 37 of the wringer support casing 38 is adapted to rest. The wringer casing is provided with a reverse gear 39 of a well known construction.

In the operation of this washer the motor 16 operates the worm and through the worm wheel 13 rotates the main shaft 11. The worm wheel may be adjusted in relation to the worm by means of the adjustable eccentric step bearing 40.

The eccentric members 26 and 27 are formed of a single casting and are secured to the shaft by a suitable pin in the connecting sleeve. The rotation of the eccentrics around the axis of the shaft imparts a reciprocating movement to the rods 33 and being arranged diametrically opposite the one to the other the action of each rod operates to pull upon the opposite ends of the rocker member alternately. The thrust against the opposing member equals the pull of the other in such a manner that the shaft is always balanced and requires no support adjacent to the eccentrics and does not spring.

This eccentric arrangement renders the operation extremely smooth and free from vibration and the tub is oscillated without the use of springs and in an exceedingly quiet manner.

It is very important to note that the entire operating mechanism is enclosed within the unitary casing. This obviates the dangers of accidental injury to the operator and a machine of extremely attractive appearance is produced.

What we claim as our invention is:—

1. In a washing machine, the combination with a rigid frame and an oscillating tub, of a rocker member disengageably connected with the tub, means for moving said rocker member into and out of operating contact with said tub, a vertical drive-shaft, a pair of sheaves rigidly arranged upon a connecting sleeve and placed in diametrically opposed relation the one to the other, the said sleeve being rigidly mounted on the drive shaft, rings rotatably mounted on said

sheaves, forked connecting rods directly pivoted at one end to said rings and at the other end to the opposing ends of the rocker member.

2. In a washing machine, the combination with a rigid frame and an oscillating tub, of a rocker member connected with the tub, a vertical drive shaft, a sleeve adjustably secured to said drive shaft and having formed integral therewith at opposite ends thereof a pair of eccentrics arranged in diametrically opposed relation, the lower eccentric having a projecting flange, a ring on the lower eccentric resting upon said flange, a ring encircling the upper eccentric and having a flange at its upper edge resting on the eccentric, and formed connecting rods secured at one end to said rings and at the other end to the opposite ends of the rocker member.

3. In a washing machine, the combination with a rigid frame and an oscillating tub, of a rigid casing having a horizontal portion and a vertical portion, a journal pin rigidly supported in the horizontal portion of the casing in axial alignment with the tub, a clutch member connected to the tub and oscillating on said pin and having an external bearing in said casing, a rocker member rotatably mounted on said pin and capable of movement longitudinally thereof and having a clutch member to engage the aforesaid clutch, means for moving said rocker member on said pin into and out of clutch, a drive shaft arranged in the vertical portion of said casing, and means connected with said rocker member and operatively connected with said drive shaft to rock said member on said pin.

4. In a washing machine, the combination with a rigid frame and an oscillating tub mounted on said frame, of a rocker member slidably mounted and connected with the tub, a cylindrical shaped casing vertically arranged and rigidly supported on the frame and having a horizontal extension projecting opposite the axis of the tub, manually operated means mounted on said extension for disconnecting said rocker member from the tub, rigid connecting rods for oscillating the tub arranged within the horizontal extension, a vertical drive shaft arranged in the cylindrical casing and operatively connected directly through said connecting rods to the rocker member, and means for driving said vertical shaft.

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