Oct. 23, 1923. 1,471,667

B. E. LITOT

WASHING MACHINE

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FIG. 1.

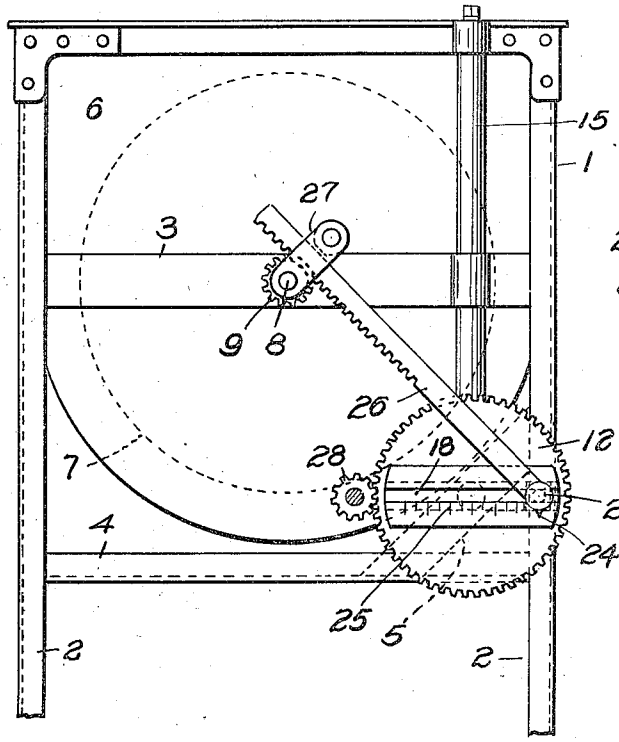


FIG. 2.

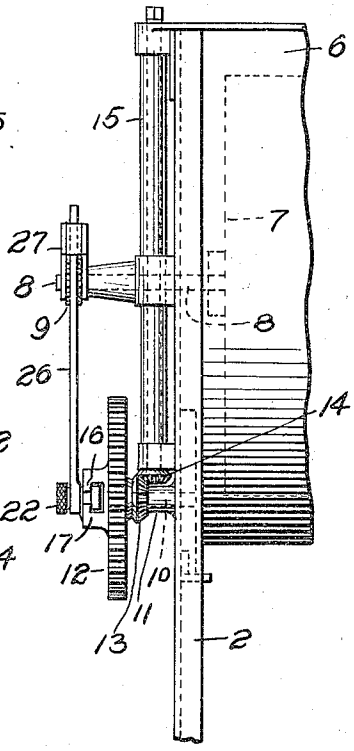
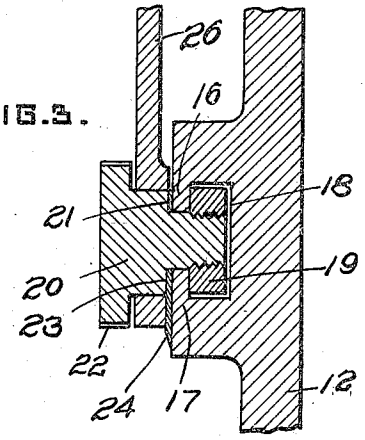


FIG. 3.



WITNESSES

J. Herbert Bradley.

INVENTOR

Bernard E. Litot

By Winter & Brown

His attys

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FIG.4.

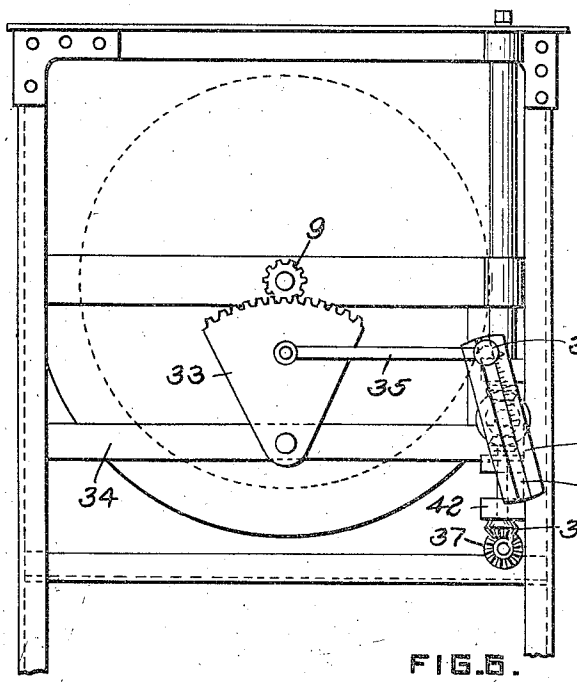


FIG.5.

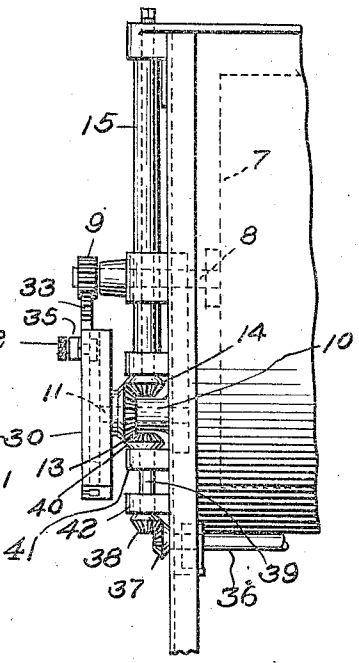
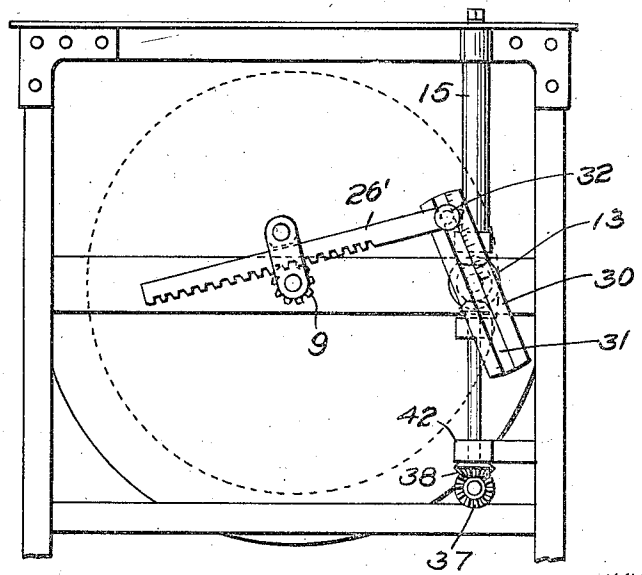


FIG.6.



WITNESSES

J. Hebert Bradley

INVENTOR

Bernard E. Litot

By Hunter & Brown

His attys

Patented Oct. 23, 1923. 1,471,667

UNITED STATES PATENT OFFICE.

BERNARD E. LITOT, OF WILKINSBURG, PENNSYLVANIA.

WASHING MACHINE.

Application filed October 21, 1921. Serial No. 509,355.

To all whom it may concern:

Be it known that I, BERNARD E. LITOT, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Washing Machines, of which the following is a specification.

This invention relates to washing machines and mechanism for driving the same and particularly to that type of machines in which the cylinder containing the clothes is alternately rotated in opposite directions, that is, in which the cylinder is rotated a few turns in one direction and then a corresponding number of turns in the opposite direction, or in which the cylinder is merely oscillated back and forth.

The objects of the invention are to provide a machine of the character referred to which will be simple in construction, cheap to manufacture, easy to repair, which contains a minimum number of parts and which is effective in operation.

Special objects of the invention are to provide a machine which can be easily adjusted to vary the number of turns of the cylinder in either direction, to prevent its being rotated even if the driving motor were started, or to cause mere ocillations thereof as is found desirable.

In the accompanying drawing illustrating an embodiment of the invention Fig. 1 is a side elevation showing the washer together with the driving mechanism; Fig. 2 a similar view taken at right angles to that of Fig. 1; Fig. 3 a transverse section on enlarged scale showing the means for adjusting the driving mechanism; Fig. 4 a view similar to Fig. 1 illustrating a modified form of the invention; Fig. 5 a fragmentary elevation of the same taken in a plane at right angles to that of Fig. 4; and Fig. 6 is a view corresponding to Fig. 4 of a still further modified form.

In the form shown in Figs. 1 to 3, 1 represents the frame of the machine comprising the legs 2, cross members 3 and 4 and the angularly disposed brace 5. Attached to the frame in the usual manner is the tub 4 within which is rotatably mounted the cylinder 7 having lateral shaft 8. The said shaft projects through the tub and is journaled in the cross member 3 and has attached to its outer end the pinion 9 for driving the cylinder.

Suitably journaled in a bearing 10 supported by brace 5 is a stub shaft 11 having fixed to its outer end the driving gear 12. Attached to the inner face of the hub of gear 12 is a beveled pinion 13 which meshes with a beveled pinion 14 fixed on the lower end of the shaft 15 suitably journaled in the frame as illustrated in Fig. 2 and is adapted to be connected at its upper end to the mechanism for driving a wringer, not shown.

The outer face of gear 12 is provided with two over-hanging flanges 16 and 17 which cooperate to form a radial guide slot in which is slidably mounted a polygonal block or slide 19, that shown in the drawing being square and fitting the slot 18 sufficiently tight to prevent turning movement thereof yet permitting the same to be easily moved lengthwise of the slot for a purpose hereafter described.

A bearing pin 20 having a reduced threaded inner end is mounted in a threaded bore provided in the block 19. A shoulder 21 formed on the pin 20 is adapted to bear against the outer face of the flanges 16 and 17 and the pin is screwed into the slide 19 for the purpose of frictionally binding the pin in place, and in order that the pin may be easily manipulated the same is equipped with a knurled head 22. Interposed between the shoulder 21 and the flanges 16 and 17 is a spacing washer 23 provided with an integrally formed pointer or finger 24 which rides over a graduated scale 25 upon the outer face of flange 17.

Pivotally mounted upon the enlarged outer end of pin 20 is a rack 26 for driving pinion 9 and is held in mesh therewith by the yoke 27 which is pivotally mounted upon the outer end of shaft 8 straddling the pinion 9 and the said rack.

Guide slot 18 is disposed radially of the the gear 12 so that no matter at what point the bearing pin 20 is positioned the pivotal point of rack 26 coincides with a radius of the gear. The gear 12 may be driven by any suitable source of power, preferably an electric motor, not shown, through the pinion indicated at 28.

The operation of the device is as follows: Power is supplied from any suitable source through pinion 28 to drive gear 12 which causes rack 26 to reciprocate on account of its pivotal connection with bearing pin 20. Reciprocation of rack 26 rotates pinion 9 and consequently the cylinder 7 in one direc-

tion during a half revolution of the gear 12 and in the opposite direction during its remaining half revolution, the yoke 27 at all times accommodating itself to the varying positions of the rack and maintaining the same in mesh with pinion 9.

The number of revolutions that the pinion 9 will make in either direction depends upon the extent of reciprocation of rack 26 which in turn depends upon the eccentric setting of the bearing pin 20 with respect to the gear 12. By unscrewing the pin 20 a slight distance it can be moved together with the block 19 along the guide slot 18 and positioned at any desired point and fixed thereat by tightening the shoulder 21 against the washer 23 and the flanges 16 and 17. Positioning the bearing pin near the periphery of the gear causes a maximum reciprocation of rack 26 while the nearer the same is disposed towards the center of the gear the shorter its stroke will become, thus reducing the number of revolutions of pinion 9 and the cylinder 7. By placing the center of pin 20 so as to coincide with the center of the gear 12 no movement whatever will be transmitted to the rack and consequently the cylinder 7 will remain stationary regardless of the fact that the driving pinion is rotating. If the pin 20 is set but a slight distance from the center of the gear 12, pinion 9 will not be rotated a complete revolution, thus effecting an oscillation of the cylinder 7.

The exact point at which the bearing pin must be set to effect any desired number of revolutions of the cylinder for each stroke of rack 26 is indicated on the scale 25 so that by merely moving the pin 20 until the pointer 24 lies directly over the indicated point thereon any desired setting may be readily made.

Since the movement of rack 26 is harmonic, that is gradually reaches zero at the opposite ends of its stroke, the movement of cylinder 7 is reversed smoothly without undue shocks or jars so frequently accompanying the operation of washing machines of this type, and thus eliminates the necessity of using special shock absorbing devices. This feature is found to be of great practical importance and materially reduces the complication and cost of construction.

In the form illustrated in Figs. 4 and 5, the stub shaft 11 is journaled higher up in the frame and, instead of the gear 12, carries a rotatable cross arm 30 on its outer end provided with a guide slot 31 in its face. The bearing pin indicated at 32 is adjustably mounted in the slot 31 and is identical to bearing pin 20 in the preferred form previously described. Pivotally connected at one end to the pin 32 and at its other end to a toothed sector 33 mounted for rocking movement in a cross member 34 of the frame is a connecting rod 35, the said sector meshing with the pinion 9 for driving the same.

The pinion 13 and cross arms 30 are driven by power applied to the shaft 36 from any suitable source, a beveled pinion 37 at the end of said shaft meshing with pinion 38 on the lower end of the intermediate shaft 39 carrying beveled pinion 40 at its top which in turn meshes with pinion 13. The shafts 36 and 39 are journaled on the frame in any convenient manner such as in bearing lugs indicated at 41 and 42.

The modified form shown in Fig. 6 corresponds to that previously described except that the stub shaft carrying the cross arm 30 is journaled at the same height as the shaft 8 and pinion 9, and instead of rotating the said pinion by means of a connecting rod and toothed sector, the same is driven by a rack bar 26′ corresponding to the rack bar in Figs. 1 to 3.

In the modification shown in Figs. 4 to 6 very compact mechanisms are provided and ones in which power is transmitted from the rotatable cross arm in what may be termed a substantially straight line drive.

I claim:

1. An adjustable crank mechanism comprising a rotatable member provided with a radial slot in its face, a polygonal block in said slot, a bearing pin having a reduced inner end removably engaging the block and causing the shoulder formed between the reduced inner end and the enlarged outer end to frictionally engage the face of said member to position the same. and a pivoted member attached to the said outer end.

2. An adjustable crank mechanism comprising a rotatable disc having projecting flanges on one face thereof to form a guideway, a block slidable therein provided with a threaded bore, a bearing pin having a reduced inner end threaded in the said bore and forming a shoulder abutting the face of the disc to position the same, means for turning and adjusting the pin, and a pivoted member mounted on the said outer end.

3. An adjustable crank mechanism comprising a rotatable disc, one face of said disc being provided with overhanging flanges which cooperate to form a radial guide slot, a block slidably adjustable therein, a bearing pin threaded in the block and provided with an enlarged outer end forming a shoulder thereon, a washer having a pointer formed integrally therewith interposed between the shoulder and the face of the guide slot, a graduated scale on the said face over which the pointer rides, and a pivoted member on said enlarged outer end.

In testimony whereof, I sign my name.

BERNARD E. LITOT.

Witness:
EDWIN O. JOHNS.