

J. HULKENBERG & B. J. MATTES.

WASHING MACHINE.

APPLICATION FILED JUNE 25, 1908. RENEWED AUG. 11, 1909.

960,330.

Patented June 7, 1910.

2 SHEETS—SHEET 1.

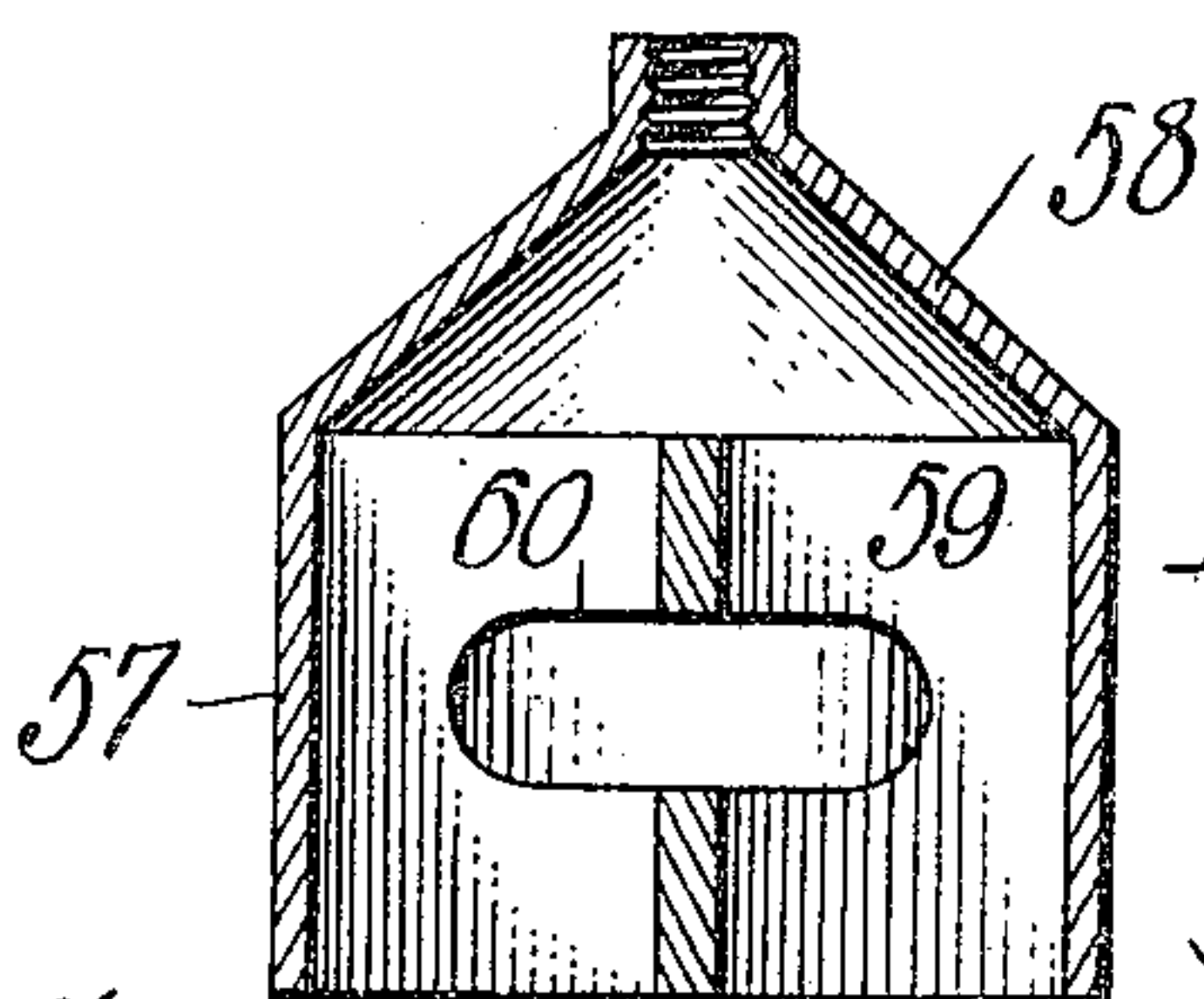
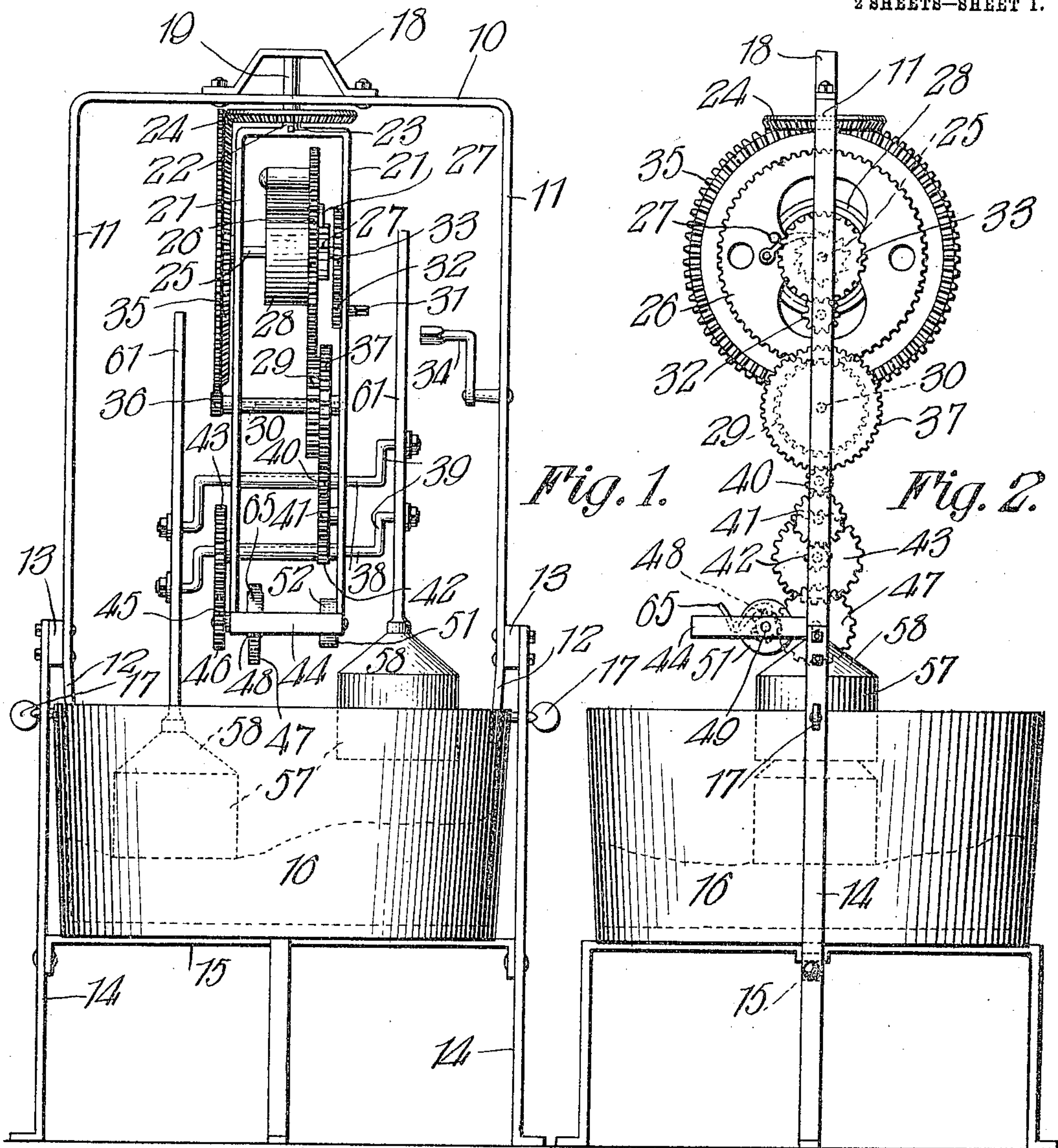


Fig. 5.

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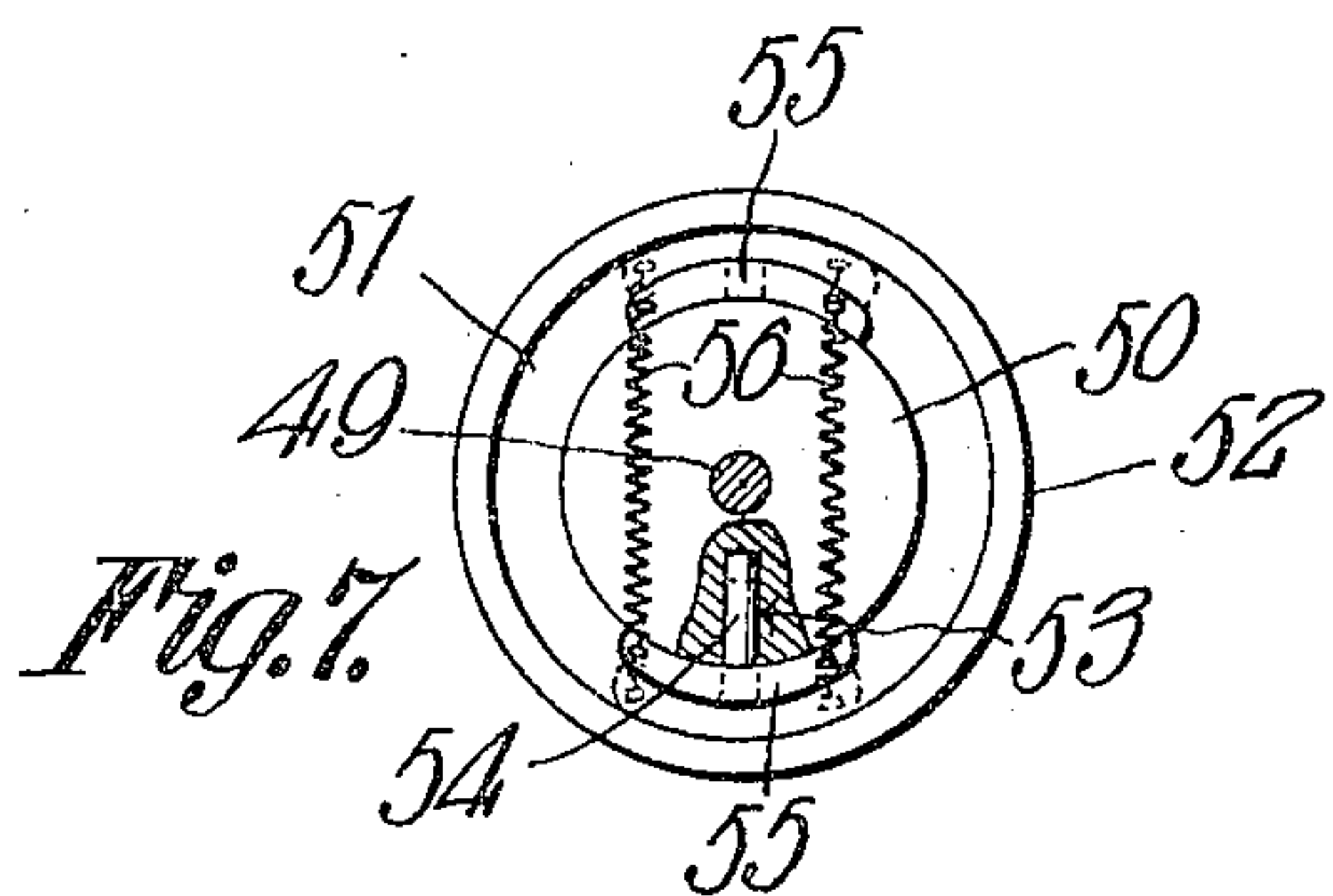
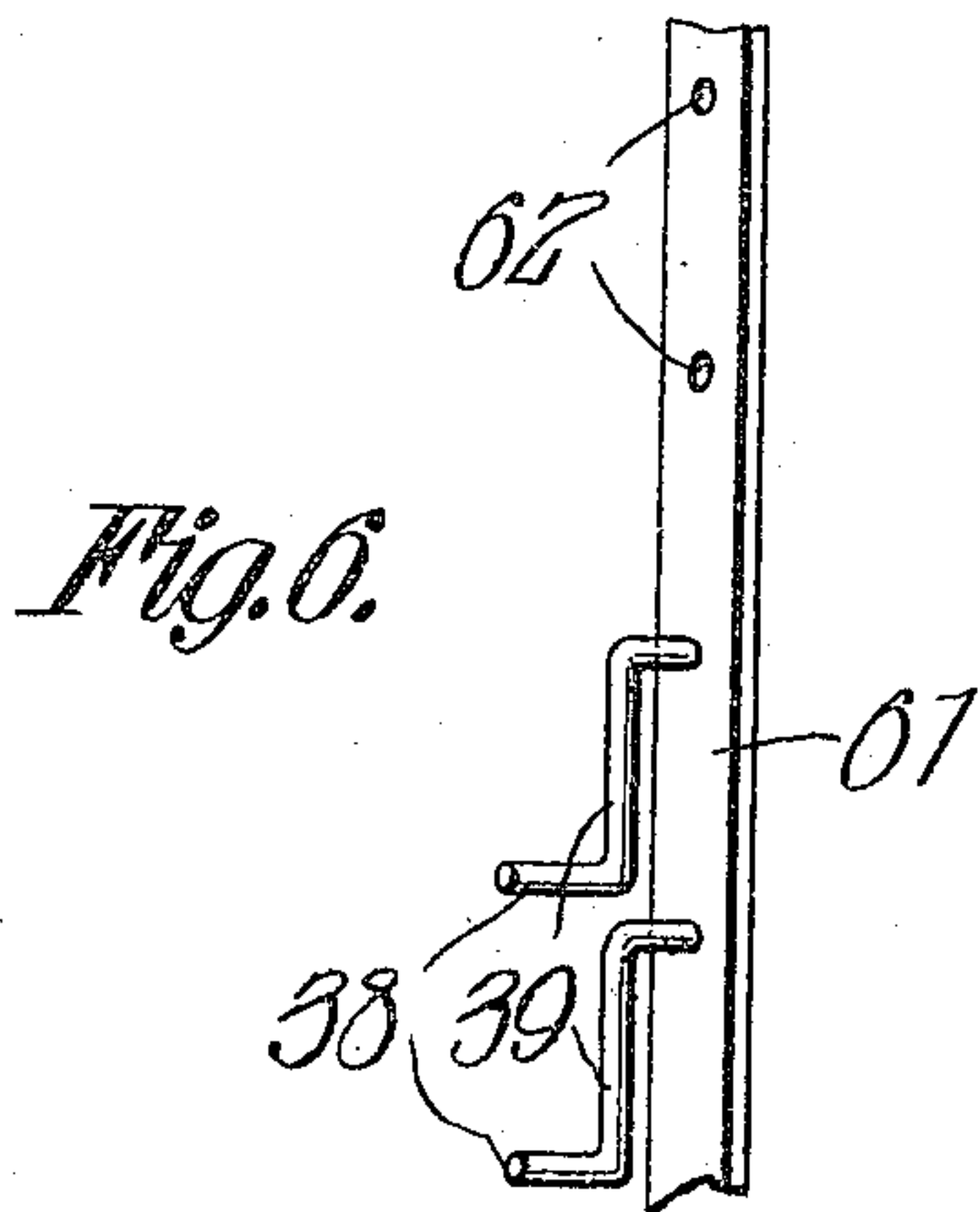
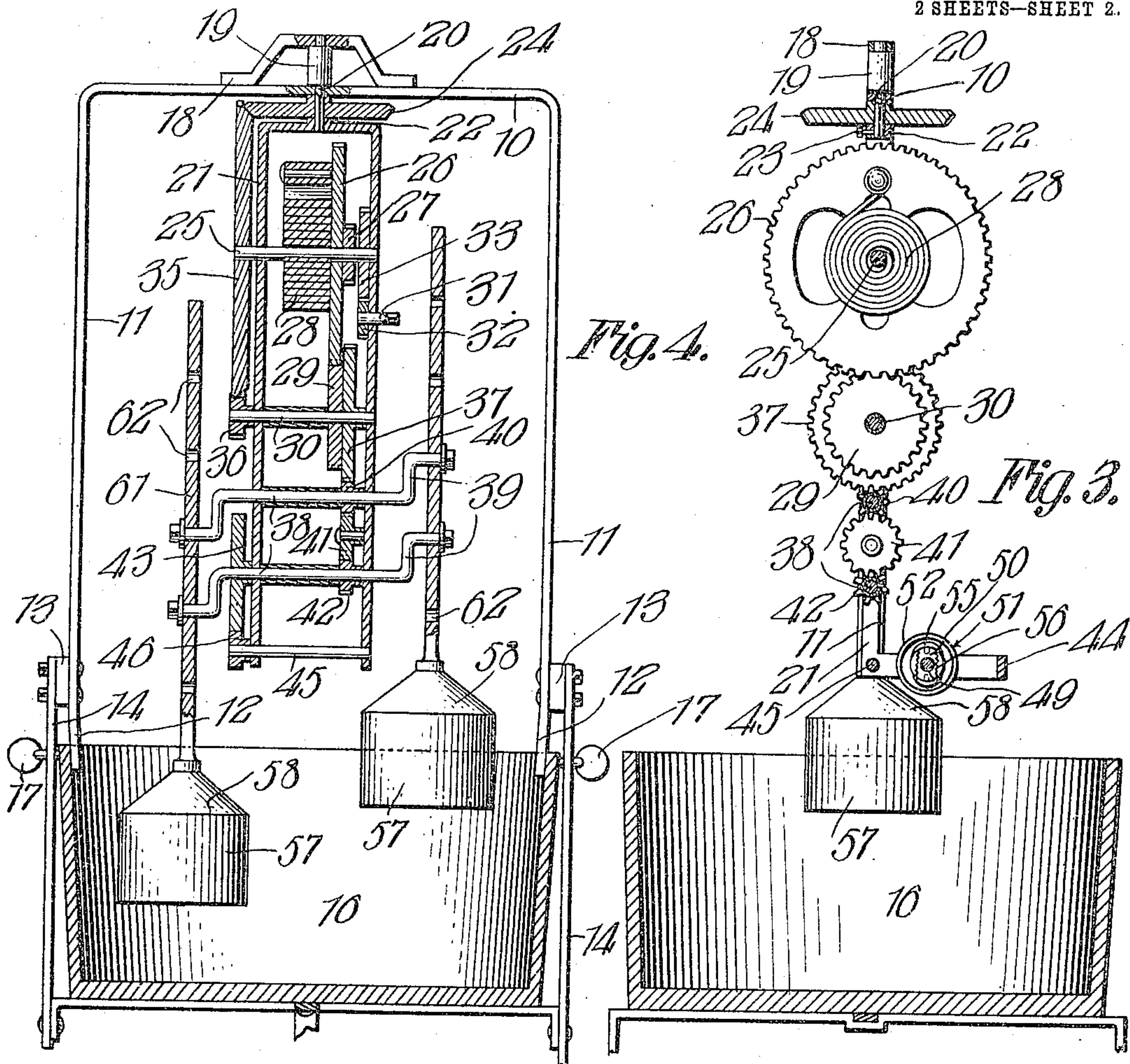
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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WASHING-MACHINE.

960,330.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JACOB HULKENBERG and BALTHASAR J. MATTES, citizens of the United States, residing, respectively, at Columbus and Crooksville, in the counties of Franklin and Perry, State of Ohio, have invented certain new and useful Improvements in Washing-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to washing machines and more particularly to that class in which vertically reciprocable dashers are employed.

More specifically the invention resides in the means for driving or reciprocating the dashers and in the provision of means for rotating the frame in which the dasher shafts are mounted, during the operation of the dashers so that the goods being washed may be evenly and thoroughly treated, the dasher shafts and the frame being both rotated from a common source of power which is preferably in the form of a spring motor arranged within the rotatable frame.

Another novel feature of the invention resides in the provision of a governor in connection with the driving mechanism of the device, the governor being mounted in an angularly directed extension of the rotatable frame so as to position it the proper distance above the tub and thereby prevent its interference with the clothes within the tub.

In the accompanying drawings, Figure 1 is a front elevation of a washing machine embodied in our invention, Fig. 2 is a side elevation thereof, Fig. 3 is a vertical longitudinal sectional view, Fig. 4 is a vertical transverse sectional view, Fig. 5 is a detail vertical sectional view through one of the dashers. Fig. 6 is a detail perspective view of one of the dasher stems and the cranked ends of the two dasher shafts which are connected therewith, and Fig. 7 is a detail view in elevation of the governor showing the normal position of the parts in full lines and the governor shoe shot outwardly by centrifugal force in dotted lines.

The mechanism embodying our invention and also the tub above which the mechanism operates is supported in a main frame which

may be made of ordinary bar metal and which is bent into vertical U-shaped form to form a top cross piece 10 and vertical side pieces or standards 11. At their lower ends, the side pieces or standards 11 are bent inwardly in the direction of each other at an obtuse angle as indicated at 12 and bolted to each of the side pieces 11 adjacent their ends 12 and spaced therefrom by means of a spacing block 13 through which the securing bolts also pass, is a leg 14 these legs serving to support the entire frame. A tub supporting cross piece 15 connects the legs 14 adjacent their lower ends and it is upon this tub supporting cross piece 15 that an ordinary wash tub 16 is supported, the upper edge of the body of the tub being engaged between the upper ends of the legs 14 and the lower end 12 of the side standards 11 and held securely in place by means of set screws 17 which are engaged through the upper end portions of the said legs 14 and impinge against the said side or body of the tub 16.

Bolted or otherwise secured upon the top cross piece 10 of the main frame just described is a bearing bracket 18 and journaled at its upper end in the connecting portion of this bracket is a shaft 19, the said shaft being reduced, at its lower end as at 20 and passed at its said portion through a bearing opening formed in the top cross piece 10. A frame comprising side bars 21, the contour of which will be presently more fully described, is provided at its upper or connecting portion, the frame being of substantially U-shaped form and inverted, with a sleeve 22 into which is inserted the lower end of the shaft 19, there being a set screw 23 engaged through the sleeve and impinging against the said shaft to hold the sleeve thereon and thereby support the frame upon the shaft for rotation therewith. The shaft directly above the upper end of the sleeve is squared and fixed upon it is a bevel gear 24 the said gear being of course located between the said upper end of the sleeve and the top cross piece 10 of the main frame of the machine. Journaled in the side bars 21 of the frame just described, which will hereinafter be termed the supplemental frame, is a shaft 25 and loosely mounted upon this shaft is a gear 26 which however is connected to the shaft

for rotation in one direction by means of a pawl and ratchet 27. A spring 28 is fixed at one of its ends to the said shaft and at its other end to the gear 26 and meshing with this gear is a gear 29 which is fixed upon a shaft 30 also journaled in the side bars 21 of the supplemental frame. A shaft 31 is journaled in one of the side bars 21 and carries at its inner end a pinion 32 which meshes with a similar pinion 33 upon the shaft 25 and this shaft 31 is squared at its outer end for the engagement therewith of the crank handle 34 by means of which it may be rotated to wind the spring 28.

The shaft 25 carries in addition to the gear 26 a gear 35 which is fixed thereto and which meshes with the beveled gear 24 and also with a pinion 36 upon the said shaft 30. A gear 37 is also carried by the shaft 30 and this gear meshes with a pinion 40 mounted on the upper one of a pair of crank shafts 38 the said shafts being cranked at their ends as at 39. The lower one of the crank shafts 38 is driven from the upper crank shaft 38 through the medium of an idler gear 41 which is journaled upon a stub shaft carried by one of the side bars 21 of the supplemental frame and this gear 41 meshes with a gear 42 upon the said lower one of the crank shafts 38. The crank shaft 38 also carries a gear 43 which serves to transmit motion to gearing which drives a governor as will now be explained.

The side bars 21 of the supplemental frame adjacent their lower ends are bent or turned to extend at right angles in a direction which may be termed a forward direction so as to form an extension of the supplemental frame, said extension being indicated by the numeral 44 and journaled in the extension is a shaft 45 which carries a pinion 46 which is in mesh with the gear 43 and also carries a fixed gear 47 which meshes with a gear 48 fixed upon a shaft 49 also journaled in the said extension of the supplemental frame. The shaft 49 carries, in addition to the pinion 48, a solid fly wheel 50 which constitutes one element of the governor above mentioned. Upon one of the side bars of the extension 44 of the supplemental frame is secured in any suitable manner a casing 51 including a brake flange 52 and the fly wheel 50 is formed with sockets which open through its periphery and in which are received the stems 54 of brake shoes 55 the said sockets 53 and in fact the brake shoes being positioned diametrically opposite each other as is clearly shown in the last figure of the drawings. Springs 56 connect the brake shoes at their corresponding ends and serve to normally hold them with their stems 54 received entirely within the sockets 53, it being understood upon rapid rotation of the shaft 49, due to rapid rotation of the remainder of

the drive mechanism of the machine, the brake shoes will be forced outwardly by centrifugal force and will ride over the brake flange 52, the frictional contact of the brake shoes with the said flange serving to regulate the speed of movement of the various parts of the mechanism as will be readily apparent.

The dashers embodied in our washing mechanism comprise each a body and a stem, the body being indicated by the numeral 57 and being substantially cylindrical in form and being formed with a conical top 58, the open end of the bodies of the two dashers being presented downwardly as is usually the case. Intersecting partitions or webs 59 are arranged within each dasher body 57 and at and adjacent their point of intersection these partitions 59 are formed with openings 60 through which the water within the tub 16 may rush or circulate when the dashers are forced downwardly into the tub under conditions which will be presently explained. The stems of the dashers indicated by the numeral 61 are secured at their lower ends to the tops 58 of the bodies 57 of the dashers and each of the stems is formed with a plurality of openings 62 which are equidistantly spaced and through which are engaged, interchangeably, the corresponding ends of the crank shafts 38, it being understood of course that when these shafts are rotated, the dashers will be reciprocated vertically and alternately forced downwardly into the water in the tub 16, the cranked ends 38 of the shafts being oppositely directed.

From the foregoing description of our invention, it will be understood that the spring 28 is first to be wound and then after the spring has been wound and the mechanism released, the dasher supporting and operating shafts 38 will be rotated through the system of gearing previously described and at the same time, the gear 35 will rotate it being in mesh with the gear 24 which is secured to the supplemental frame and will serve to rotate the frame, the effect being that the dashers will be vertically reciprocated and the frame rotated, the two actions being simultaneous. It will further be understood that the speed of actuation of the several sub-mechanisms of the machine will be governed by the governor previously described and that by reason of the fact that this governor is supported in an angularly directed extension of the supplemental frame, it will be held out of position to interfere with the tub or with the goods within the tub, being washed. It will also be understood that by engaging the cranked ends 39 of the dasher supporting and operating shafts 38 in various corresponding pairs of openings in the two dasher stems 61, the limit of downward movement of the dashers may be limited to any degree de-

sired so as to accommodate for a greater or less bulk of clothing or goods which is in the tub 16.

In order that the operation of the mechanism may be at any time arrested, we have provided a pivoted hand operated detent 65, the said detent being mounted upon one of the side members of the right angularly directed extension of the supplemental frame and being engageable, for the purpose stated, with the pinion 48.

What is claimed is—

1. In a washing machine, a main frame, a supplemental frame rotatably mounted therein, dasher actuating mechanism supported on the supplemental frame, and means to continuously rotate the supplemental frame during the operation of the machine.

2. In a washing machine, a main frame, a supplemental frame rotatably mounted therein, dasher actuating mechanisms supported on the supplemental frame, and means actuated from the dasher actuating mechanism to continuously rotate the supplemental frame during the operation of the machine.

3. In a washing machine, a frame, dasher actuating mechanisms supported thereon including a pair of crank shafts, and a dasher provided with a stem having spaced open-

ings to receive the cranks of said crank shafts.

4. In a washing machine, a main frame, a supplemental frame rotatably mounted thereon, dasher actuating mechanisms supported on the supplemental frame including a pair of crank shafts, a dasher provided with a stem having spaced openings to receive the cranks of said crank shafts, and means to continuously rotate the supplemental frame during the operation of the machine.

5. In a washing machine, a main frame, a supplemental frame rotatably mounted thereon, dasher actuating mechanisms supported on the supplemental frame including a pair of crank shafts, a dasher provided with a stem having spaced openings to receive the cranks of said crank shafts, and means actuated from the dasher actuating mechanisms to continuously rotate the supplemental frame during the operation of the machine.

In testimony whereof, we affix our signatures, in presence of two witnesses.

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BALTHASAR J. MATTES.

Witnesses:

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F. E. ATKINSON.