

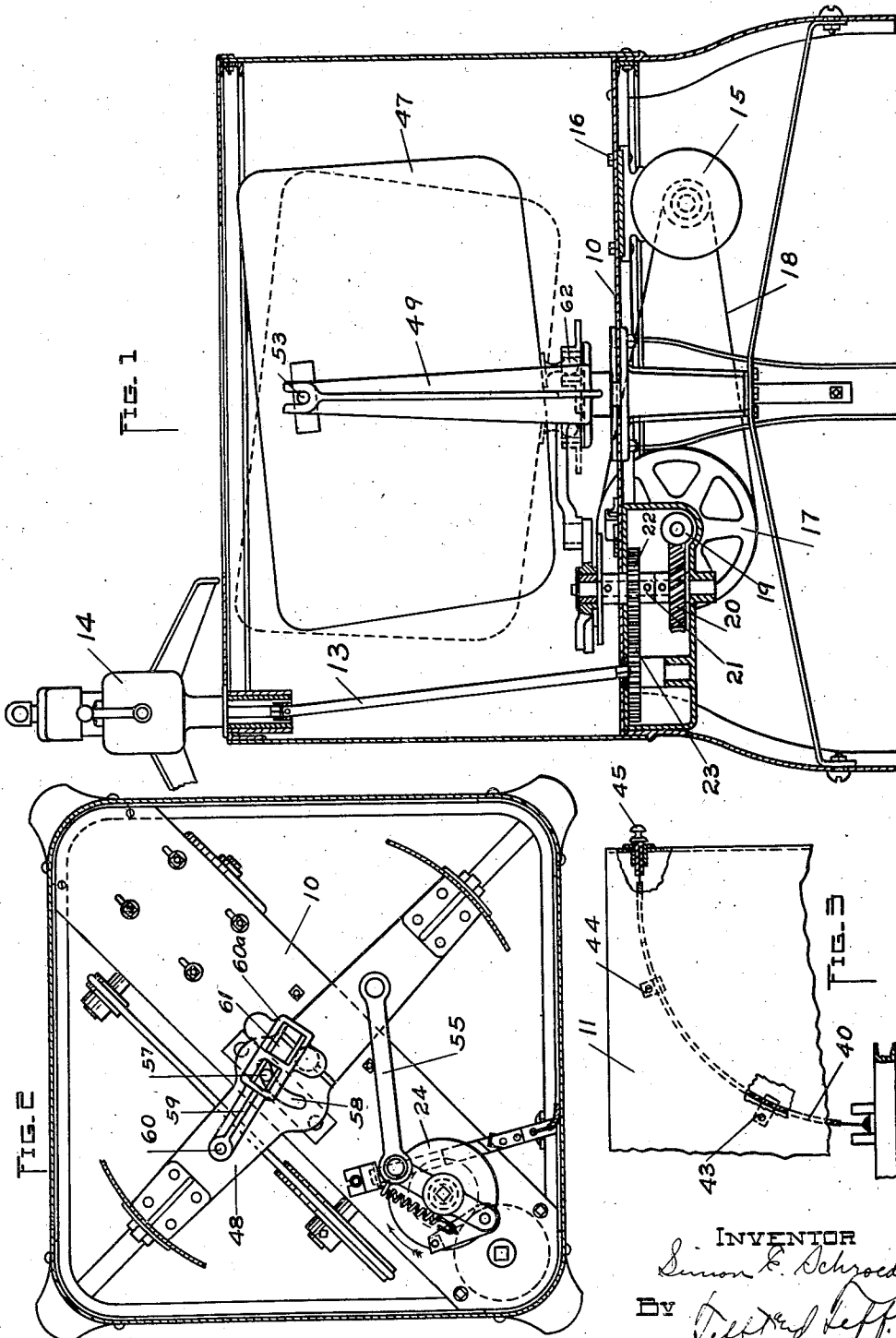
Aug. 12, 1930.

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WASHING MACHINE

Original Filed Feb. 20, 1926 2 Sheets-Sheet 1



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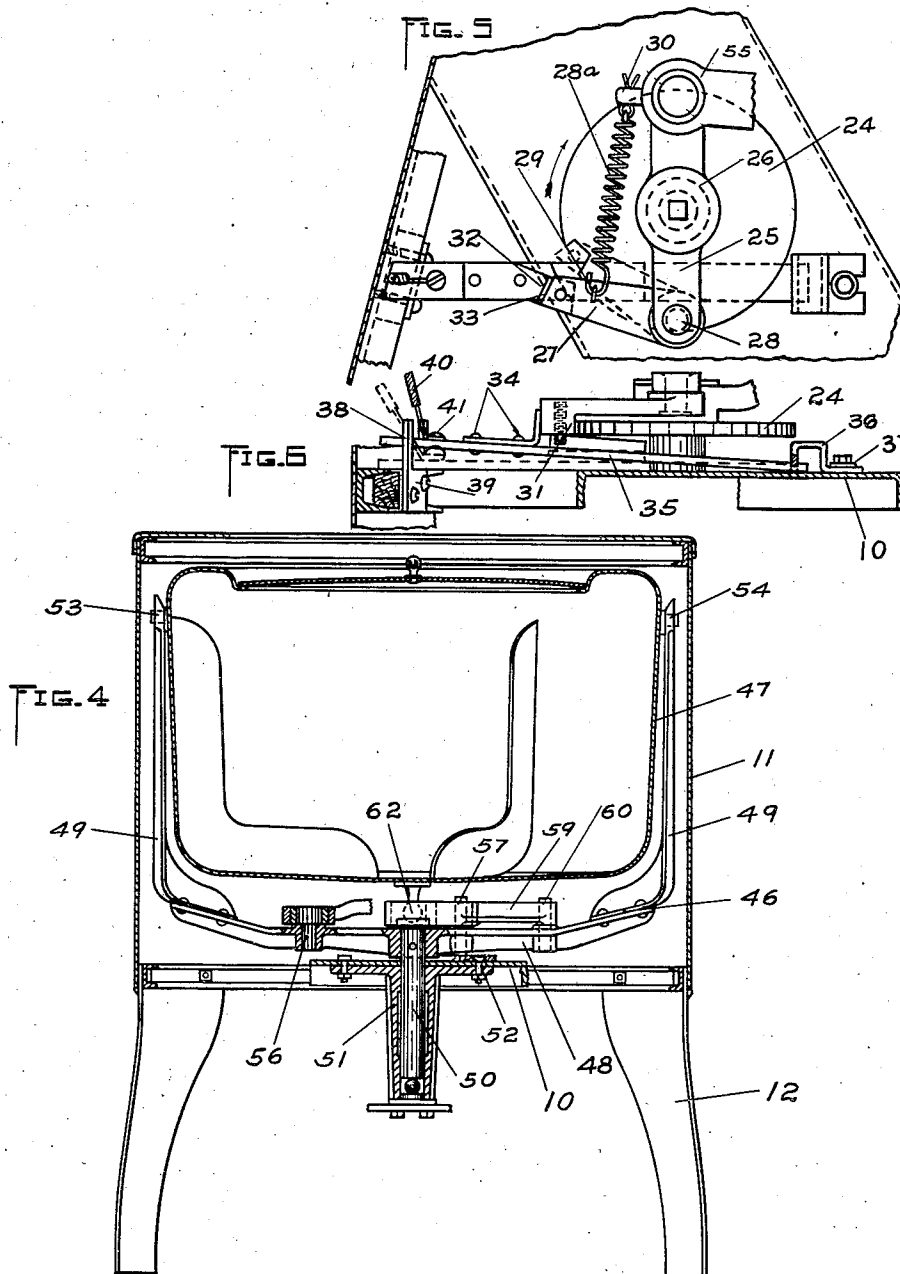
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WASHING MACHINE

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UNITED STATES PATENT OFFICE

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WASHING MACHINE

Application filed February 20, 1926, Serial No. 89,539. Renewed January 4, 1930.

This invention relates to washing machines.

One of the objects of the invention is in the provision of a washing machine fashioned in such manner that the driving means therefor imparts to the tub member a reciprocatory movement with a combined and coincident tilting movement.

Another object thereof is in the provision of a washing machine having a tub member supported in a cradle member with drive means for the cradle member and connections between said cradle member and the tub member, capable of imparting a combined agitating and tilting movement to the tub member.

Still another object lies in the provision of mechanism for driving the tub member of a washing machine, to permit coincident agitation and tilting movement of the tub.

Other objects will appear in the following specification, taken in connection with the annexed drawings, in which—

Fig. 1 is a side elevation, partially in section, of the washing machine;

Fig. 2 is a plan view from above, with the tub member removed;

Fig. 3 is a detail showing of the means for operating the clutch member;

Fig. 4 is a side elevation, partially in section, to permit a clear disclosure of the tub supporting members;

Fig. 5 is a plan view, in detail, of the clutching mechanism;

Fig. 6 is a side elevation of the parts shown in Fig. 5.

Referring to the drawings, there is shown in Figs. 1, 2 and 3, in many instances in section, the general assembly of the washing machine, which is conventional in so far as the frame 10, outer casing 11, and supporting legs 12 are concerned.

In Fig. 1, there has been shown driving connections 13, and the well known wringer mechanism 14, the same, however, constituting no part of the present invention, and being shown merely to complete the general washing machine assembly.

Referring specifically to the power means for operating the driving mechanism later to be described, we find the electric motor 15 suitably attached, as at 16, to the frame 10.

The motor 15 drives the pulley 17 through the belt 18. Power connections from the pulley 17 include a worm 19 and adjacent gear 20, which is fixedly attached to a vertically disposed stub drive shaft 21, suitably mounted in bearing members in the framing 10. A gear 22 is likewise attached to the stub shaft 21, and serves to drive the wringer mechanism before described but briefly. This drive for the wringer mechanism is completed through a train of gears 23. Fixedly attached to the upper end of the stub drive shaft 21, we find a clutch plate 24. A crank arm 25 is pivotally mounted as at 26 on the upper end of the vertically disposed drive shaft 21. This crank arm 25 provides the driving, or rather, agitating means for the tub member later to be described. Likewise, there is a clutch connection between the clutch plate 24 and the crank arm 25. The clutch connection between the clutch plate and the crank 25 is effected through the following parts. A clutch finger 27 is pivoted as at 28 to one end of the crank arm 25. This clutch finger is held in a tensioned manner with respect to the opposed end of the crank arm 25, by means of a coil spring 28^a, attached at 29 to the clutch finger, and at 30 to a lug integrally formed with the crank arm. The clutch finger 27 normally has its downwardly projecting portion 31 engaging a corresponding aperture or receiving portion on the clutch plate 24, this connection providing the clutched position of the plate 24 with the crank arm 25. As shown perhaps most clearly in Fig. 5, there is provided means for holding the clutch finger 27 away from its corresponding receiving portion on the clutch plate 24, to effect the unclutched position of the crank arm 25 with said clutch plate. The above means includes a latch 32 having its abutment face 33 beveled to coincide with the adjacent beveled edge of the clutch finger 27, said latch being capable of movement into or out of engagement with said clutch finger, with the following results: When the clutch 32 is moved to the full line position, as shown in Fig. 6, the beveled face 33 thereof will engage the adjacent beveled face of the clutch finger, and thereby move said clutch finger,

or rather, the lug portion 31 thereon, out of engagement with the clutch plate 24, said movement resulting obviously in a cessation of movement of the crank arm 25, as said arm is merely pivoted to the projecting end of the vertical stub drive shaft. Again, a depression of the latch 32 permits the re-engagement of the clutch finger, or rather lug member 31 thereon, with the clutch plate 24, with a consequent resumption of activity of the crank arm.

The latch member described generally as 32, is actually fastened, as at 34, to a bar 35, said bar 35 having one of its ends held in a semi-loose manner by a bracket 36, securely bolted as at 37 to the frame 10. The bar 35, or rather, the operating end thereof, is adapted to be raised or lowered to permit engagement or disengagement of the latch portion 32 with the clutch finger. This movement of the bar is restricted by a guide member 38 suitably attached, as at 39, to the frame. Movement of the bar 35 is actually effected through the cable 40 attached, as at 41, to the bar, said cable passing through the housing 42, immovably attached to the surrounding casing 11 by means of suitable brackets 43 and 44. The cable projects through the casing 11, and a manually operated button 45 is attached to the projecting end thereof, the same operating to effect the movement of the bar 35 and consequent clutching or unclutching of the crank 25 with the clutch plate 24.

Referring to Fig. 4 of the drawings, we find a frame or cradle 46, which supports the tub member 47. The cradle, described generally as 46, includes a base portion 48, upwardly projecting arms 49, and a downwardly projecting supporting column 50, pivotally mounted in a suitable supporting framework 51, attached as at 52 to the main frame 10. The tub 47 has pivotal or rockable connections 53 and 54 with the arms 49 of the cradle. The above described rockable or pivotal support for the tub leaves the bottom of the tub free to move, or rather to tilt, irrespective of the agitating movement imparted to the tub, the means for accomplishing same now to be described.

Oscillation, or rather agitation, of the tub member, or really, the cradle member, is effected through the arm 55, which has a pivotal connection with the crank arm 25 and a similar pivotal connection with the base portion of the cradle, as shown in detail at 56 in Fig. 4.

The tilting or rocking movement of the tub member, which is accomplished coincidentally with the agitation of the cradle, is effected by the following mechanism:

A lug 57 is fixedly attached to the frame 10 and projects through an arcuately shaped aperture 58 in the base portion 48 of the cradle. This lug 57 engages, at its upper end, a lever 59 pivoted, as at 60, to the base of the

cradle member. The lug 57, due to the movement of the cradle member, and consequently, of the lever 59, acts as a sort of fulcrum for said lever, with the result that the opposite end portion 60^a of said lever is given considerable movement during movement of the cradle member. The above described end portion 60^a of the lever 59 is fashioned, as at 61, to receive therein a ball 62 fixedly attached to the bottom of the tub 48.

The operation of the washing machine is as follows. Power connections from the motor to the clutch plate 24 may be readily followed. Similarly, the clutch connection of the crank arm 25 with the plate 24, permits rotation of said crank arm with a consequent agitation of the cradle member through the lever 55. The reciprocatory movement of the cradle member is transmitted directly, of course, to the tub member, which is pivotally supported therein. Coincident with this agitation of the tub is the tilting movement, which is perhaps most clearly disclosed in Fig. 1, said tilting movement being effected through the movement of the lever 59, which is initially moved by the cradle member, the opposite end portion thereof being given a degree of movement by the pivoting of said lever upon the upwardly projecting lug member 57. The movement of the lever 59 is transmitted to the lower side of the tub, due to the fact that the ball portion 62 is retained in the moving portion of the lever 59, as shown at 61. We may see from the above that not only is there a reciprocatory movement of the tub member, but coincident therewith a movement of the bottom of the tub to give it a tilting movement.

What I claim is:

1. In a washing machine, in combination, a frame, an upright tub portion, a tub support pivotally mounted in the frame, power operated mechanism for moving said support in an oscillatory manner, and means for imparting a tilting movement to the tub during said oscillation.

2. In a washing machine, in combination, a frame, an upright tub portion, a tub support, pivotally mounted in the frame, a rockable connection between the tub and supporting member, power operated mechanism for moving said support in an oscillatory manner, and mechanism controlled by the movement of the supporting member for imparting a tilting movement to the tub during said oscillation.

3. In a washing machine, in combination, a frame, an upright tub portion, a tub support pivotally mounted in the frame, said tub support including upwardly projecting arms, pivotal connections between the tub portion and support therefor to permit tilting action of the tub, power operated mechanism for moving said support in an oscillatory manner, and mechanism for imparting

a tilting movement to the tub during said oscillation, including a lever member actuated by said tub support and a connection between said lever and the tub.

5 4. In a washing machine, in combination, a frame, an upright tub portion, a tub support, power operated mechanism for moving said support in an oscillatory manner, a rockable connection between the tub support and the
10 tub portion, and mechanism controlled by the movement of the tub support, for imparting a tilting movement to the tub coincident with said oscillation.

15 5. In a washing machine, in combination, a frame, an upright tub portion, a tub support pivotally mounted in the frame, a rockable connection between the tub portion and tub support, power operated mechanism for moving said support in an oscillatory man-
20 ner and mechanism for imparting a tilting movement to the tub during said oscillation, including a lever member pivoted on the supporting frame, a sliding pivotal connection for said lever intermediate its length, and a
25 connecting means between the tub member and the opposed end of said lever member.

6. A washing machine having in combination, a container mounted for primary oscillation about its vertical axis and trunnioned
30 adjacent its top for secondary oscillation about an axis at right angles to the primary axis of oscillation, and means oscillating the container about the axes defined.

7. In a washing machine, a container, trunnions adjacent the top of the container, a
35 U-frame support on which the trunnioned container is mounted, a substantially central bearing for the U-frame and means imparting a primary movement to the container by movement of the U-frame in its bearing and
40 a secondary movement to the container about its trunnions.

8. In a washing machine, a U-shaped yoke rotatably supported, bearings on the yoke, a
45 trunnioned container mounted on the bearings, and means oscillating the yoke about its support and the container about the trunnions.

In testimony whereof I have hereunto
50 affixed my signature.

SIMON E. SCHROEDER.

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