

Dec. 16, 1924.

1,519,475

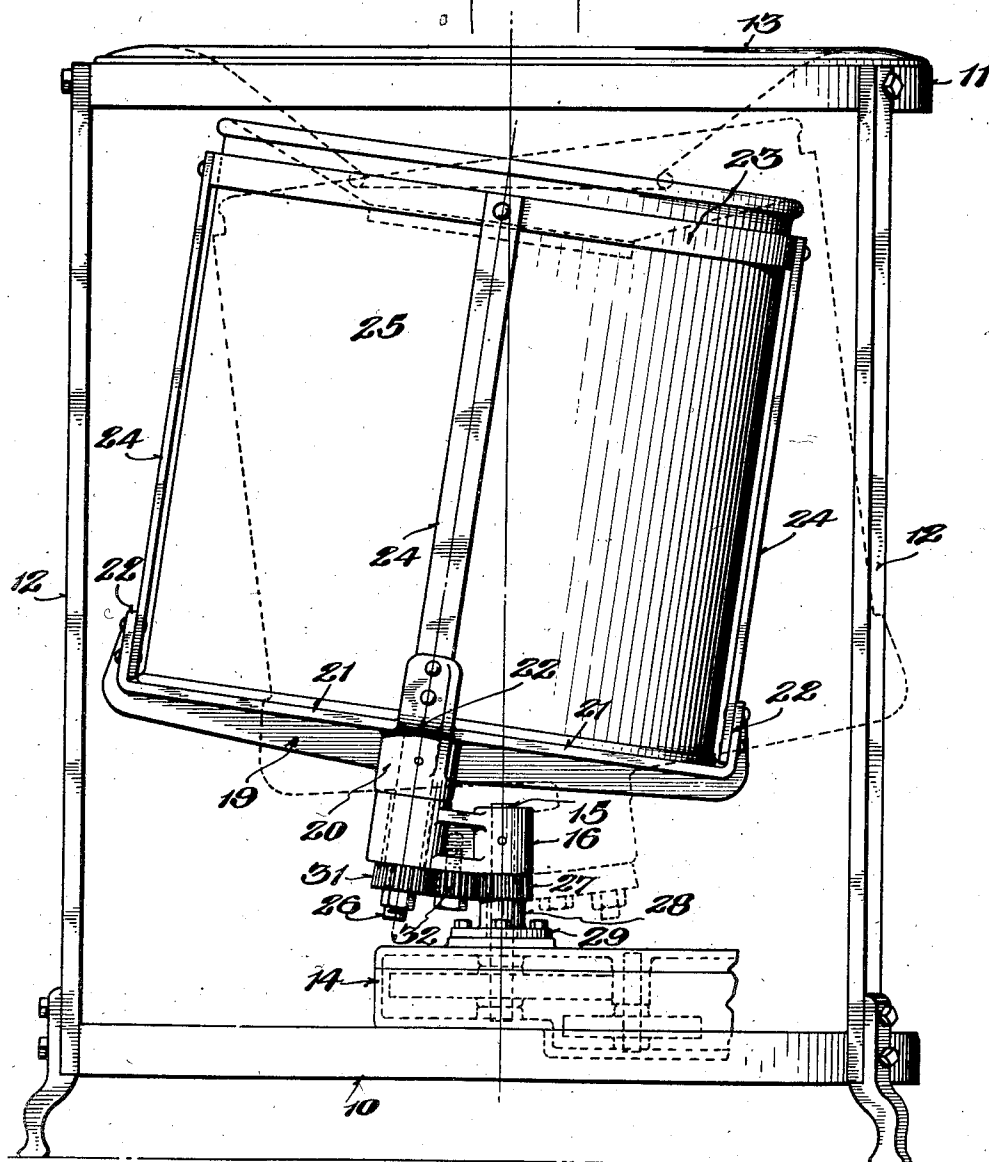
A. W. ALTORFER

WASHING MACHINE

Filed Oct. 29, 1924

2 Sheets-Sheet 1

FIG. 1.



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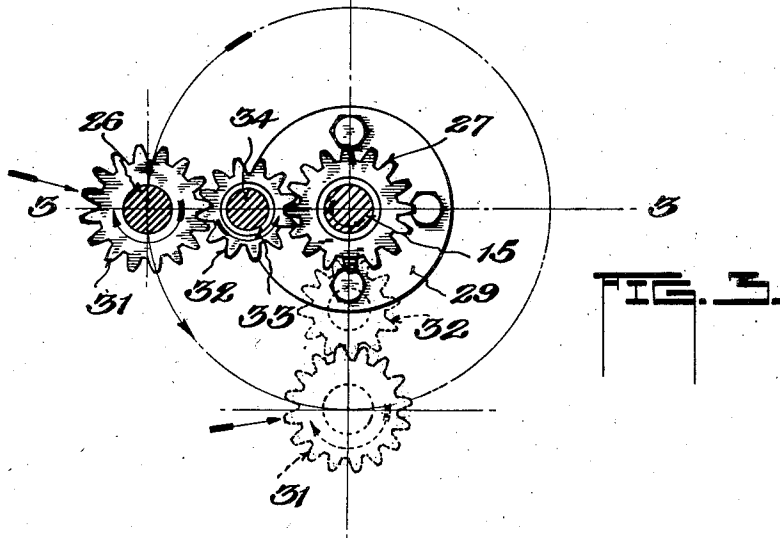
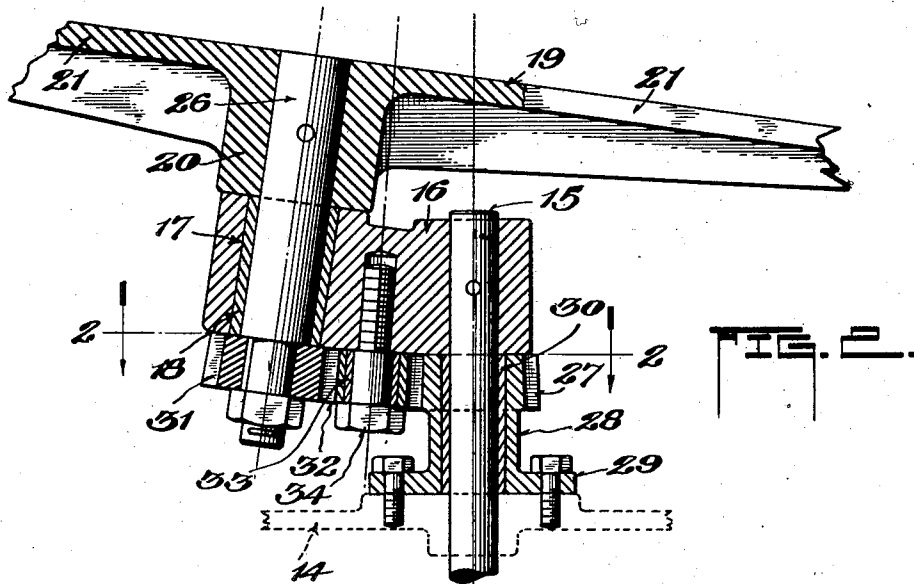
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

ALPHEUS W. ALTORFER, OF PEORIA, ILLINOIS.

WASHING MACHINE.

Application filed October 29, 1924. Serial No. 746,552.

To all whom it may concern:

Be it known that ALPHEUS W. ALTORFER, a citizen of the United States of America, residing at Peoria, in the county of Peoria and State of Illinois, has invented certain new and useful Improvements in Washing Machines, of which the following is a specification.

My invention relates to washing machines.

The invention has special reference to a washing machine wherein the container or tub is adapted to be moved through a continuous uninterrupted circular course.

The invention includes the mounting of a tub upon a support below the bottom thereof, and eccentrically with respect to the axial center of a driving means, wherein the tub body may be driven in a continuous circular course about the center of said driving means and to means for controlling the tub from turning upon its own axis.

The invention also includes the support of a tub at an angle inclined towards an axial line extension from the driving means wherein line extensions through the axis of said driving means will intersect a point located above the bottom of the tub.

The invention also includes a special character of tub support located beneath the tub, and the relationing of the same respectively to a driving member and to the tub, whereby the tub may be driven in an uninterrupted circular course about an axial line extension from the driving means, and to compensating means in association with the driving means and the tub, to control the turning of the tub upon the axis of its support.

The invention also includes modification of the defined structure wherein the means, herein shown, for controlling the turning of the tub with reference to its supporting axis, may be modified in a manner to permit the tub to turn throughout a limited arc of its circumference during the period that the tub body is turned throughout the course of a complete circle.

The invention also includes a special frame or basket support for the tub, to permit the latter to be readily separated or removed from such basket support.

The invention includes details of construction and special combination of parts and functioning utility of the same to produce certain operative results, hereinafter

more particularly specified and pointed out in the claims.

In the drawings, Fig. 1, is a side elevation of the machine, the dotted lines therein indicating variation with respect to positioning of movable parts in the course of operation of the machine.

Fig. 2, is a vertical sectional detailed view of related parts functioning in the driving action of the machine, taken on the line 3—3 of Fig. 3, and

Fig. 3, is a cross sectional view on the line 2—2 of Fig. 2, the dotted line shown therein, indicating relative travel course location of associated parts.

The applicant has knowledge of known art relating to washing machines wherein a tub is supported upon a traveling inclined disc and held against rotation when its disc support is rotated, the same being illustrated in the patent to Greenberg, 1,330,801, dated February 17, 1920.

Referring, now particularly, to the framing support shown in the drawings; 10 and 11 are respectively upper and lower ring members attached to vertical framing members 12. 13 is designed to indicate a partial top closure member, designed, in practice, to be provided with a central opening above the top of a tub, designed to be supported in the framing. 14, is a diagrammatic showing intended to represent a gear housing and gear content, the latter comprising such gear members as may serve to drive shaft 15, connected therewith, in a constant direction. 16, refers generally to a crank arm member attached to shaft 15, and with its upper portion fashioned with a circular opening 17, disposed in an inclined relation with respect to the vertical axis of shaft 15. 18, is a tubular sleeve member turnably seated in opening 17, in said crank arm member 16.

19, refers generally to a support for a tub, which includes a central hub member 20 and radial arm members 21, terminating at their outer ends in upwardly tending flange or extension portions 22. 23, is a ring member and 24, are bar members connected each at their opposed ends respectively with flange portions 22 of a tub supporting member 19, and ring member 23, thereby providing what might be termed, a basket housing or support for a tub member 25. To the hub portion 20, of tub support member 19, is fixed a stub shaft or post 26, posi-

tioned on a line through the central axis of the tub and depending downwardly from hub member 20 of said tub support and projecting through and in turnable fit relation with tubular member 18, supported in conjunction with crank arm member 16, whereby, through relative engagement of hub member 20 of the tub support with crank arm member 16, the former is supported from the latter. In the relation of support from shaft 15, as above indicated, it will appear that the axial center of support for the tub, is at an inclined angle toward a line extension from the vertical axis of shaft 15, and that such axial extension lines will intersect at a point above the bottom of the tub support, and also it will appear that with the rotation of shaft 15, the axial supporting center for the tub will be swung about driving shaft 15, and similarly the tub will be caused to describe a similar circular course whereby, if the tub is maintained in fixed position with respect to a turning upon its axial center, that a point preferably within the confines of the tub coinciding with the intersecting axial line extensions of driving shaft 15, and centering shaft 26, for the tub will be substantially stationary, and constitutes the swinging or pivotal center about which lower portions of the tub will be caused to travel, thereby producing the operative effects herein sought in promoting washing activities within the tub.

Referring now to means provided for preventing the tub from turning upon its own axis, 27, is a stationary gear member fashioned with a sleeve portion 28, and perforated flange portion 29, the latter adapted to be fixedly seated in conjunction with gear case member 14; and 30, is a sleeve member interposed between said gear and shaft 15. 31, is a gear member fixed to the lower end of tub centering shaft 26; and 32, is an idle gear, journaled in boxing member 33, the latter being supported in conjunction with screw member 34, having threaded support in conjunction with the body of crank arm member 16, said idle gear being co-operatively related to gear members 27, and 31. The functioning effect of the provision of such gear members is, that as shaft 15 is turned to cause shaft extension member 26, from the tub support to be moved about driving shaft 15, said shaft extension member, through its gear connection with fixed gear member 27, and a proper relative relation as to diameter and tooth members, serves to exactly compensate for the general turning movement of the tub from shaft 15, whereby said tub will be maintained in a stationary position with respect to a vertical plane through its axis, and also with respect to a point coincident with the intersection of axial line extensions from the

driving and tub supporting means, whereby a constantly progressive tipping of the tub into constantly varying plane positions is effected.

I desire to note here that it is within my conception that compensating gear members 27, and 31, may be varied with respect to diameter or tooth member, or both, to the end of effecting only partial compensation for the revolving action of the tub about line extension through the axes of shaft 15, in its effect without such compensating means to change the position of the tub with respect to the axes of its support, whereby, under such modification of gear relation over that shown in the action of causing the tub to travel through the course of a complete circle, the travel of the tub with respect to its axis will be less or more than through a course comprehending a complete circle about said tub.

We name this modification as to relative motions about the driving center and axially of the tub, merely to indicate means that might be adopted to effect approximation of the result attained by the specific means herein shown, but with no suggestion as to equivalency of result attained.

What I claim is:

1. In a washing machine, in combination, a supporting frame, a driven shaft supported thereon, a tub support fixed to the driven shaft, a tub mounted thereon, eccentrically and inclined toward the axis of the driven shaft whereby the tub may be swung about the driving axis in a continuous circular course and means actuated by the driven shaft to prevent rotation of the tub.

2. In a washing machine, in combination, a supporting frame, a vertically disposed drive shaft supported thereon, a support for the tub fixed to the drive shaft, a tub mounted upon the support eccentrically and at an inwardly inclined angle with relation to the axes of said drive shaft and means to limit rotation of the tub.

3. In a washing machine, in combination, a supporting frame, a driven member thereon, a tub supporting member fixed to the driven member, a tub member seated upon said support in substantial register with the axial center of its support and eccentrically and at an inwardly inclined angle with relation to the axis of the driven member and means active through the rotation of the driven member to control the tub from rotating.

4. In a washing machine, in combination, a supporting frame, a drive shaft supported thereon, a support for a tub, a tub mounted upon the support eccentrically and at an inwardly inclined angle with relation to the axis of said drive shaft, and means having a movement relatively to the movement of

the drive shaft to restrict the rotation of the tub.

5. A washing machine having in combination, a tub seat, a tub removably seated therein, and axially removable therefrom, a driven member located eccentrically with relation to the center of the tub seat, and means operable from the driven member and acting in conjunction with the tub seat to control the rotation of the latter about its own axis.

6. A washing machine having in combination, a supporting frame, a driven shaft mounted thereon, a tub support fixed to the driven shaft, a tub mounted on said support eccentrically with reference to the axis of the drive shaft, whereby the tub may be swung about the axis of the drive shaft in a continuous circular course, and means actuated by the driven shaft to prevent rotation of the tub.

7. A washing machine having in combination, a supporting frame, a drive shaft mounted thereon, a support for a tub, a tub mounted upon the support eccentrically with relation to the axis of the drive shaft, and means having movement relative to the movement of the drive shaft to limit the rotation of the tub.

8. In a washing machine, a driven shaft, a tub, means for connecting the tub to said driven shaft for revolving the tub about

said shaft, and relatively movable compensating means for preventing rotation of the tub during said revolution.

9. In combination, a tub seat, a tub removably seated therein, and axially removable therefrom, an inclined driven member located eccentrically with relation to the center of the tub seat, means connecting the tub seat to the driven member and means for preventing the tub seat from rotating about its own axis.

10. In a washing machine, a supporting frame, a driven shaft supported thereon, means for driving the said shaft, a crank arm fixed to the shaft provided with an opening therein, spaced from said shaft, and inclined towards the axis of said driving shaft, a sleeve in said opening, a tub member, a shaft depending axially from the tub and supported within the sleeve member of said crank arm member, a gear fixed to the tub shaft, a gear fixed to the frame and centered about the drive shaft, and an idle gear member meshing with each of said above mentioned gears, whereby the rotation of the tub about its own axis will be controlled during the revolution of the tub about the axis of the drive shaft.

In testimony whereof I affix my signature.

ALPHEUS W. ALTORFER.