Nov. 12, 1940. S. TATAR 2,221,224

WASHER

Filed March 17, 1939 2 Sheets-Sheet 1

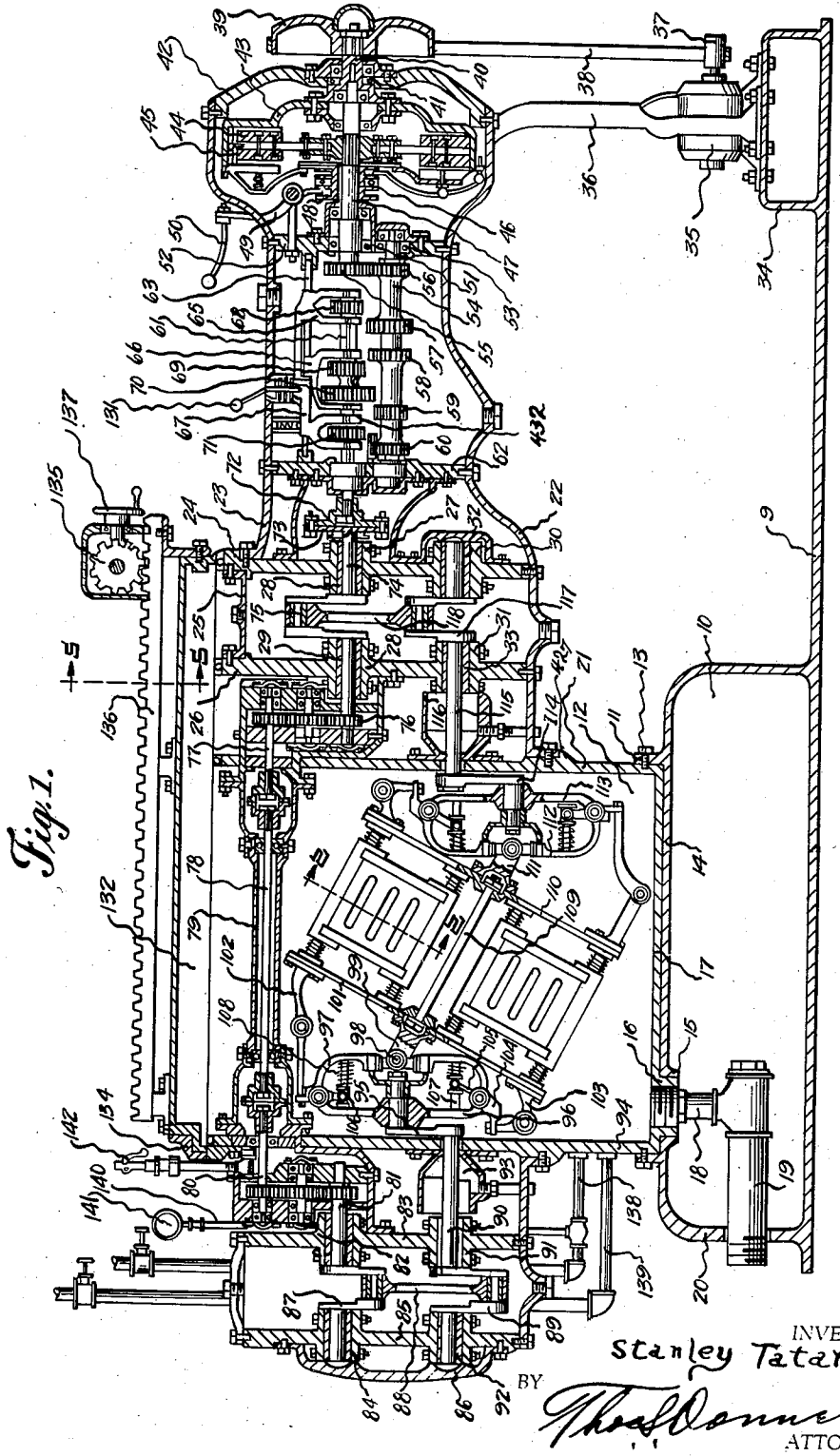


Fig. 1.

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Fig. 2.

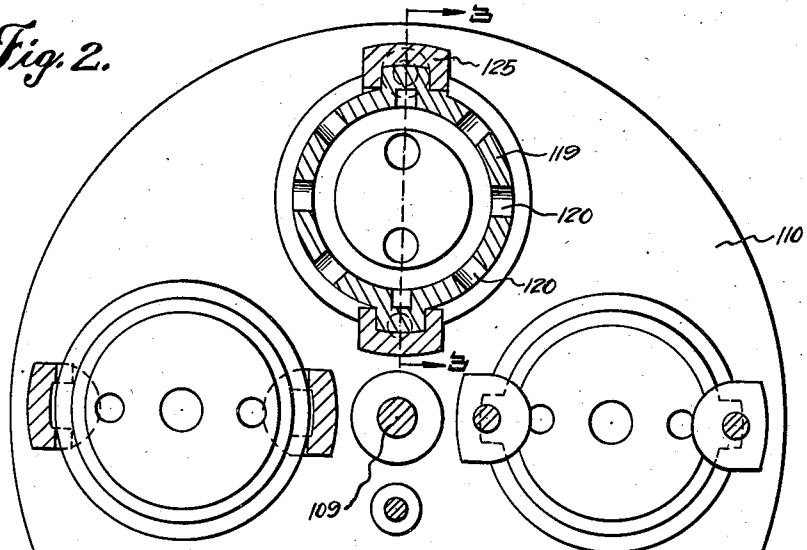


Fig. 3.

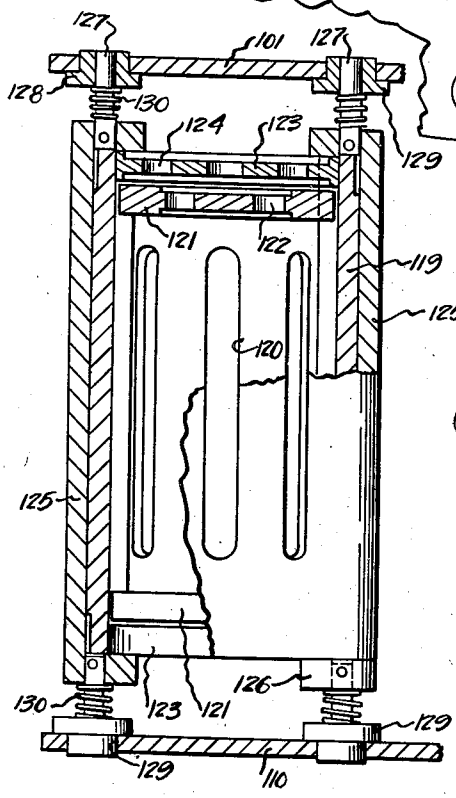


Fig. 5.

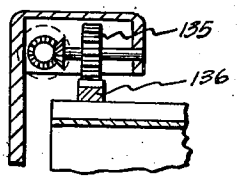
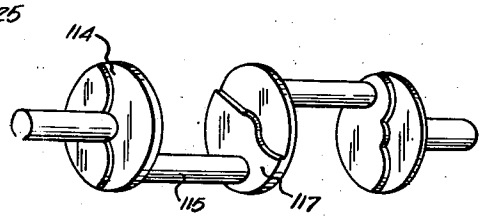


Fig. 4.



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UNITED STATES PATENT OFFICE

2,221,224

WASHER

Stanley Tatar, Detroit, Mich.

Application March 17, 1939, Serial No. 262,458

6 Claims. (Cl. 141—1)

My invention relates to a new and useful improvement in a washing machine and it is an object of the present invention to provide a washing machine having a container in which the articles to be washed are positioned and which is oscillated or toppled in a receptacle containing the washing fluid.

It is another object of the present invention to provide a washing machine of this class which will be simple in structure, economical of manufacture, durable, and highly efficient in use.

Another object of the invention is the provision of a washing machine of this class so arranged and constructed that a plurality of containers may be mounted on a toppling holder and simultaneously toppled in a cleansing liquid.

Another object of the invention is the provision of a washing machine of this class of a material container adapted for mounting on a holder and so arranged and constructed that it may be easily and quickly placed in position on the holder and removed therefrom.

Other objects will appear hereinafter.

The construction and operation of the invention will be understood by the description herein given which makes reference to the accompanying drawings and in which,

Fig. 1 is a longitudinal central vertical sectional view of the invention,

Fig. 2 is a fragmentary sectional view slightly enlarged taken on line 2—2 of Fig. 1,

Fig. 3 is an enlarged sectional view taken on line 3—3 of Fig. 2,

Fig. 4 is a perspective view of the cam used in the invention.

Fig. 5 is a fragmentary, sectional view, taken on line 5—5 of Fig. 1.

The invention is supported on a suitable base 9 extending upwardly from which is a hollow supporting table 10 having the upwardly projecting flange 11 to form a frame in which the lower part of the liquid receptacle 12 engages and to which it is secured by the screws 13. A table top 14 is provided with a boss 15 in which an outwardly projecting nipple 16 on the bottom 17 engages. Threaded into this nipple is an outlet drain pipe 18 having a laterally directed portion 19 extended through the wall 20 of the hollow support.

Mounted on one of the side walls 21 of the receptacle 12 and projecting outwardly therefrom is a housing 22, the upper side 23 of this housing terminating outwardly from the lower side thereof and being secured to the supporting wall 24, this supporting wall being also secured to the lower side of the housing 22. A connecting plate 25 connects the supporting wall 24 to the supporting wall 26 which is also connected to the housing 22. This housing 22, while secured to the wall 21 by means of bolts is not entirely supported by these bolts as the housing rests upon the outwardly projecting boss 427 on the wall 21. Formed in the wall 24 is a bearing 27 in alignment with a bearing 28 formed in the wall 26, bushings 28 and 29, respectively, being positioned in these bearings. A bearing 30 is formed in the wall 24 and in alignment with the bearing 31 formed in the wall 26, bushings 32 and 33, respectively, being mounted in these bearings.

A supporting bed 34 projects upwardly from the base 9 from one end thereof and mounted on this bed is an electric motor 35. A supporting standard 36 also projects upwardly from the bed 34 and serves to support the outer end of the housing 22. A pulley 37 which is driven by the motor 35 is connected by the belt 38 to a pulley 39 fixedly mounted on a shaft 40, this shaft 40 being journalled in a bearing 41 mounted in the end plate 42 which is secured to the end of the housing 22. Mounted on the shaft 40 and adapted for rotating therewith is a clutch disk 43 carrying the friction pads 44 adapted to be engaged by the friction pads 45 of a clutch disk 46 which is mounted slideably on the shaft 47 which is in alignment with the shaft 40. The clutch disk 46 carries a yoke collar 48 engaging with which is the rockable yoke 49 which may be rocked by the handle 50. Upon rocking the yoke in one position, the clutch pads may be brought into engagement and the shaft 40 and 46 rotated in unison with each other. The shaft 47 is also journalled in a bearing 51 mounted in the supporting wall 52 in which is also mounted a bearing 53 receiving one end of the gear shaft 54. Fixedly mounted upon the shaft 47 is a gear 55 meshing with the gear 56 on the shaft 54. Mounted on this shaft 54 are also gears 57, 58, 59, and 60, to provide part of a transmission cooperating with the gears which are slidably mounted on the shaft 61. The portion 43 of the clutch serves as a fly wheel. It will be noted that this portion 43 is formed cup-shaped so that the flange embraces the clutch-cooperating parts and thus any tilting, strain, wobbling, or other vibrations delivered to it on account of rotation will be counteracted.

Supported by and extended between the supporting walls 52 and 62 is a guide rod 63 on which

is slideably mounted a yoke bar carrying the yokes 65, 66, and 67. The yoke 65 is adapted for effecting slideable movement of the gear 68 and the yoke 66 is adapted for effecting slideable movement of the dual gear having the gears 69 and 70 while the yoke 67 is adapted for effecting slideable movement of the gear 71. The yokes referred to all embrace the shaft with which associated, each of these yokes being provided with a semi-circular cap which passes around the shaft and is bolted to the yoke forks. This assures a firm secure mounting and an easily slideable movement. The shaft 61 extends through the wall 62 and is provided with the flange 72 bolted to the flange 73 carried by the crank shaft 74 having the crank 75 intermediate its ends. The opposite end of the shaft 74 extends through the bushing 29 and is provided with a gear 76 adapted to drive through proper transmitting gearing a shaft 77 which is bolted to the connecting shaft 78 which extends through the housing 79. A shaft 78 is bolted to the shaft 80 adapted to drive through transmission gearing the crank shaft 81 which is journalled in a bearing 82 formed in the supporting plate 83 and in the bearing 84 formed in the supporting plate 85 and to which a cover cap 86 is connected. The shaft 81 is provided with a crank 87 oppositely faced and corresponding in throw to the crank 75. This crank 87 is connected by a connecting rod 88 to a crank 89 formed on the shaft 90 which is journalled in a bearing 91 on the supporting wall 83 and in a bearing 92 on the supporting wall 85. This shaft 90 projects through an oil housing 93 and through the side wall 94 of the receptacle 12. Formed on the shaft 90 interiorly of the receptacle 12 is a crank 95, connected centrally to a cross-head 96 to which is connected a cross-bar 97 pivoted at 98 to the lug 99 projecting outwardly from the carrying plate 101. This carrying plate is also connected to the opposite ends of the cross-head by the toggles 102 and 103 which are diametrically opposite each other. Each of these toggles connects to a rocker arm 104 carrying a yoke 105 attached to a collar 106 slidably mounted on a stub shaft 107 projecting outwardly from the cross-head. The slideable movement of this collar in one direction is resisted by the spring 108. The carrying plate 101 is connected by the staybolts 109 to the carrying plate 110. Projecting centrally outwardly from the carrying plate 110 is the lug 111 pivotally connected at its end to the plate 112 which is connected at the opposite ends to the opposite ends of the cross-head 113 through which extends a crank 114 carried by the shaft 115, this shaft projecting through the oil container 116 and journalled in the bushing 33 and the bushing 32. A crank 117 carried by the shaft 115 is connected by the connecting rod 118 to a crank 75 on the shaft 74. As shown in Fig. 4, the cranks 117, and 114, are in the form of circular disks with a built-up portion on the one face to provide a counter-weight thus maintaining a balance of the crank shaft, and preventing the driving action which would ordinarily result were the cranks not balanced.

The construction and the connection is such that when the motor 35 is operated, the shafts 90 and 115 are rotated in unison in the same direction, thus effecting a rotation of the carrying plates 110 and 101. Because of the connection of these carrying plates with the cross-head by the pivotal connection at their centers and the toggle connection adjacent their peripheries, these plates, in addition to being rotated, are also oscillated or toppled. It will be noted that one of the toggles is of greater length than the other to assure this toppling motion while the plates are being rotated. Each of the toggles effects the slideable movement of a collar 106 on the shaft 107 compressing the spring as this collar moves in one direction, the spring assisting in the opposite movement.

Mounted between the supporting plates 101 and 110 is a plurality of containers in which dishes, clothes or the like are deposited. Each of these containers is similarly constructed and similarly mounted so that a description of one will suffice for both. Each container comprises a cylindrical body 119 having a plurality of elongated axially directed slots 120 formed therein. Inserted into each end of the cylindrical container is a follower 121 having perforations 122 formed therein. Each end of the container is closed by a closure 123 having openings 124 formed therein. In order to retain these covers in position a pair of retaining slats 125 are provided, these retaining slats being positioned on the cylindrical member 119 diametrically opposite each other. Each of these slats is provided at its ends with an angularly directed flange 126 to provide an elongated U-shaped structure. The space between the flanges 126 on opposite ends of the slats 125 is such that the slats may be slipped over the cylindrical container 119 and engage the end faces of the closures 123 so as to retain them in position. Projecting outwardly from the ends of each of these slats 125 in alignment with the wall of the container 119 is a stud 127 slidably mounted on which is a collar 128 having the peripheral flange 129. A spring 130 is positioned on the stud so as to normally retain the collar 128 pressed outwardly. Formed in the supporting plates 101 and 110 are openings 129 positioned opposite each other so that the collar 128 carried by oppositely disposed studs may be engaged in these openings, the spring 130 being compressed when the collar is in such engagement as shown in Fig. 3 and the flange 129 engaging the inner face of the plate 101 or 110 as the case may be. It is obvious that longitudinal movement of the member 119 when in mounted position will not effect its disengagement from between the plates 101 and 110 because the springs will serve to retain the collars in position. However, in order to remove one of the containers 119 it is moved longitudinally in one direction to the limit of its movement and then the collars at the opposite ends are moved on the studs against the compression of the springs to permit their disengagement. Thus there is provided a simple and easily operated method of mounting these containers in position between the supporting plates 101 and 110 in such a manner that they may be easily removed and replaced. The followers 121 are slideable within the container 119 so that when the container is not filled with articles, these followers will serve as limiting partitions to prevent undue travel of the articles in the container 119. The fit of the followers 121 with the container 119 is such that these followers may be easily slid manually to various positions in the container.

In order to operate the device the motor is started and the gears are shifted into mesh by shifting the yokes by means of the gear shift lever 131. When the gear 68 is brought into mesh with the gear 57 the shaft 63 is rotated at a predetermined speed to effect a rotation of the

shaft 74, thus rotating through the gearing arrangement the shaft 90 and the shaft 115. This will bring about a rotation and a toppling of the supporting plates 110 and 101 so as to effectively wash and cleanse the articles deposited in the containers 119. When the gear 71 is brought into mesh with the gear 60 a rotation of the shaft 74 at another speed is effected, and likewise, when the gear 70 is brought into mesh with the gear 59. Still another speed is obtained when the gear 69 is brought into mesh with the gear 68.

A cover 132 is provided for the mechanism and is adapted to slide on the top of the structure. This cover, when in operative position, is secured by the slide rail 134 and its slidable movement may be effected by means of the gear 135 meshing with the rack bar 136 secured to the cover, this gear 135 being rotated by suitable gearing associated with the hand wheel 137.

Feed pipes 138 and 139 serve as a means for conducting water and liquefied soap into the receptacle 12. A pipe 140 communicates with a gage 141 and a safety pressure valve 142 communicates with the interior of the mechanism.

While I have illustrated and described the preferred form of construction, I do not wish to limit myself to the various details of structure shown, but desire to avail myself of such variations and modifications as may appear within the scope of the appended claims.

What I claim as new is:

1. In a washing machine of the class described, a pair of spaced supporting members having aligning openings formed therein; a container adapted for the reception of articles to be washed comprising an elongated hollow body having openings formed therein; a closure for the opposite ends of said body; a pair of retaining members having laterally directed parallel extending projections at opposite ends, adapted for fitting over the opposite ends of said container; a stud projecting outwardly from each of said projections; and a collar slidably mounted on each of said studs engaging in the openings in said supporting members; and a spring on each of said studs for retaining the collar in the opening in the supporting member for mounting said container thereon.

2. In a washing machine of the class described, a pair of spaced supporting members having aligning openings formed therein; a container adapted for the reception of articles to be washed comprising an elongated hollow body having openings formed therein; a follower slidably mounted in said container for compressing together the articles placed therein; a closure for opposite ends of said container; a retaining member mounted on said container; a stud projecting outwardly from said retainer at opposite sides of said container; a spring on each of said studs; and a slidable collar on said studs engageable in the aligned openings of said supporting members for mounting said container therebetween.

3. In a washing machine of the class described, a pair of spaced supporting members having aligning openings formed therein; a container adapted for the reception of articles to be washed comprising an elongated hollow body having openings formed therein; a follower slidably mounted in said container for compressing together the articles placed therein; a closure for opposite ends of said container; a retaining member mounted on said container; a stud projecting outwardly from said retainer at opposite sides of said container; a spring on each of said studs; and a slidable collar on said studs engageable in the aligned openings of said supporting members for mounting said container therebetween; and a flange on each of said collars engageable with a face of said supporting member upon engagement of said collar in one of said aligned openings.

4. A washing machine of the class described, comprising: a liquid receiving receptacle; a pair of spaced supporting members positioned in said receptacle; containers mounted upon and positioned between said supporting members for the reception of articles to be washed; a pair of shafts projecting into said receptacle from opposite sides thereof in alignment with each other; an oppositely faced crank on each of said shafts; a cross-head mounted on each of said cranks concentrically thereof and rotatable thereby means for pivotally connecting the center of each of said supporting members centrally to the adjacent cross-head; and means for rotating said shafts.

5. A washing machine of the class described, comprising: a liquid receiving receptacle; a pair of spaced supporting members positioned in said receptacle; containers mounted upon and positioned between said supporting members for the reception of articles to be washed; a pair of shafts projecting into said receptacle from opposite sides thereof in alignment with each other; an oppositely faced crank on each of said shafts; a cross-head mounted on each of said cranks concentrically thereof and rotatable thereby; means for pivotally connecting the center of each of said supporting members centrally to the adjacent cross-heads; means for rotating said shafts; and a pair of toggles for each of said supporting members for connecting opposite sides of said supporting members to opposite ends of said cross-head, one of said toggles being longer than the other.

6. A washing machine of the class described, comprising: a liquid receptacle; a pair of spaced supporting members in said receptacle; containers mounted upon and positioned between said supporting members for the reception of articles to be washed; means for conducting liquid into said receptacle; a pair of shafts each projecting through opposite sides of said receptacle; a crank on each of said shafts interior of said receptacle; a cross-head carried by each of said cranks; means for connecting said supporting members centrally to said cross-heads in pivotal relation thereto; a pair of toggles for each of said supporting members for connecting opposite sides thereof to opposite ends of said cross-head; a crank on each of said shafts exterior of said receptacle; a pair of rotatable shafts; a crank on each of said rotatable shafts; means for connecting the crank of one rotatable shaft to a crank on one of said first mentioned shafts; and means exterior of said receptacle for rotating said rotatable shafts.

STANLEY TATAR.