March 23, 1948. J. A. EASTES 2,438,273

WOBBLE BASKET WASHING MACHINE

Filed Aug. 29, 1945 3 Sheets-Sheet 1

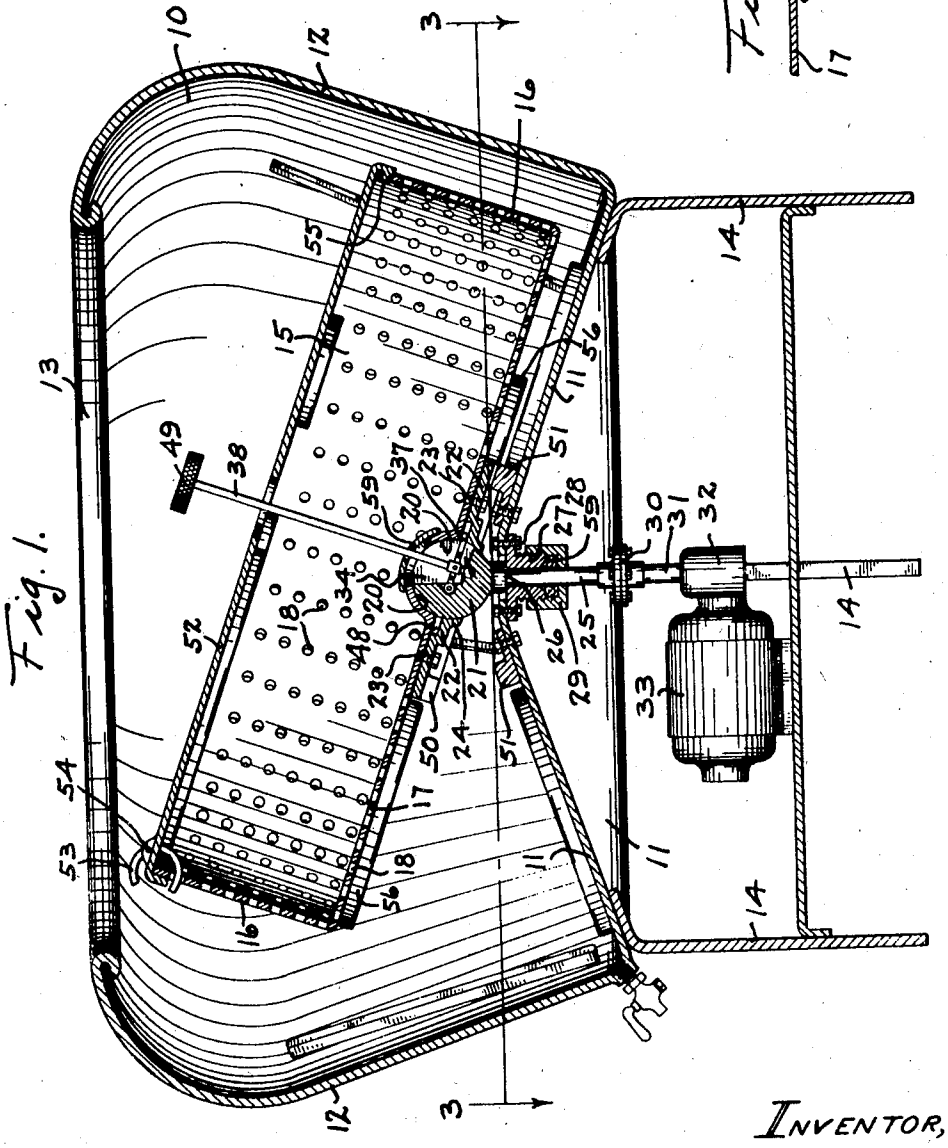


Fig. 1.

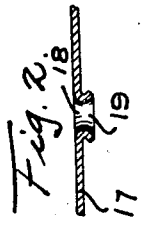


Fig. 2.

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Fig. 3.

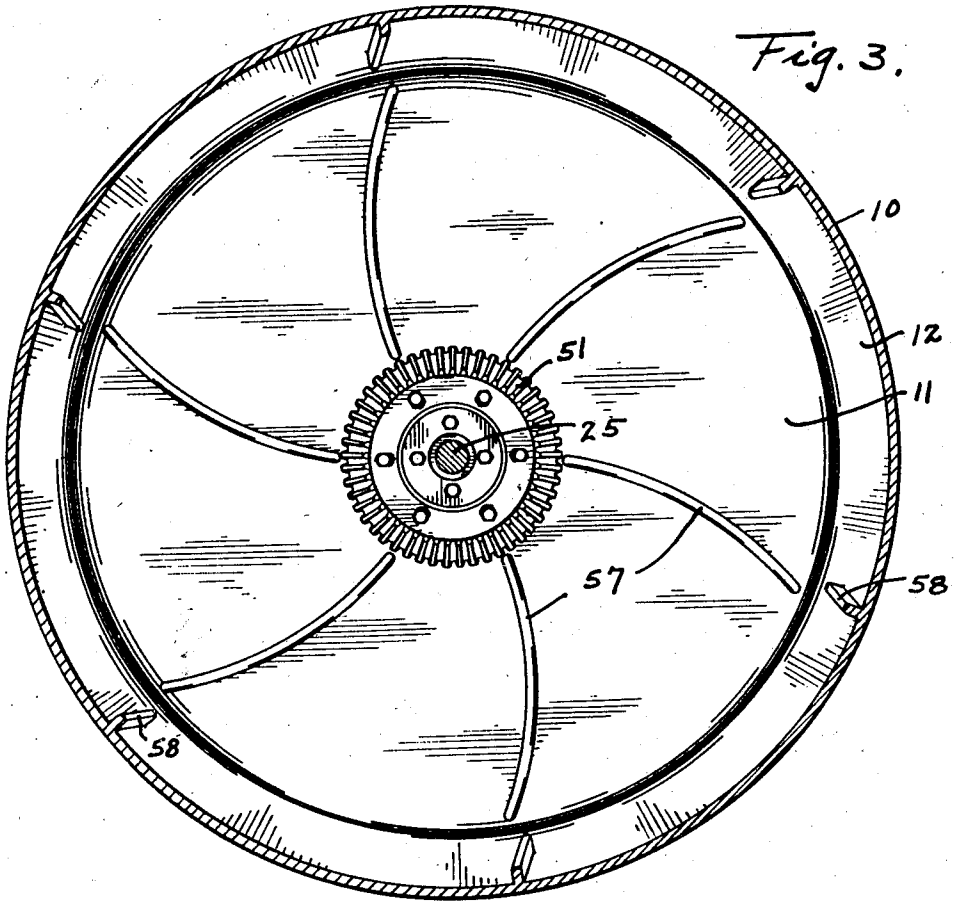


Fig. 4.

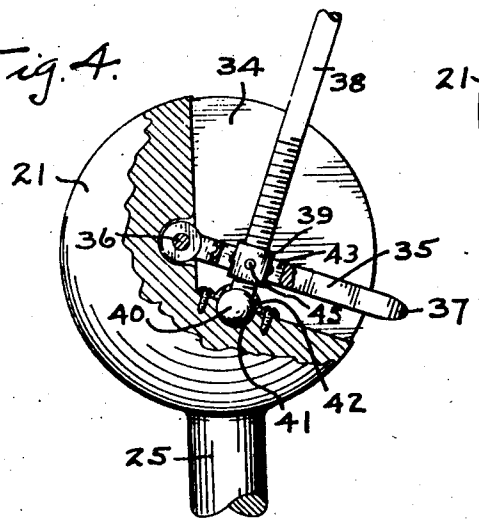
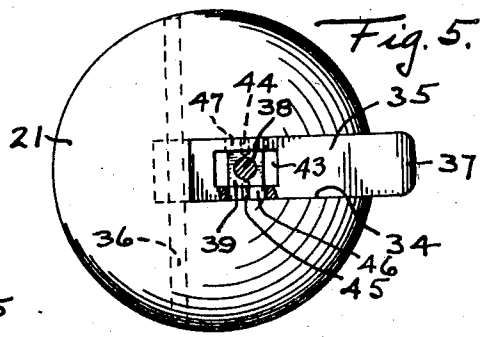


Fig. 5.



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WOBBLE BASKET WASHING MACHINE

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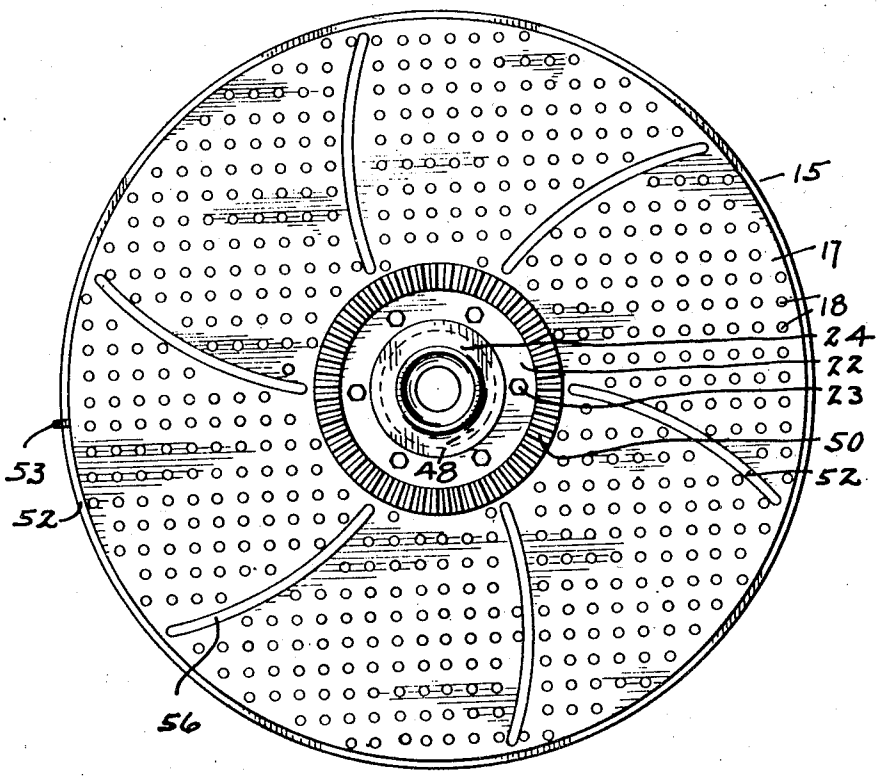


Fig. 6.

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UNITED STATES PATENT OFFICE

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WOBBLE BASKET WASHING MACHINE

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11 Claims. (Cl. 68—152)

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This invention relates to a washing machine wherein a basket is oscillated vertically and progressively around its entire circumference without rotation of the basket itself to the end that material to be washed is held within the basket to be sloshed up and down within a washing solution provided in a tub within which the basket is carried.

The invention further embodies the unique and simple mounting and driving of the basket all as herein shown and described, and the advantages of which will become apparent to those versed in the art in the following description as illustrated by the accompanying drawings, in which

Fig. 1 is a central vertical section through a structure embodying the invention;

Fig. 2, a detail in section on an enlarged scale of a modified basket orifice;

Fig. 3, a horizontal transverse section on the line 3—3 in Fig. 1;

Fig. 4, a detail on an enlarged scale in side elevation and partial section of the basket mounting and drive head;

Fig. 5, a top plan view of the drive head; and

Fig. 6, a bottom plan view of the basket.

Like characters of reference indicate like parts throughout the several views in the drawings.

I provide a tub 10 with a conical floor 11 and preferably with an outwardly flaring side wall 12, whereby the general shape of the tub is inverted frusto-conical with an opening 13 at the top end. The tub 10 is supported in any suitable manner, herein shown as by means of legs 14.

A basket generally designated by the numeral 15 is provided with perforate side and bottom walls so designed as to effectively retain clothes within the basket and yet permit free ingress and egress of water. Referring to Fig. 1, the basket 15 is provided with a cylindrical side wall 16 and a flat floor 17. In place of the simple perforations 18 shown in these two members, the floor 17 may be provided with a flange 19, about each perforation 18, Fig. 2, extending below the floor 17 as an integral part thereof to serve as an inverted funnel to induce flow of water up therethrough under a jet action when the tub floor is forcibly carried downwardly through a body of water.

The central portion of the floor 17, in the form herein shown, is pressed upwardly to form a concave cavity from the under side to form a seat 20 within which is slidingly received the upper portion of the ball 21. This ball 21 is rockably maintained in the seat 20 by means of

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a plate 22 which is brought up from the under side of the ball 21 and secured to the floor 17 in any suitable manner, such as by the cap screws 23. This plate 22 has a central opening therethrough around the margin of which is an arcuate flange 24 which bears against the ball 21 below its diametrical plane. From the under side of the ball 21 extends downwardly a stem 25 to have a shoulder 26 therearound serving as a thrust bearing against the bearing block 27 that is secured to the floor 11 of the tub by the bolts 28. The stem 25, by a reduced diameter portion extends downwardly through the bearing block 27 with a running fit and through the packing nut 29 to engage in a suitable coupling 30 in turn driven by a shaft 31 extending from the gear housing 32 of a driving motor 33.

The ball 21 is provided with a slot 34 within which a rocker arm 35 may be raised and lowered. This rocker arm 35 is pivotally connected with the ball 21 by any suitable means, such as by a pin 36 extending through the ball 21 and through the inner end of the arm 35. The arm 35 extends outwardly through the slot 34 from its pivot pin 36 to have an end 37 extending a distance beyond the surface of the ball 21. In order to control the rocking of the arm 35, a shaft 38 is extended down through the slot 34 to screw threadedly pass through a collar 39 and to terminate by a ball end 40 that is rockably maintained in a seat 41 provided at the bottom of the slot 34. The clamp plate 42 is provided to fit over the upper side of the ball 40 to retain it against displacement. Thus, the shaft 38 is free to be not only rotated about its own axis, but it may swivel in relation to the ball 21 within the confines of the slot 34.

The collar 39, in the form herein shown, is located within a slot 43 in the arm 35. The exterior of the collar 39 is provided with parallel faces bearing against the sides of the slot 43 to prevent rotation of the collar 39 within that slot. Means are provided to interconnect the arm 35 with the collar 39 whereby relative travel of the collar 39 along the shaft 38 will accordingly rock the arm 35 and retain it in any rocked position. In the present form of the invention, such means consist of a pair of pins 44 and 45 extending oppositely from the collar 39, fixed thereto, slidingly entering within slots 46 and 47 provided through the sides of the arm 35 and opening into the vertical slot 43. This permits the shaft 38 to rock in a plane longitudinally of the arm 35, which rocking is imperative due to the fact that

the centers of the mounting of the shaft 38 and of the arm 35 are not in common.

Referring again to the basket 15, there is provided an annular slot or groove 48 opening toward the ball 21. In the form herein shown, this groove 48 is formed between the under side of the floor 17 and the upper side of the plate 22. The outer end 37 of the arm 35 engages within this groove 48. The shaft 38 preferably extends on out and above the basket 15 to have a suitable operating head 49. Thus by turning the head 49, the arm 35 may be rocked upwardly to bring the basket 15 from its full inclined position, Fig. 1, to a horizontal position. The horizontal position is preferably had when the basket 15 is to be loaded with clothes, following which the shaft 38 may be turned to tilt the basket 15 back down to the position as shown.

The plate 22, Fig. 6, is provided with a gear 50 therearound having teeth which will mesh with the gear 51 secured on the top side of the floor 11 of the tub. That is, when the basket 15 is tilted to the position shown in Fig. 1, the gear 50 is in mesh with the gear 51 in the nature of meshing bevel gears.

Preferably, a perforate cover 52 is provided across the entire top of the basket 15 and secured by any means, such as the clamp 53 which is essentially a C-shaped arm shifted on the pin 54 on the cover 52 to have a lower portion thereof enter through one of the holes 18 adjacent the top of the wall 16, the opposite side of the cover having a pin 55 likewise entering one of the holes 16. The under side of the floor 17 is provided with arcuate ribs 56. Likewise the upper side of the floor 11 is provided with arcuate ribs 57. The ribs 56 and 57 are so curved and directed as to serve to induce a current of water from the outside of the tub 12 to the inner portion thereof. Also facilitating in the agitation and setting up of currents within the tub 12 are tub side wall ribs 58 inclined in the manner shown in Figs. 1 and 3.

In operation, there may be a cover provided for the tub opening 13, but in any event, the washing solution is placed within the tub 12 and the material to be washed is placed within the basket 15 in a rather loosely arranged manner and the cover 52 secured over the basket. The shaft 38 is provided with a loosely carried plate 59 which drops by gravity down over the opening through the seat 20 which is provided for the shaft 38 to extend therethrough and on up through the basket and out through the cover 52. The shaft 38 will remain substantially perpendicular to the floor 17 of the basket 15. With the basket 15 loaded, the motor 33 which may be a variable speed motor, or which may have different speed ratios in the gear housing 32 (not shown) is set in operation to revolve the ball 21 through the connecting shafts 25 and 31. Since the arm end 37 is slidingly engaged within the groove 48, this end 37 may travel completely therearound continuously from the drive of the motor 33. Since the gears 50 and 51 are intermeshed, the basket 15 will not revolve but will remain stationary as to its central vertical axis in respect to any rotation thereabout. However, as the arm end 37 travels around the groove 48, the basket 15 will be continuously and progressively tipped around the entire 360° thereof as the teeth of the gears 50 and 51 progressively intermesh but retain the basket 15 against rotation. The resultant effect is that the basket 15 is simply wobbled around on the ball 21 to have one side (left hand side in Fig. 1) elevated above the floor 11 while the other side is in close proximity thereto. The effect is to force water up through the basket 15 as the floor 17 comes downwardly and to allow that water to flow back out as that same portion of the floor 17 is lifted, whereby water is carried in and out through the basket 15. The speed of this action is controlled by the speed of driving the shaft 25, and as heretofore indicated, this may be varied through any of the well known instrumentalities not forming a part of the present invention. When the washing operation is considered to be sufficient, the motor 33 is stopped, and the operating head 49 is turned to bring the basket 15 back up to the horizontal position, whereupon the basket cover 52 may be removed through the tub opening 13 and the washed material lifted from the basket. The packing nut 27 may carry suitable packing 59 compressibly around the shaft 25 so as to prevent any leakage of water around the shaft 25 from the tub 12. The tub 12 may be drained in any suitable manner, such as through a pet cock.

While I have herein shown and described my invention in the one particular form, it is obvious that structural variations may be employed without departing from the spirit of the invention, and I therefore do not desire to be limited to that precise form beyond the limitations as may be imposed by the following claims.

I claim:

1. In a washing machine having a tub and a perforate basket therein, means for wobbling the basket comprising a central basket support ball on which the basket may universally pivot; said basket having an annular member therearound; a member extending from said support slidingly engaging said annular member; gear means intermeshing between said tub and said basket restraining the basket against circumferential travel; and means for revolving said support to carry said engaging member therewith; said extending member and said annular member being disposed and interengaged to hold the axis of the basket at an angle to the axis of revolution of said ball to progressively tilt said basket in relation to said tub.

2. In a washing machine having a tub and a perforate basket therein, means for wobbling the basket comprising a central basket support ball on which the basket may universally pivot; said basket having an annular member therearound; a member extending from said support slidingly engaging said annular member; gear means intermeshing between said tub and said basket restraining the basket against circumferential travel; and means for revolving said support to carry said engaging member therewith; said extending member and said annular member being disposed and interengaged to hold the axis of the basket at an angle to the axis of revolution of said ball to progressively tilt said basket in relation to said tub; and means for shifting said engaging member in a vertical plane to shift said basket from horizontal to inclined positions.

3. In a washing machine having a tub and a perforate basket therein, means for wobbling the basket comprising a central basket support on which the basket may universally pivot; said basket having an annular member therearound; a member extending from said support slidingly engaging said annular member; means intermeshing between said tub and said basket restraining the basket against circumferential travel; and means for revolving said support

to carry said engaging member therewith; said extending member and said annular member being relatively disposed and interengaged to tilt the axis of said basket from the axis of revolution of said support to progressively tilt said basket in relation to said tub; said basket support consisting of a ball on which the basket is clamped against displacement; said ball having a longitudinally disposed slot therein; and said engaging member being shiftably mounted to be constrained by the slot walls to travel longitudinally of the axis of ball revolution.

4. In a washing machine having a tub and a perforate basket therein, means for wobbling the basket comprising a central basket support ball on which the basket may universally pivot; said basket having an annular member therearound; a member extending from said support slidingly engaging said annular member; gear means intermeshing between said tub and said basket restraining the basket against circumferential travel; and means for revolving said support to carry said engaging member therewith; said extending member and said annular member being disposed and interengaged to hold the axis of the basket at an angle to the axis of revolution of said ball to progressively tilt said basket in relation to said tub; and means for shifting said engaging member in a vertical plane to shift said basket from horizontal to inclined positions; said rocking means consisting of a shaft carried by said support; threaded means engaged by said shaft and also engaging said member which engages the annular member.

5. Means for wobbling a member in the absence of rotation thereof comprising a relatively fixed member under the wobble member; a ball rotatively supported by the fixed member; means for universally rockably retaining the wobble member on said ball; an annular member carried by said wobble member adjacent said ball; a member carried by said ball fixed against lateral travel relative to the ball and slidingly engaging said annular member; means for rotating the ball about an axis diametrically therethrough; said slidingly engaging member being inclined to said axis to effect the wobbling action.

6. Means for wobbling a member in the absence of rotation thereof comprising a relatively fixed member under the wobble member; a ball rotatively supported by the fixed member; means for universally rockably retaining the wobble member on said ball; an annular member carried by said wobble member adjacent said ball; a member carried by said ball fixed against lateral travel relative to the ball and slidingly engaging said annular member; means for rotating the ball about an axis diametrically therethrough; said slidingly engaging member being inclined to said axis to effect the wobbling action; and intermeshing means carried by said wobble and fixed members whereby teeth on one mesh with abutments on the other to hold the wobble member against circumferential travel.

7. In a washing machine, the combination with a tub and a separate basket therein, of a shaft vertically disposed centrally of the tub; a ball on the upper end of the shaft supporting said basket; means universally rockably retaining the basket on said ball; a member extending from the ball and tilted from the axis of rotation of said ball; annular means carried by said basket centered about said ball; and means rotating the ball about the axis of said shaft to revolve said extending member; said annular means comprising a track; and said extending member bearing on said track to tilt the basket to have its axis inclined from the axis of rotation of said ball.

8. In a washing machine, the combination with a tub and a separate basket therein, of a shaft vertically disposed centrally of the tub; a ball on the upper end of the shaft supporting said basket; means universally rockably retaining the basket on said ball; a member extending from the ball; annular means carried by said basket centered about said ball and slidingly receiving said ball extending member to fix the position of rocking of the basket over said ball; and means rotating the ball about the axis of said shaft to revolve said extending member; and means for placing said extending member at an angular position with said shaft axis to place said annular means in a plane non-perpendicular to said axis and progressively tilt said basket within said tub.

9. In a washing machine, the combination with a tub and a separate basket therein, of a shaft vertically disposed centrally of the tub; a ball on the upper end of the shaft supporting said basket; means universally rockably retaining the basket on said ball; a member extending from the ball; annular means carried by said basket centered about said ball and slidingly receiving said ball extending member to fix the position of rocking of the basket over said ball; and means rotating the ball about the axis of said shaft to revolve said extending member; and means for placing said extending member at an angular position with said shaft axis to place said annular means in a plane non-perpendicular to said axis and progressively tilt said basket within said tub; gear means carried by said basket and complementary gear means carried by said tub intermeshing one with the other in said basket tilted position, whereby the basket is held against bodily rotation.

10. In a washing machine, the combination with a tub and a separate basket therein, of a shaft vertically disposed centrally of the tub; a ball on the upper end of the shaft supporting said basket; means universally rockably retaining the basket on said ball; a member extending from the ball and tilted from the axis of rotation of said ball at a position longitudinally of the axis of said shaft to place said basket in a tilted position in respect to said axis; annular means carried by said basket centered about said ball and slidingly receiving said ball extending member to fix the position of rocking of the basket over said ball; and means rotating the ball about the axis of said shaft to revolve said extending member; said tub having a conical floor with said ball at the apex thereof, and said basket having a substantially planar floor.

11. In a washing machine the combination with a tub and a separate basket therein, of a shaft vertically disposed centrally of the tub; a ball on the upper end of the shaft supporting said basket; means universally rockably retaining the basket on said ball; a member extending from the ball and tilted from a horizontal plane through said ball; annular means carried by said basket centered about said ball and slidingly receiving said ball extending member to fix the position of rocking of the basket over said ball; and means rotating the ball about the axis of said shaft to revolve said extending member; said tub having a conical floor with said ball at the apex thereof, and said basket having a substantially

planar floor; and ribs around the side and floor of said tub arranged in positions and shapes to cooperate with the tilting of said basket to induce currents of the washing fluid toward the center of the tub floor.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,519,715	Altorfer	Dec. 16, 1924
2,056,088	Berry	Sept. 29, 1936
2,145,453	Miller	Jan. 31, 1939
2,206,871	Berry	July 9, 1940
2,265,516	Chayle	Dec. 9, 1941
2,294,281	Chadbourne	Aug. 25, 1942