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A. W. ALTORFER

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WASHING MACHINE

Filed June 4, 1925

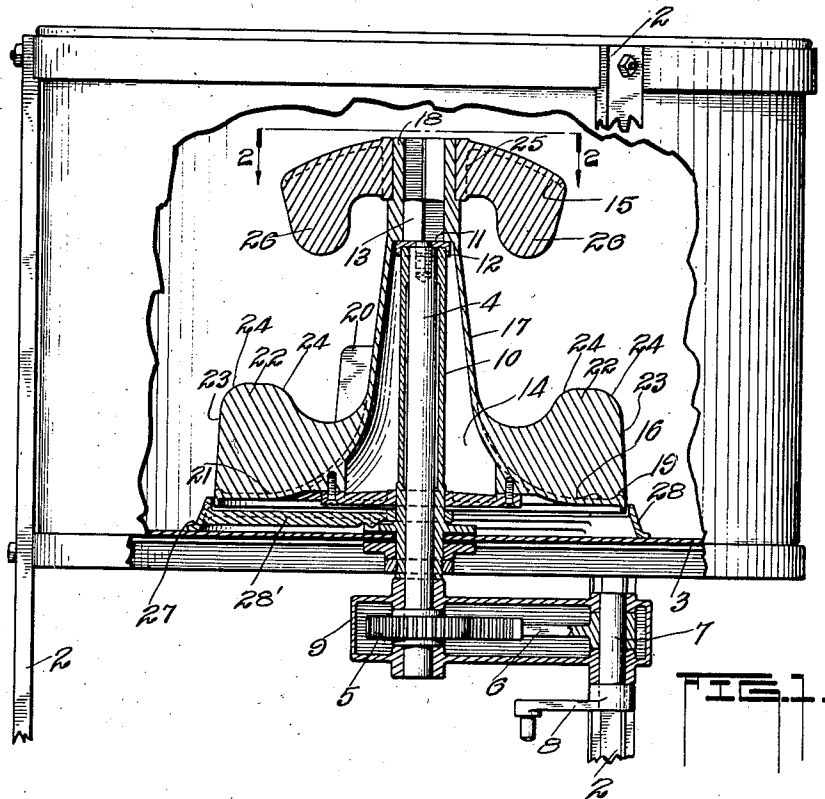


FIG. 1.

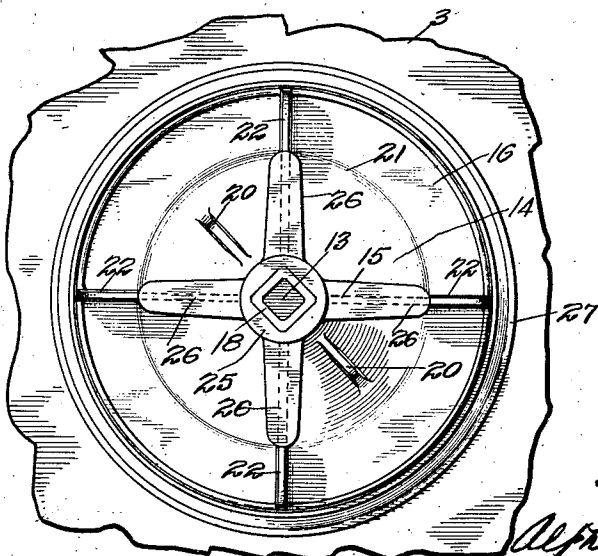


FIG. 2.

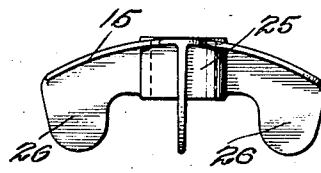


FIG. 3.

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WASHING MACHINE

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This invention has reference to washing machines, and it has for its principal object to improve the dolly or agitating means, whereby to produce a more effective and improved washing action on the articles deposited in the tub or container thereof.

The invention has for a further object to provide a dolly or agitator, including superimposed separable members one of which is in inverted position next adjacent the bottom of the tub and both said members operable from and by means of a shaft passing up through the bottom of the tub or container. Said members being further provided with fins or baffles extending in the direction of the other, and said inverted member having a surface formation and fins or baffles so constructed that the resultant action as the members are oscillated, alternately in opposite directions, is to cause the articles being washed to be moved toward the center of the dolly or agitating member and upwardly and thence outwardly and downwardly; the upper and normally positioned member of the dolly or agitator accentuates the washing action and thereby the articles are more effectively cleansed.

A further object of the invention is a shroud on the bottom wall of the tub or container to prevent the articles being washed from getting under the inverted member of the dolly or agitator as it is oscillated and thereby tear or otherwise damage such articles; the surface of said shroud being preferably inclined upwardly, corresponding somewhat to the surface formation of the inverted member to aid in directing the articles toward the center of said dolly or agitator. Such a construction of dolly or agitator and shroud makes it possible to provide a tub or container with a comparatively larger surface area than is ordinarily found in washing machines of this character.

A still further object of the invention resides in the mounting for the dolly or agitator, whereby the members constituting the dolly are separable from each other and attachable to and detachable from the operating shaft.

That the invention may be more fully un-

derstood, reference is had to the accompanying drawings forming a part of the present description, illustrating a preferred embodiment of the invention, in which:—

Figure 1 is a partial elevation, in section, showing a washing machine embodying my invention;

Figure 2 is a plan view of the dolly or agitator structure and shroud as the same would appear on the line 2—2 Figure 1, and

Figure 3 is a side elevation of the normally positioned, or superimposed member of the dolly or agitator.

Like characters of reference denote corresponding parts throughout the figures.

The tub or container 1 is preferably cylindrical in shape, not unlike those in general use in machines of like character, except that it is made possible, with the use of a washing element, such as I show and describe, to provide a tub or container with a comparatively larger surface area than is ordinarily found in machines of this class. Said tub or container is supported by standards or legs 2, only one of which is indicated, and the bottom wall 3, of the tub or container may be substantially flat, as shown.

Extending upwardly through the bottom wall 3 is an operating shaft 4, and said shaft on its lower end has a gear wheel 5 engaged by a rack or segment gear 6 connected to and adapted to be oscillated back and forth by a shaft 7. Connected to said shaft 7 is a crank 8 arranged to be operated by suitable means, not shown, from any suitable source of power. The gear wheel 5 and the rack or segment gear 6 may be encased in any suitable housing 9.

The shaft 4 extends up through and has bearing in a stem or casing 10, open at its upper end and to the upper end of said shaft 4 is connected a coupling member 11 having a depending flange 12 encircling the upper end of the stem or casing 10 and the extended axial portion of said member 11 is preferably square, as at 13, to provide a convenient mode of attaching the dolly or agitator, to be described, thereto, and to detach the same therefrom. The lower end of said stem or casing 10 passes through the bottom wall 3 of the

tub or container, and any suitable means is employed to seal the connection between said stem or casing and said bottom wall to prevent leakage around said stem or casing.

5 The dolly or agitator includes preferably, two separable members 14 and 15 in superimposed relation; the former assuming an inverted position next adjacent the bottom wall 3 of the tub or container and the latter assuming a normal position spaced above the member 14. The member 14 comprises a preferably annular base portion 16 and an upstanding preferably tapered tubular sleeve-like portion 17 with an elongated shouldered throat 18 square in cross-section and having a square opening arranged axially therein to fit over the squared extension of the coupling member 11 connected to the shaft 4. Such a construction provides a simple means by which the dolly or agitator may be attached to and detached from the shaft 4 and also provides a simple and convenient means for separably connecting the members 14 and 15 constituting said dolly or agitator. The peripheral edge of the base portion 16 of the member 14 is formed or provided, preferably with a bead 19 and from such peripheral edge the surface of the member slopes inwardly and upwardly, as at 21, merging into the sleeve-like portion 17, forming in effect a central cone-like structure. Also formed or provided on the base 16 of said member 14 are a plurality of radially arranged, upstanding major fins or baffles 22, which, as shown, extend inwardly from the peripheral edge of said member and merge or fade into the sleeve-like portion 17. These major fins or baffles, have their outer edges 23 preferably inclined slightly upwardly and inwardly and are formed with upper curved or arcuate ends 24 and then downwardly and inwardly toward the center of the member and then merge or fade into the sleeve-like portion 17. Preferably arranged immediately certain of said major fins or baffles and disposed radially diametrically of each other, are a pair of supplemental fins or baffles 20 having their upper ends preferably in a horizontal plane above the highest points of said fins or baffles 22 and their lower portions merging or fading into the curved surface of the base portion. Such supplemental fins or baffles extend longitudinally of the sleeve-like portion 17 and project a short distance therefrom and in operation tend to force the articles, being washed, outwardly, whereas, the combined action of the curved surface of the member 14 and fins or baffles 22 is to draw the articles inwardly and upwardly of said dolly or agitator.

Coacting with the agitating member 14 is the member 15 which has a central hub 25 formed with a squared axial opening there-through arranged for a slip-over connection with the throated end of the sleeve of said

member 14, whereby they may be separated one from the other, or the two members 14 and 15 simultaneously attached to and detached from the shaft 4. I have stated that the member 14 assumes an inverted position, but the member 15 assumes a normal superimposed position above the member. Said member 15 is provided with a plurality of radially arranged depending fins or baffles 26 corresponding in position and arrangement to the fins or baffles 22 of the member 14 of said dolly or agitator, extending inwardly from the peripheral edge of said member and merge or fade into the hub 25 thereof.

As will be seen, the height to which the shaft 4 extends up into the tub or container 1 and the length or height of the dolly or agitator which is carried thereby, inasmuch as it is supported from the upper end of said shaft, will determine the position of the fins or baffles 22 in the water in the tub or container and the relative positions of the fins or baffles 22 and 26 to the normal water line; also the position of the base of the member 14 to the bottom wall of the tub. The connection between the dolly or agitator at the upper end of the shaft and the location of the top surface of the hub portion of the member 15 is such that leakage around the upper end of the shaft, when the dolly or agitator is agitated, is a remote possibility. The action of the fins or baffles 26 is to accentuate the action of the fins or baffles 22 as the articles rise to or near the surface of the water and in this way more effectively cleanse the articles.

Surrounding the lower base portion of the member 14 is a shroud 27, of preferably cast aluminum or the like. Said shroud preferably rests on the bottom wall of the tub or container and is also preferably held in fixed position by webs 28' having a central hub slipped down over the stem or casing 10 with a snug fit thereon, or brazed or soldered thereto, or otherwise suitably and conveniently held. This shroud has the form of an annular ring, as shown, with an inwardly and upwardly inclined surface wall 28. When the shroud and dolly or agitator are assembled, the upper edge of the shroud lies preferably above the lowermost base line of the dolly or agitator and preferably at or below the horizontal plane of the lowermost upper surface of the base of the member 14. The relation these parts bear to each other is best seen in Figure 1 and illustrates the practical impossibility of articles, being washed, getting under the edge of the dolly or agitator and being damaged.

What I claim is:—

1. In a washing machine, an agitator including separable members, one being inverted in its relation to the top of the tub and both said members being provided with

baffles extending toward the other operated by the same means.

2. In a washing machine, an agitator including separable members, one being inverted in its relation to the top of the tub and both said members being provided with baffles extending toward the other and operated by the same means and a shroud for the inverted member.

3. In a washing machine, an agitator including separable members in superimposed relation and provided with radially arranged baffles extending toward each other, said members being operated by the same means.

4. In a washing machine, an agitator including separable members in superimposed relation and provided with radially arranged baffles extending toward each other said members being operated by the same means and a shroud for the lowermost member.

5. In a washing machine, in combination, a tub, an operating shaft passing up through the tub bottom, a dolly including separable agitator members in superimposed relation and provided with radially arranged baffles extending toward each other, and means for detachably connecting said dolly with said shaft.

6. In a washing machine, in combination, a tub, an operating shaft passing up through the tub bottom, a dolly including separable agitator members in superimposed relation and provided with radially arranged baffles extending toward each other, a shroud for the lowermost member, and means for detachably connecting said dolly with said shaft.

7. In a washing machine, in combination, a tub, an operating shaft passing up through the tub bottom, means to oscillate said shaft, an agitator including separable members in superimposed relation and provided with radially arranged baffles extending in the direction of each other, and a coupling member for detachably connecting said agitator with the upper end of said shaft.

8. In a washing machine, in combination, a tub, an operating shaft passing up through the tub bottom, means to oscillate said shaft, an agitator including separable members in superimposed relation and provided with radially arranged baffles extending in the direction of each other, a coupling member for detachably connecting said agitator with the upper end of said shaft, and a shroud for the lowermost member, resting on the tub bottom.

9. An agitator for a washing machine including separable members, one of said members comprising a base having a plurality of upstanding radially arranged baffles and an upstanding tapered sleeve connecting said base with a concave sloping surface, the other

of said members detachably connected with the upper end of said sleeve and provided with a plurality of depending radially arranged baffles.

10. In a washing machine, in combination, a tub having a substantially flat bottom, an operating shaft passing up through said bottom, an annular shroud resting on said bottom and having a sloping outer surface, an agitator including separable members, the lower of which is arranged for detachable connection with the upper end of said shaft and having its base operative within said shroud, means to detachably attach the upper member to the lower member, and both said members provided with radially arranged baffles extending in the direction of the other.

11. A washing machine comprising a container, an agitator supported therein, said agitator having two independent sets of ribs spaced vertically from each other and having respectively enlarged outer ends whereby the articles in the container are maintained in free circulation and means for imparting a limited oscillatory movement to said agitator.

12. In a washing machine, the combination with a tub and an oscillatable shaft mounted therein, of an agitator mounted on said shaft and comprising a side wall, a bottom portion, ribs extending radially along said bottom portion and ribs extending vertically along said side wall in vertical alignment with and independent of said radial ribs.

13. In a washing machine, the combination with a container of an agitator supported immediately above the bottom thereof and having a vertical wall, a bottom portion, ribs extending radially along said bottom, the outer ends thereof being of larger area than the immediately adjacent portion thereof, ribs extending vertically along said wall and spaced vertically from said radial ribs, the outer ends of said vertical ribs being of larger area than the immediately adjacent portion thereof.

In witness whereof, I have hereunto affixed my hand this 2nd day of June, 1925.

ALPHEUS W. ALTORFER.