

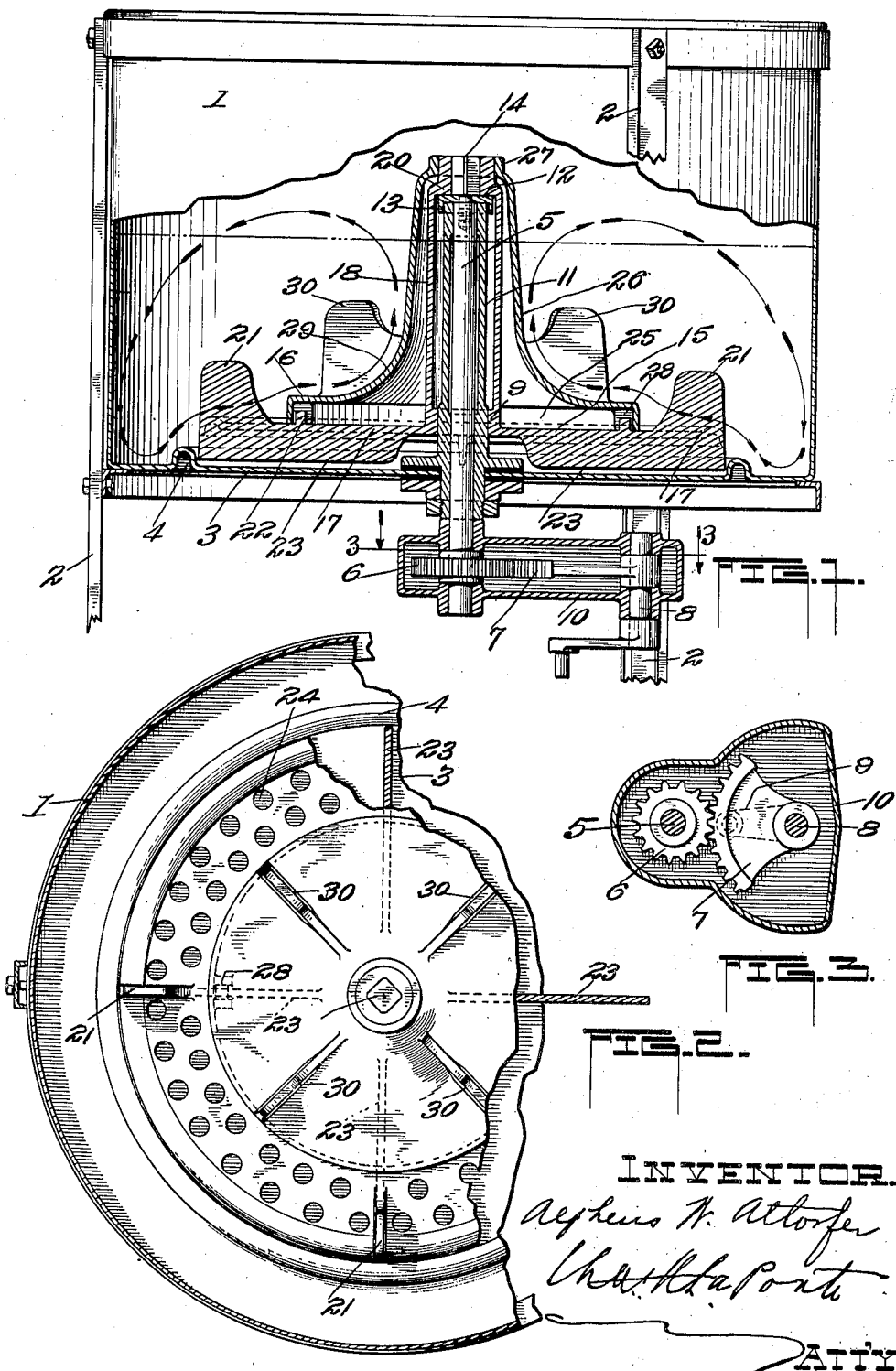
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WASHING MACHINE

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UNITED STATES PATENT OFFICE.

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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 agitating member operative from and by means of a shaft passing up through the bottom of the tub or container, and so constructed with radially arranged fins or baffle members and an intermediate surface inclined or curved upwardly from its peripheral edge, that the resultant action of the dolly or agitator, as it is alternately oscillated 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; or in other words impart to such articles a slow whirl like motion radially of the dolly or agitator and thereby more effectively cleanse the articles, by constant agitation and the forcing of air and water through the articles.

A further object of the invention is to provide in a washing machine, an oscillatory dolly or agitator so constructed, that it will act upon the articles being washed in a way as to cause said articles to circulate or whirl slowly in a direction radially of the tub and from and toward the center of the tub with a limited circular movement circumferentially of the tub; the centrifugal action set up by the oscillation of the dolly or agitator tends, or causes the articles as they rise to or above the water line, to recede from the center of the tub, thereby aiding in the radial circulation of such articles.

The invention has for a further object a dolly including separable sections arranged for detachable connection with each other and with operative means, and including a plurality of upstanding radially arranged baffle members adapted to act on the articles to be washed in a manner as will produce a more efficient washing action than heretofore obtained.

A further object of the invention is to provide a dolly of the character herein referred to with both upstanding and depending radially arranged baffle members; the former adapted to act directly on the articles being washed and the latter adapted to increase the agitation and circulation of the

water, resulting in a more efficient washing action. A still further object of the invention is in the provision of a substantially flat tub bottom, next adjacent to which and above the dolly is supported in operative position, said bottom being formed or provided with an upwardly pressed or annularly formed ring adapted to encircle the base of the dolly, when in operative position, and serves as a shroud to prevent the articles being washed getting under the edge of the dolly and thereby becoming torn or otherwise damaged. 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, and making it further possible to locate the dolly or agitator with its fins or baffles above the bottom wall of the tub and closer to the normal water line in which the articles are suspended, and thereby apply a more constant action of the dolly or agitator on the articles.

That the invention may be more fully understood, 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 an elevation, in section, showing a washing machine embodying my invention;

Figure 2 is a top plan view partly broken away and in section, and

Figure 3 is a detail plan, in section, as the same would appear on the line 3—3, Figure 1.

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 and its bottom wall 3, may be substantially flat, except for the upstanding annular ring 4 which may be pressed or formed in, or otherwise provided in or on said bottom wall to provide, what will be designated a shroud to surround the base of the dolly, to be described, to prevent ar-

ticles from getting under the edge of the dolly and becoming torn or otherwise damaged.

Extending upwardly through the bottom wall 3 of the tub is an operating shaft 5, and said shaft on its lower end has a gear wheel 6 engaged by a rack or segment gear 7 connected to and adapted to be oscillated back and forth by a shaft 8. Connected to said shaft 8 is a crank 9 arranged to be operated by suitable means, not shown, from any suitable source of power. The gear wheel 6 and the rack or segment gear 7 may be encased in any suitable housing 10.

The shaft 5 extends up through and has bearing in a stem or casing 11, open at its upper end and to the upper end of said shaft 5 is connected a coupling member 12 having a depending flange 13 encircling the upper end of the stem or casing 11 and the extended axial portion of said member 12 is preferably square, as at 14, 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 11 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.

The dolly or agitator comprises the separable sections 15 and 16. The former includes preferably a comparatively large annular base member 17 adapted to cover two thirds or more, as may be desired, of the bottom 3 of the tub and when in operative position is seated in the depression formed by the shroud 4 on the tub bottom, as shown. Extending upwardly and axially from said base member 17 is a tubular sleeve or stem 18 having a bearing position 19, at or near its lower end, to have a journal bearing on the stem 11, and the upper end of said sleeve or stem is formed or provided with a shouldered throat 20 having a square opening arranged axially therein to fit over the squared extension of the coupling member 12 connected to the shaft 5. Such a construction provides a simple means by which the dolly or agitator may be attached to or detached from the shaft 5. Extending upwardly from said base member 17, for a suitable distance and extending radially inwardly of the said section 15 to a suitable distance are a plurality of radially arranged fins or baffle members 21 and preferably spaced inwardly from said baffles or fins and upstanding from said base member 17 are lugs 22. And, depending from said base member 17 and in the same vertical plane with the fins or baffles 21 are arranged fins or baffles 23 which extend radially of the dolly and from the peripheral edge of the base member 17 to a point short of the axis thereof. These

last mentioned fins or baffles, when the dolly is in operative position, depend into and oscillate within the seat formed by the shroud 4 and agitate and keep in constant circulation the water within the tub. I prefer also to perforate the base member 17, as at 24 between the respective fins or baffle members 21 and 23, as shown.

The section 16 of the dolly comprises a preferably annular base 25 and an upstanding preferably tapered tubular sleeve-like portion 26 with a contracted neck 27 adapted to fit down over the shouldered throat 20 of the sleeve or stem 18. In operative position, the section 16 overlies or is superimposed in position on the section 15, with its base 25 resting on the base member 17 of the section 15, as shown. The base 25 of the section 16 is of a diameter to lie within the fins or baffles 21 on the section 15 and it is provided with depending sockets or seats 28 into which are inserted the lugs 22 on the section 15. Such construction provides a connection between the base portions of the two sections 15 and 16, whereby they may oscillate in unison, while at the same time the said sections may be removably attached to each other and connected to and disconnected from the shaft 5, the surface of the section 16 preferably slopes inwardly and upwardly, as at 29 merging into the sleeve-like portion 26, forming in effect a central cone-like structure. Also formed or provided on the base of the section 16 are a plurality of radially arranged, upstanding fins or baffles 30 which, as shown in Figure 2, extend inwardly from the peripheral edge of said section 16 and merge or fade into the sleeve-like portion 26. The upper ends of said fins or baffles 30 are preferably curved downwardly and upwardly toward the center of the dolly section 16 and then merge or fade into the sleeve-like portion 26. It is to be observed that the fins or baffles 30 are preferably positioned alternately to the fins or baffles 21 and that their upper ends are preferably in a horizontal plane above the highest points of the fins or baffles 21. The fins or baffles 30 extend longitudinally of the sleeve-like portion 26 and project a short distance outwardly therefrom and in operation tend to force the articles being washed outwardly, whereas the combined action of the curved surface of the section 16 and the fins or baffles 21 on the section 15 is to draw the articles inwardly and upwardly of the dolly or agitator. Combined with these actions is the centrifugal force set up by the oscillation of the dolly or agitator, which tends or causes the articles as they rise to or above the water line, to recede from the center of the tub, thereby aiding in the radial circulation of such articles. Furthermore, it is to be understood that with this slow whirling or radial circulation of the

articles, there is less chance of the articles becoming entangled and there is only a limited circular movement of the articles circumferentially of the tub and the articles thereby kept from being wound around the center stem or post of said dolly or agitator as will be found in many of the different machines of this class.

As will be seen, the height to which the shaft 5 extends up into the tub or container 1 and the length or height of the dolly or agitator 16 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 in the water in the tub, or container, and the relative positions of such fins or baffles to the normal water line in the tub; also the position of the base of the dolly or agitator to the bottom wall of the tub. The post or stem connection formed between the shaft 5 and the dolly or agitator is such, that the upper end thereof is sufficiently far above the water, when agitated, to prevent leakage through the top of said stem.

As the dolly or agitator is oscillated, the articles are moved upwardly and inwardly and outwardly and downwardly, being given a slow whirl like action in a direction radially of the tub from and toward the center of said tub, with a limited circular movement circumferentially of the tub, tumbling the articles over each other, changing their positions and effectively forcing air and water therethrough. It is well understood that the rubbing together of the articles intensifies the cleansing, and this is accentuated by those parts of the articles coming together at or above the waterline. By my improved washing action, produced by the peculiar arrangement and construction of the dolly or agitator, the articles are constantly being projected to or above the water line and caused to tumble and rub against each other and thereby the cleansing made more effective.

In Figure 1, I have illustrated the normal water line and the relation of the baffles of the dolly or agitator thereto and I have also shown by arrows the approximate movement of the articles in a radial direction toward and from the axis of the tub.

What I claim is:—

1. In a washing machine, a tub, a dolly comprising separable sections supported above the bottom wall of the tub, means to clutch the sections together when in operative positions, means to oscillate said dolly alternately in opposite directions about a substantially central point, and co-operating

means on each of the said sections arranged to impart to articles in said tub a whirl-like motion in a radial direction from and toward the axis of said dolly.

2. In a washing machine, a tub, a dolly comprising separable sections supported above the bottom wall of the tub, means to clutch the sections together when in operative positions, means to oscillate said dolly alternately in opposite directions about a substantially central point, and co-operating means on each of the said sections arranged to impart to articles in said tub a whirl-like motion in a radial direction from and toward the axis of said dolly and a limited circular movement in opposite directions circumferentially of the tub.

3. In a washing machine, a dolly composed of separable sections arranged in superimposed relation, the lower section being of larger diameter than the upper section and the surface of the upper section sloping inwardly and upwardly, and both said sections provided with radially arranged upstanding baffle members, and means to clutch the sections together when in operative positions.

4. In a washing machine, a dolly composed of separable sections arranged for connection in superimposed relation, the surface of the upper section sloping inwardly and upwardly and having radially arranged upstanding baffle members thereon, and the base of the lower section provided with both upstanding and depending radially arranged baffle members.

5. In a washing machine, in combination, a tub having a bottom wall provided with an upstanding annular portion formed therein constituting a shroud, a drive shaft extending through said bottom wall, means for oscillating said shaft, a dolly operatively connected with said shaft and adapted to oscillate within said shroud, baffle members extending upwardly from the upper surface of said dolly and additional baffle members extending downwardly from the lower surface of said dolly and operating within said shroud.

6. In a washing machine, in combination, a tub, an annular member thereon constituting a shroud, and a dolly adapted to be mounted within the tub and oscillated within the shroud, said dolly having baffle members depending therefrom and extending within the area encompassed by said shroud.

In witness whereof, I have hereunto affixed my hand this 20th day of June, 1925.

ALPHEUS W. ALTORFER.