Aug. 21, 1928. 1,681,464

L. CAMETO

CLOTHES WASHING MACHINE AGITATOR

Filed Oct. 6, 1926

Fig. 1.

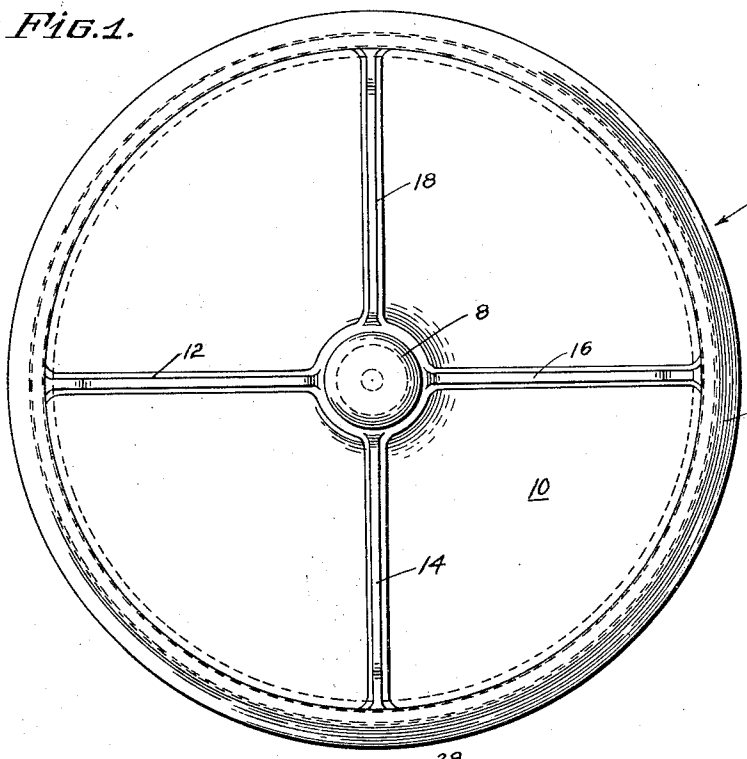


Fig. 2.

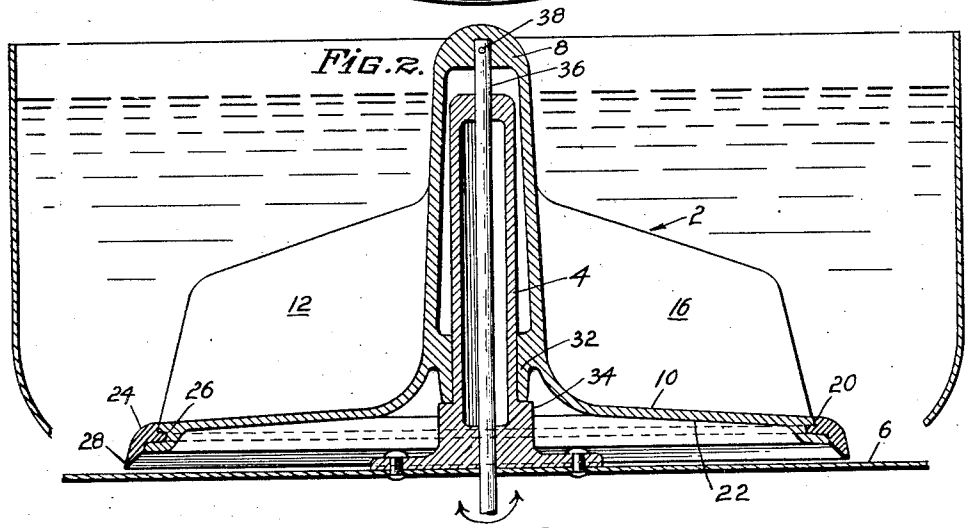
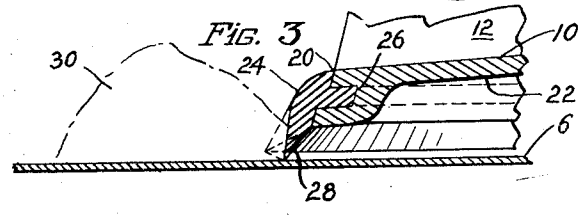


Fig. 3



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UNITED STATES PATENT OFFICE.

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CLOTHES-WASHING-MACHINE AGITATOR.

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My invention relates broadly to washing machines and is directed particularly to an improved rotary-oscillatory agitator for clothes washing machines.

It is an object of my invention to improve the efficiency and efficacy of washing machines by teaching a generally improved form and placement of agitators therefor.

It is an object of my invention to reduce the wearing and tearing action of washing machines on clothes.

It is an object of my invention to increase the efficiency and efficacy of washing machines by providing an agitator which is designed to prevent clothes or parts of clothes from catching on, in, under, or about the agitator. The device of my invention is designed to prevent clothes from lodging in a position relative to the agitator which decreases the action of the agitator upon them or which decreases the effectiveness of, or load upon, the agitator.

It is further an object of my invention to secure the above described results without sacrificing any of the recognized superiorities of certain past designs of agitator. It is furthermore an object of my invention to produce an improved agitator which is simple, reliable, and easy to manufacture, and which is inexpensive.

Other and ancillary objects of my invention will become apparent as the description proceeds, or will be suggested by use of my improved device. Certain of its advantages can be realized by modifications within the purview of my invention and with the use of less than all its improved features. I desire not to be circumscribed other than by the limits set up by the claims finally determining my invention.

Referring to the drawings:

Figure 1 is a plan of my improved agitator. Fig. 2 is a central vertical section of the agitator in operative position in a tub. Fig. 3 is an enlarged detail of a peripheral portion of Fig. 2 showing the action of the bottom periphery of the agitator on a piece of fabric in lodgement thereagainst.

It has become common practice in clothes washing machines to provide rotary agitators within a tub containing soapy water and the clothes to be washed. The agitator is rotated alternately in opposite directions to stir up eddy currents in the water, causing it to pass through the fabric of every portion of the clothes. In the drawings, the numeral 2 indicates such an agitator, journaled for rotation on the hub 4 projecting from the fixed horizontal surface 6 of the bottom of the tub, tank or the like, with which my agitator may be used.

The agitator of my invention is a circular rotor having a high nipple-shaped central core 8 rising from a flat breast-shaped base 10. Four agitating vanes 12, 14, 16 and 18 radiate from the core 8, and slope continually downward and outward therefrom to the peripheral edge 20 of the base 10. The top edge of each vane slopes downward at an angle of approximately fifteen degrees from horizontal to a point near the outer limit of the agitator and at which point it drops to the said peripheral edge 20 along an angle of approximately fifteen degrees to the vertical. The corners are all well-rounded. Since the outer edges of these vanes are made up of both curved and straight lines it is necessary to define their geometric shape as a curve; it being understood that certain portions of the curve will have an infinite radius of curvature. The term "curve" as used in the specification and claims is used in its geometrical sense to not exclude straight lines. There are no protuberances or projections on these vanes that can catch and hold apron strings and the like in any manner and cause tearing and general damage to the clothes. The corners are obtuse-angled, and therefore no cloth can wind around them but will simply slide off. There are no projections on the agitator which form centrifugal obstructions. Clothes do not bunch upon and clog the agitator.

It is relatively easy to set the surface water in a tank in motion while leaving the bottom water substantially undisturbed. The water at the bottom of the tub or tank is most effective in washing if agitated, or in enshrouding the clothes and preventing cleansing action if dead. It is therefore important that the vanes 12 to 18 have their broadest portion nearest the bottom of the tank, and as shown in Fig. 2, the agitator is journaled closely adjacent to the fixed surface 6 at the bottom of the tank.

While the agitator may be operated in inverted position in any tub, it will be ap-

preciated from the foregoing explanation, that decidedly superior results are attained by using it right-side-up in the bottom of a tank as shown in the drawings.

Means are provided for preventing entrance of clothes into the dead space between the fixed surface 6 and the back radial face 22 at the bottom of the agitator. It was found that the unyielding edge 20 of the bare agitator tended to cut into clothes, and that a rubber band applied to the peripheral edge, preferably with a portion depending flexibly toward the fixed surface 6, allowed the clothes to rub against or roll under the agitator without harm. It was desired to prevent clothes from rolling under the agitator however, so the improved rubber band 24 was evolved. This band may be molded rubber to fit a groove 26 in the agitator, or may be of unmolded rubber and stretched or otherwise applied to the agitator. A lip 28 depends from the body portion of the band almost into contact with the fixed surface 6, and extends outward of the peripheral edge 20 so that clothes normally tend to ride upon the lip rather than underneath it. As indicated in Fig. 3, the band 24 is spaced so close to the fixed surface 6 that centripetal pressure of a piece of cloth 30 suffices to press the band inward thereat and seals it against this surface. This band, by preventing entrance of clothes under the agitator, makes it unnecessary to provide means for preventing clothes from wrapping themselves around the base of the hub 4, or diametrically around the agitator. Although flexible materials other than of rubber can be used for the band 24, rubber has especial merit because it is at once resilient, flexible, and extremely frictionless when wetted with soapy water. It is moreover cheap and durable, easily procurable and easy to apply. It is not without the purview of my invention to provide rubber bands as attachments applicable to existing washing machine agitators.

Enclosed means are provided for transmitting rotation to the agitator. The core 8 is hollow and surrounds the hub 4 upon which it is journaled; and inward flange 32 of the core, serving as both the rotational and thrust bearing by reason of an enlargement 34 at the base of the hub. The agitator is supported near its bottom. A drive-shaft 36 is journaled within the hub and is keyed into a socket at the top of the core 8, by a driving pin 38.

I claim:

1. In a clothes washing machine, a fixed surface, a rotary agitator journaled adjacent to said surface, and a circumferential band on said agitator having a yieldable edge depending close enough to said surface to prevent entrance of clothes.

2. In a clothes washing machine, a fixed surface, a rotary agitator journaled adjacent to said surface, and a circumferential band on said agitator having a depending yieldable edge extending outward from the periphery and close to said surface whereby centripetal pressure of clothes upon said edge causes it to contact said surface and prevent entrance of clothes between the rotor and said surface.

3. In a clothes washing machine, a fixed surface, a rotary agitator journaled adjacent to said surface, and a peripheral band on said agitator having a yieldable portion depending toward said surface, to prevent cutting of the clothes between the unyielding agitator edge and said fixed surface.

4. In a clothes washing machine, a fixed surface, a rotary agitator journaled adjacent to said surface, and a band of yieldable material on the peripheral portion of the rotor nearest said surface.

5. In a clothes washing machine, a fixed surface, a rotary agitator journaled adjacent to said surface, and a band of resilient material on the peripheral portion of the rotor nearest said surface.

6. A rotary agitator for clothes washing machines having a peripheral band of yieldable material.

7. A rotary agitator for clothes washing machines having a peripheral band of resilient material.

8. A rotary agitator for clothes washing machines having a peripheral band of rubber.

9. In a clothes washing machine, a tub and a rotary agitator journaled with its bottom radial face close to the bottom of said tub and having agitating vanes projecting from the top face of the agitator with their broadest part nearest the tub and yieldable means depending from the circumferential edge of the agitator to prevent tearing the clothes.

In testimony whereof, I affix my signature.

LEON CAMETO.