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J. A. CASTRICONE
CLOTHES WASHING MACHINE

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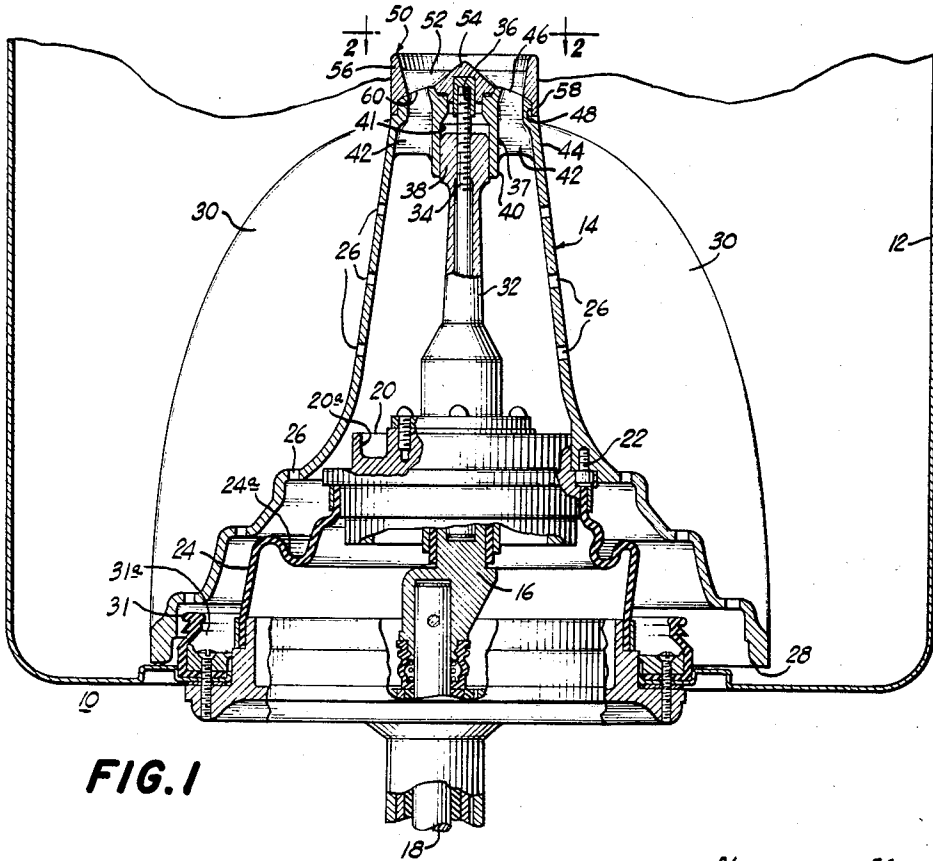


FIG. 1

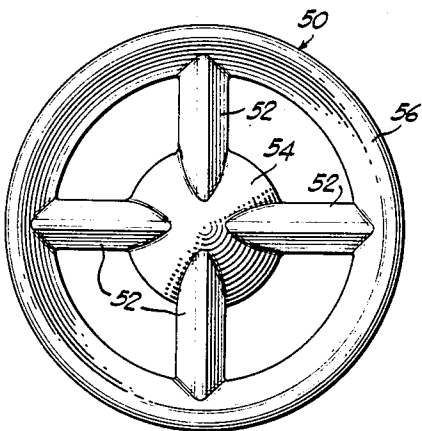


FIG. 2

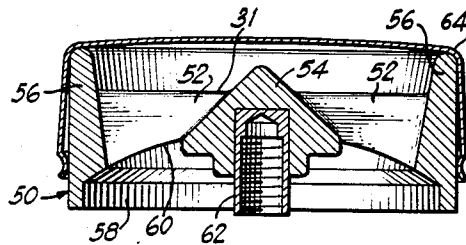


FIG. 3

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CLOTHES WASHING MACHINE

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5 Claims. (Cl. 68—17)

The present invention relates to improvements in clothes washing machines and more particularly to the provision of a new and improved device to facilitate the introduction of a detergent or other ingredient into the machine for transmission to the washing liquid during operation of the machine and for attaching the clothes agitating means, such as a dasher, to its supporting and driving means.

In many cases it is desirable to introduce a detergent, soap, water-softener, bleach, or the like, and hereinafter referred to as detergents, into a washing liquid by adding the detergent to the liquid before the clothes are put into the liquid or in the case of automatic type washers it is desirable to provide means for gradually introducing the detergent into the liquid as it is introduced into the wash tub in which the clothes have previously been placed and in such manner that the detergent will not come into contact with the clothes before it is dissolved and diluted by the liquid. Consequently, various feeding devices have been designed for gradually feeding the detergent into the wash water as it is introduced into the tub. In some of these prior art devices the feeding means are mounted within washing means, such as the agitator or dasher, but these devices are relatively complex and expensive to manufacture and thus increase the cost of the machine by an appreciable amount.

Therefore, a principal object of the present invention is to provide a new and improved arrangement for the feeding of detergents into a wash tub of a washing machine and particularly an arrangement which will insure dilution of the detergent before it comes into contact with the clothes, thereby to prevent damage to the clothes.

Another object of the present invention is to provide a new and improved feed and washing means securing means which is simple in construction and inexpensive to manufacture so as not appreciably to increase the cost of the machine, and which cannot become clogged or otherwise rendered inoperative during the life of the machine.

Briefly, the above and further objects are realized in accordance with the present invention by providing a washing means, such as a perforated dasher, with a substantially open ended tubular upper portion, a vertical drive spindle positioned within the tubular upper portion of the dasher and spatially arranged with respect thereto, and a dasher holder or cap through which detergent may be introduced into the dasher which is so constructed that the detergent will remain in it and not contact the clothes. As a result, when the tub is being initially filled with the wash water, the water enters the dasher through the perforations therein and dissolves and dilutes the detergent. Accordingly, it is not possible to place a strong or concentrated material into direct contact with the clothes, thus avoiding undesired damage to the clothes. The cap may be provided with a cover which can be used as a measuring cup.

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Further objects and advantages of the invention will best be understood by reference to the following detailed description taken in connection with the accompanying drawing in which:

5 Fig. 1 is a partial sectional view of a washing machine embodying the present invention;

Fig. 2 is a plan view of the combination detergent injector and dasher securing cap used in the machine of Fig. 1; and

10 Fig. 3 is an enlarged sectional view of the connector of Fig. 2 with a measuring cap attached thereto.

Referring now to the drawing and first to Fig. 1, there is illustrated a portion of a washing machine indicated as a whole by reference character 10. The illustrated portion of the machine includes a tub 12 within which is mounted clothes agitating means illustrated as a dasher 14. During washing, the tub is held stationary and the dasher is moved in an orbital path within the tub without rotation. For centrifugal drying the tub and dasher are rotated at high speed while the dasher driving means is rotated at a different speed. For further details of the operation, reference may be had to Patents Nos. 2,709,908—Altorfer, Jr., et al. and 2,715,330—Altorfer, Jr. The latter patent also illustrates details of the dasher construction drive not necessary for an understanding of the present invention. Briefly, the dasher is driven orbitally through a crank arm structure 16 rotated around the axis of a drive shaft 18.

The dasher 14 is mounted upon dasher supporting head or assembly 20 and relative to which it is located by positioning and driving pins 22. The dasher and supporting assembly are prevented from rotating relative to the tub by a flexible boot 24 secured to the assembly and the tub structure. The upper portion of the head is provided with an annular hollow, as indicated by the reference character 20a, and the boot is convoluted to have an annular hollow 24a. These hollows receive the detergent placed into the dasher, as will be described in greater detail hereinafter.

The dasher is of tubular, generally truncated conical shape and provided with perforations 26 therein so water can flow within the dasher when the tub is supplied with water for washing clothes. Its bottom 28 is located a short distance above the bottom of the tub and it is also provided with several generally radial fins 30. Interiorly of the bottom 28 of the dasher is an upstanding ring 31, inside of which is a space 31a also adapted to receive detergent so that it will not flow out and contact clothes.

The dasher is additionally supported and driven through a connecting rod 32 extending upwardly from the assembly 20, to which it is secured in alignment with the crank 16. Within the rod is a tie rod 34 having an upper threaded end 36 secured to the upper generally cylindrical and enlarged end 38 of the tie rod and projecting some distance above the latter. The cylindrical end 38 of the tie rod is closely but detachably received in the hub-like top portion 40 of the dasher which is centrally apertured as indicated by reference character 41 for passage of the upper end of the tie rod.

In accordance with the present invention, the upper end of dasher 14 is apertured to permit introduction of detergent inside of the dasher. Furthermore, the dasher is held in place by an apertured cap through which the detergent can be introduced into the dasher. The construction of the upper end of the dasher is best illustrated in Fig. 1. As there illustrated, it includes the hub-like portion 40 from which emanate a plurality, such as four, of radial supports or spokes 42 (only two of which are shown) extending to and blending with the generally tubular upper end 44 of the dasher. This upper end is

generally rounded, as indicated by reference character 46 and it is provided with a peripheral shoulder 48 providing a seat for the cap 50.

The cap 50 of the present invention is also apertured, the apertures being defined by spaces between the radial support arms or spokes 52 emanating from a generally conical hub portion 54 and terminating in an annular rim 56, having a dependent lower portion 58 received on the shoulder 48 on the dasher. The cap is also provided with a rounded undersurface 60 seating closely on the rounded upper surface 46 of the dasher.

The cap detachably secures the dasher on its supporting and driving structure. This is accomplished by providing the conical central portion 54 of the cap with an internally threaded insert 62 adapted to be threaded onto the upper end 36 of the tie rod 34 which projects into the aperture 41 of the dasher. The dasher and cap may be made of suitable material. Plastic may be used, and if used, the insert 62 may be of metal and molded into the cap.

The cap is provided with a detachable cover 64 adapted frictionally to be held on the rim 56 of the cap.

From the foregoing detailed description of the present invention, it may be noted that it provides a simple and economical arrangement enabling detergent to be inserted into a washing machine and, at the same time, provides means for securing the dasher in place. Once assembled, detergent can be inserted inside the dasher through the apertures in the cap and dasher, the detergent being prevented from contacting the clothes by being held in the hollows 20a, 24a and 31a. When water is added the detergent will gradually be dissolved in and diluted by the wash water so that should some strong detergent (or bleach) be accidentally placed in the washing machine, it will not contact the clothes until diluted. Accordingly, there is little likelihood of the clothes being damaged.

While the invention has been described by particular embodiments thereof, it will be understood by those skilled in the art that many changes and modifications may be made without departing from the invention. Therefore, in the appended claims, it is intended to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed as new and is desired to be secured by Letters Patent of the United States is:

1. In a washing machine, a tub, dasher mounting means comprising movable structure located within the tub and having an upper portion provided with securing means, a hollow dasher mounted on said mounting means and including a central hub portion apertured for the passage of the upper portion of said securing means and a series of spaced apart radial supports extending from the hub to the upper end of the dasher, the spaces between said supports providing passageways into the dasher through which detergent may be introduced into the dasher, means including said dasher mounting means and apertures in said dasher providing for circulation of wash water through the dasher whereby detergent introduced therein will be gradually dissolved and diluted and preventing direct contact of the detergent with clothes placed in the tub, and a dasher overlying cap for securing said dasher on its mounting means comprising a central hub portion having securing means cooperating with said first mentioned securing means, an annular rim portion, and a series of radial spaced apart supports extending between said hub and rim providing spaces through which detergent can be inserted into said dasher.

2. In a washing machine, a tub, dasher mounting means comprising movable structure located within the tub and having an upper portion provided with securing means, a hollow dasher mounted on said mounting means and including a central hub portion apertured for the

passage of the upper portion of said securing means and a series of spaced apart radial supports extending from the hub to the upper end of the dasher, the spaces between said supports providing passageways into the dasher through which detergent may be introduced into the dasher, means including said dasher mounting means and apertures in said dasher providing for circulation of wash water through the dasher whereby detergent introduced therein will be gradually dissolved and diluted and preventing direct contact of the detergent with clothes placed in the tub, and a dasher overlying cap for securing said dasher on its mounting means comprising a central hub portion having securing means inserted into the underside of said cap and cooperating with said first mentioned securing means, an annular rim portion, and a series of radial spaced apart supports extending between said hub and rim providing spaces through which detergent can be inserted into said dasher.

3. In a washing machine, a tub, dasher mounting means comprising movable structure located within the tub and having an upper portion provided with securing means, a hollow dasher mounted on said mounting means and including a central hub portion apertured for the passage of the upper portion of said securing means and a series of spaced apart radial supports extending from the hub to the upper end of the dasher, the spaces between said supports providing passageways into the dasher through which detergent may be introduced into the dasher, means including said dasher mounting means and apertures in said dasher providing for circulation of wash water through the dasher whereby detergent introduced therein will be gradually dissolved and diluted and preventing direct contact of the detergent with clothes placed in the tub, and a dasher overlying cap for securing said dasher on its mounting means comprising a central hub portion having securing means cooperating with said first mentioned securing means, an annular rim portion, and a series of radial spaced apart supports extending between said hub and rim providing spaces through which detergent can be inserted into said dasher, the underside of said cap and the upper side of said dasher having complementary rounded engaging surfaces.

4. In a washing machine, a tub, dasher mounting means comprising movable structure located within the tub and having an upper portion provided with securing means, a hollow dasher mounted on said mounting means and including a central hub portion apertured for the passage of the upper portion of said securing means and a series of spaced apart radial supports extending from the hub to the upper end of the dasher, the spaces between said supports providing passageways into the dasher through which detergent may be introduced into the dasher, means including said dasher mounting means and apertures in said dasher providing for circulation of wash water through the dasher whereby detergent introduced therein will be gradually dissolved and diluted and preventing direct contact of the detergent with clothes placed in the tub, and a dasher overlying cap for securing said dasher on its mounting means comprising a central hub portion having securing means cooperating with said first mentioned securing means, an annular rim portion, and a series of radial spaced apart supports extending between said hub and rim providing spaces through which detergent can be inserted into said dasher, said dasher having a peripheral shoulder at its upper end and the rim of said cap having its lower portion seated on said shoulder.

5. In a washing machine, a tub, dasher mounting means comprising movable structure located within the tub and having an upper portion provided with securing means and including portions adapted to receive and hold detergent, a hollow dasher mounted on said mounting means and apertured for the circulation of washing liquid therein, said dasher including an upper portion apertured for the passage of the upper portion of said securing means and

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having an opening into the dasher through which detergent may be introduced into the dasher so as to be received in said portions, and a dasher overlying cap cooperating with said securing means for securing said dasher on its mounting means and having an opening through which detergent can be inserted into said dasher through the said opening in the dasher.

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