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DOMESTIC FABRIC WASHING MACHINE

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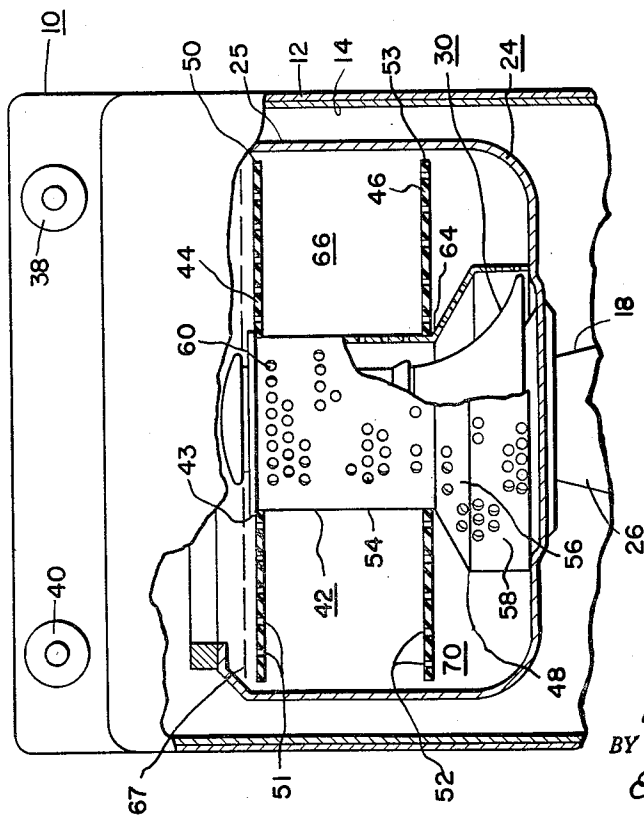
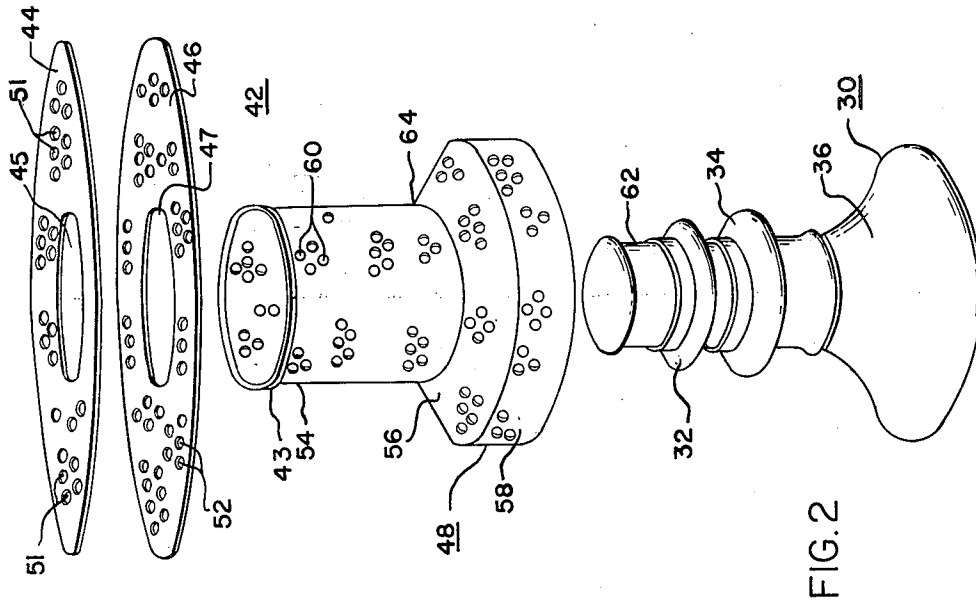


FIG. 1

FIG. 2

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1

3,021,700

DOMESTIC FABRIC WASHING MACHINE

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3 Claims. (Cl. 68-4)

This invention relates to a domestic appliance and more particularly to an improved clothes washing machine.

Many advances have been made in the clothes washing art toward achieving a fully automatic clothes washing procedure. However the washing of woollens, such as blankets and sweaters, has presented a problem not completely solved by the automatic washing machines presently available. It has been believed generally that high temperatures for the washing fluid are the underlying cause of shrinkage to woolen fibers washed in such fluid. However, investigation has shown that the undesirable shrinkage is caused primarily by the intra-action of the woolen fibers resulting from the flexing of the fabric during washing. This invention relates to an apparatus for washing woollens in a manner to prevent the intra-action of the woolen fibers, thereby eliminating shrinkage resulting from such intra-action.

Accordingly it is an object of this invention to provide an improved washing apparatus which can clean woollens without causing shrinkage thereof.

It is also an object of this invention to provide a fabric washing apparatus which is more gentle than the manual washing operation when one presses a washing solution through a fabric.

It is also an object of this invention to provide an attachment for a washing machine agitator which will shield fabrics to be washed from the agitator and retain the fabrics in an inundated, non-flexing position in the path of water being circulated by the agitator.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein preferred embodiments of the present invention are clearly shown.

In the drawings:

FIGURE 1 is a partial sectional view with parts broken away of a washing machine equipped with this invention; and

FIGURE 2 is an exploded perspective view of this invention.

In accordance with this invention and with reference to FIGURE 1 a washing machine 10 is formed with an outer cabinet 12 and a water container 14 having a bottom bulkhead. Beneath the bulkhead in the water container 14 a drive mechanism shown generally at 18 is disposed. This mechanism is of the type shown in the patent to Sisson 2,758,685, issued August 14, 1956, and in brief consists of a reversible motor affixed to the washing machine cabinet 12 and adapted to drive an agitating and spinning mechanism having a shaft which is supported from a flexible housing 26 on the bulkhead. The agitating and spinning mechanism includes concentric shafts (not shown) which project upwardly through the bulkhead and the flexible mechanism mount 26 to engage the agitator 30 and the spin-basket 24. Thus with the operation of motor in one direction to rotate the agitate and

2

spin mechanism, the agitator 30 is reciprocated vertically to effect a washing action within the tub 24. At the conclusion of the washing action the motor is reversed to rotate the mechanism in the opposite direction to rotate the spin tub or basket 24 in a centrifuging operation. A conventional timer mechanism 38 may be utilized to affect sequential automatic control of the agitate and spinning mechanism. The agitator 30 is comprised of a plurality of rings such as a lint chaser ring 32, a circulator ring 34 and an energy ring 36. The up and down movement of the agitator 30 causes the washing fluid placed within the tub 24 to circulate in a toroidal movement to effect a cleansing action of fabrics placed within the tub. During a normal washing action any clothing placed within the tub through its access opening moves in a circular movement about the torus and is thereby flexed and occasionally contacted by the agitator rings 32, 34 and 36. Whereas this action is a definite aid in washing normal fabrics, the flexing and abrasion promoted thereby is disadvantageous to washing woollens. It is therefore the purpose of this invention to improve the washing apparatus 10 with an appliance which will prevent rolling or flexing of the woollens and any abrasive action of the agitator rings on the fabric.

As aforesaid it is harmful in the washing process for woollens to include a washing fluid which is too hot for the woolen goods and which will cause fading thereof. This problem has been solved in the prior art by applying a selectable temperature control 40 for the washing solution. This however has no effect whatsoever on that shrinkage brought about by the intra-action or flexing of the woolen fibers.

Reference may be had to FIGURES 1 and 2 for the preferred embodiment of the applicant's invention. In FIGURE 1 the spin basket or tub 24 includes the agitator 30. The fabric shrinkage prevention assembly is shown generally at 42 within the tub 24 and in an exploded condition in FIGURE 2. The assembly 42 is comprised of an upper fabric inundating baffle 44, a lower fabric support baffle 46 and an agitator ring shield 48. The baffles 44 and 46 may be of any shape necessary to conform to the configuration of the side wall of tub 24. Thus in the particular apparatus illustrated the baffles 44 and 46 may be circular disks, the outer peripheral edges of which lie in close proximity to the side wall 25 of the tub 24. Mounting apertures or holes 45, 47 are placed in baffles 44, 46 respectively. Each baffle 44 and 46 is formed from slightly resilient material, but the material should be sufficiently rigid to support the baffles in an extended condition as shown. Sufficient rigidity in the baffles 44, 46 is also necessary to prevent the fabric sandwiched between the baffles from moving between the outer peripheral edge 50, 53 of the baffles and the side wall 25 of the tub. It has been found that $\frac{1}{8}$ to $\frac{1}{4}$ inch hard rubber is sufficiently rigid for the purposes of this invention. Within each of the baffles a plurality of apertures 51, 52 approximately $\frac{1}{4}$ inch in diameter and spaced approximately $\frac{3}{8}$ inch apart are formed to permit the interflow of water through the baffles 44 and 46.

The shrinkage prevention assembly 42 includes also the agitator shield 48 which may be of metallic construction. More particularly the shield is formed with an upper cylindrical portion 54, a central conical or flared section 56 and a lower energy ring covering cylindrical section 58. The shield 48 also carries a plurality of aper-

tures or ports 60 to permit water to flow from the interior of the shield 48 to the exterior in response to the pumping action of the agitator 30. The shield 48 should be sized in accordance with the configuration of the agitator to which it is to be applied. In this instance the agitator 30 is formed with a substantially cylindrical upper portion 62 to which the lint chaser ring 32 and the circulator ring 34 are removably attached. The upper cylindrical portion 62 is joined to the energy ring 36 to form the completed agitator 30. To provide the agitator 30 with a shield it is necessary to form the member 48 with its upper portion 54 oversized to the agitator section 62 and the rings 32, 34 thereon. The shield 48 includes a central conical portion 56 which accommodates for the radially outward flare of the energy ring 36 on the agitator. The lower shield portion 58 overlies the radially outer periphery of the energy ring 36 and is sufficiently long to permit the vertical reciprocation of the agitator 30 and, in particular, the energy ring 36 without interfering with the fixed relationship of the shield 48 in the tub 24.

The shrinkage preventing assembly 42 is assembled with the lower support baffle 46 being slipped downwardly over the annular flange 43 on the upper shield section 54 until the baffle 46 rests at the juncture 64 between the upper section 54 and the conical section 56 of the shield 48. Of course baffle 46 may rest at the top of section 58 by enlarging hole 47. Each baffle 44 and 46 has its respective central aperture 45 and 47 sized to permit a snug fit of the baffles 44 and 46 over the cylindrical portion 48 of the shrinkage prevention assembly 42. Upward movement of baffle 44 is limited by flange 43, while downward movement of baffle 46 is prevented by flared section 56.

In operation, where it is desired to wash woolens or other fabrics the flexation of which produces harmful effects, the assembly 42 is inserted within the tub 24. In placing fabrics to be washed within the tub 24 the upper baffle 44 is bent upwardly along one edge thereof to force the fabrics into the space 66 between the baffles 44 and 46. Of course the operator may, if she wishes, remove the baffle 44 from the shield 48 until the fabrics are loaded and then she may replace the baffle 44 on the section 54 of the shield member 48. In accordance with a conventional washing action water is then admitted to the tub 24 until it covers both baffles (as shown by the water level line 67 in FIGURE 3) and inundates the fabrics disposed between the baffles 44 and 46. With the initiation of an agitation cycle the agitator 30 will move up and down within the shield 48 pumping water from the apertures 60 in the shield exteriorly to the area 66 in which the fabrics are arranged. In particular water is pumped outwardly by the energy ring 36 from the apertures 60 in the lower portions 56 and 58 of the shield 48 into a space 70 beneath the lower baffle 46. Since the pumping action of the agitator 30 sets up a toroidal movement of the water the washing fluid currents will flow upwardly through the apertures 52 in the lower baffle 46, then through the woolens or fabrics within the space 66 and upwardly through the apertures 51 in the upper baffle 44. The washing fluid returns to the agitator 30 through the open top in the shield 48 and through the ports 60 in the upper portion 54 of the shield. It will be recognized that with this appliance the fabric is not subjected to any flexation but is held firmly in sandwiched relationship between the baffles and is exposed merely to a surging current of washing fluid, which approximates a manual washing operation whereby suds are pressed through the fabric fibers. It is important to note also that the space 66 and any fabrics disposed therein are always beneath the surface of the water and the fabrics are retained comparatively motionless in this area. After the washing operation is concluded, the shrinkage prevention assembly 42 may be removed and stored in a remote location from the washing machine 10 until needed.

It should now be seen that an improved washing action is effected by the teachings of this invention. Fabrics such as woolens which are harmed by the intra-action of the fibers due to the agitator-caused flexing thereof may now be washed automatically without undesirable shrinkage.

While the forms of embodiment of the invention as herein disclosed constitute preferred forms, it is to be understood that other forms might be adopted, as may come within the scope of the claims which follow.

What is claimed is as follows:

1. A domestic fabric washing machine comprising a tub having a side wall and a top access opening smaller than said tub, an agitator in said tub having a large diameter bottom ring and a small diameter upper ring, a removable perforated shield for said agitator having an upper and lower portion, said upper and lower portions being configured respectively to clear said upper and lower rings and said access opening, means for vertically reciprocating said agitator inside said shield, said shield being stationary relative to said tub during said reciprocating, a flexible first baffle removably attached to and supported by said upper portion and having a dimension greater than said access opening, and a flexible second baffle removably attached to and supported by said lower portion in spaced, fabric containing relationship to said first baffle and having a dimension equal to that of said first baffle, said baffles each having a peripheral edge in uniformly spaced relationship to said side wall and a plurality of ports, whereby the vertical reciprocation of said agitator pumps a washing solution through said perforations, said ports and said fabric to wash said fabric without agitating said fabric and whereby the flexibility of said baffles facilitates the removal of said shield and said baffles through said access opening and the insertion of fabric into said tub.

2. A domestic fabric washing machine comprising a tub having a side wall and a top access opening smaller than said tub, an agitator in said tub having a large diameter lower portion and a small diameter upper portion, means for vertically reciprocating said agitator to normally agitate said fabric, a fabric shrinkage prevention assembly stationary relative to said agitator and including a removable perforated shield for enclosing said agitator, said shield having upper and lower sections configured respectively to clear said upper and lower portions and said access opening, a yieldable first support member removably supported by said shield adjacent said upper portion of said agitator and having a dimension greater than said access opening, and a yieldable second support member removably supported by said shield adjacent said lower portion of said agitator in spaced, fabric containing relationship to said first member and having a dimension equal to that of said first support member, said members each having a peripheral edge in uniformly spaced relationship to said side wall and a plurality of ports, whereby the vertical reciprocation of said agitator pumps a washing solution through said ports and said fabric to wash said fabric without said normal agitation of said fabric, said fabric shrinkage prevention assembly being removable to adapt said machine for the normal agitation of said fabric and whereby the yieldableness of said members facilitates the removal of said fabric shrinkage prevention assembly through said access opening and the insertion of fabric into said tub.

3. The structure of claim 2 wherein said members are formed as flexible, rubber, circular disks.

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