April 23, 1963 A. H. GERHARDT ETAL 3,086,380

WASHING MACHINE HAVING A FILTER

Filed March 9, 1961

Fig. 2

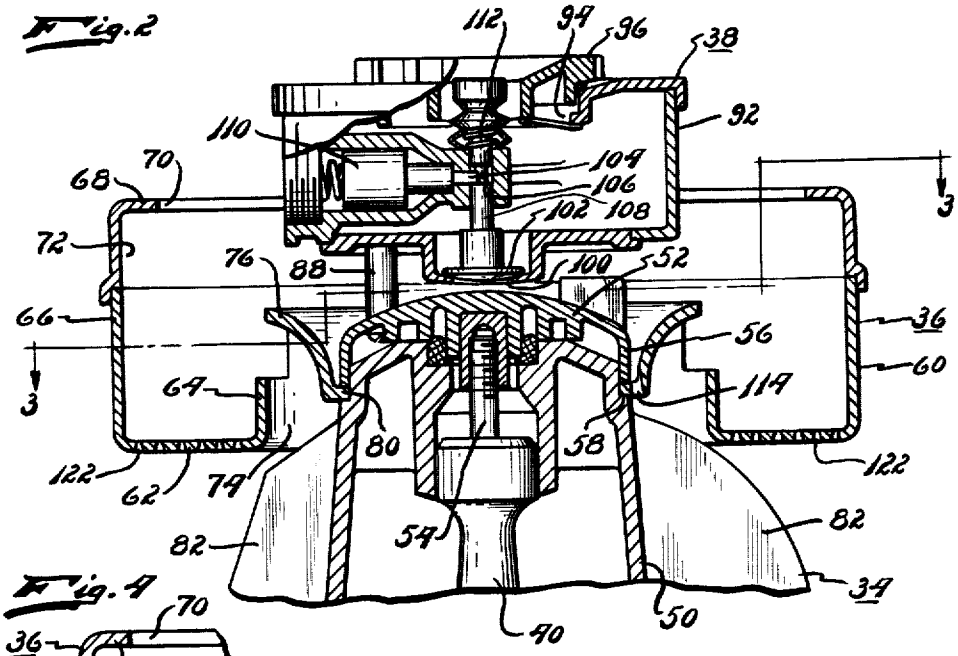


Fig. 4

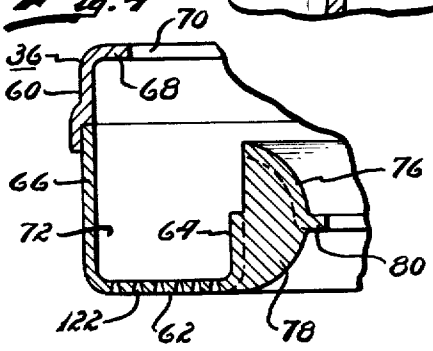


Fig. 3

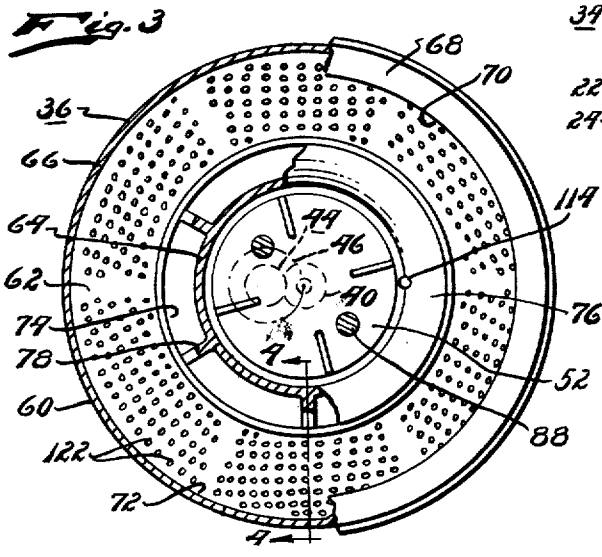
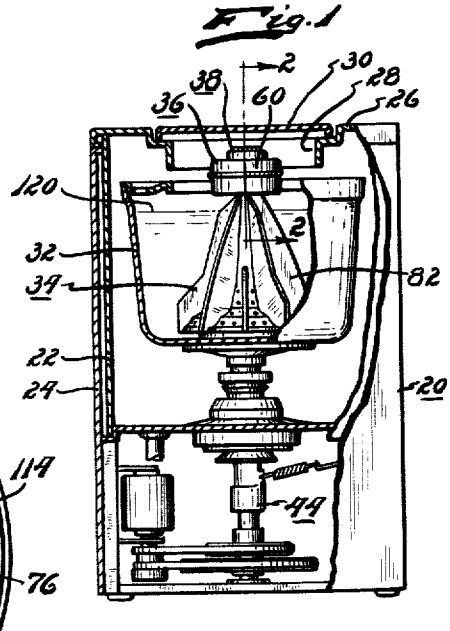


Fig. 1



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WASHING MACHINE HAVING A FILTER

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The present invention relates to laundry equipment and more particularly to equipment therein having provisions for circulating and filtering the cleaning fluid.

It is an object of the present invention to provide in a laundry equipment a new and improved circulating system for the cleaning fluid to effect a filtering thereof.

A further object of the present invention is to provide a new and improved circulating system with a filtering arrangement which may readily be incorporated for use in a clothes washing machine and readily removed therefrom.

A further object of the present invention is to provide a new and improved circulating system for a clothes washing machine wherein the cleaning fluid or wash water is circulated and filtered without interference to or lessening of the turbulent washing action as effected by the movement of the dasher.

A further object of the present invention is to provide a new and improved circulating system for a clothes washing machine wherein the dasher moves in an orbital path and which may readily be utilized with an improved filtering device.

A further object of the present invention is to provide a new and improved circulating system having a filtering arrangement therewith which is simple in construction, economical of manufacture and highly efficient in use.

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

In the drawings:

FIG. 1 is a front view of a clothes washing machine embodying features of my invention and showing a portion thereof broken away and in cross section;

FIG. 2 is an enlarged view in cross section of my invention taken along the line 2—2 of FIG. 1;

FIG. 3 is a view taken along the line 3—3 of FIG. 2, and

FIG. 4 is a fragmentary view in cross section taken along the line 4—4 of FIG. 3.

Referring to the drawings, the numeral **20** designates in general a laundry equipment which includes a combination washing and centrifuge drying machine having my new and improved device. The machine **20** includes a stationary tub **22** enclosed within a casing **24** having a top wall **26** in which is formed an access opening **28** closed by a hinged lid **30**. Positioned within the tub **22** is a movable wash basket or receptacle **32**. The basket **32** is positioned so that access thereinto is had through the opening **28**. Within the basket is an agitator or dasher **34** upon which is carried my circulating and filtering device designated generally by the numeral **36**, together with a dispensing device **38**.

The basket **32** and the agitator or dasher **34** are suitably connected and driven by a drive mechanism **44** which preferably is substantially as set forth in Patent No. 2,709,908 to Alpheus W. Altorfer, Jr. et al. The drive mechanism as shown includes a crank arm **40** which extends vertically upwardly to form a post upon which is secured for carry the dasher **34**. Preferably, the dasher does not rotate about the axis of the crankarm **40** but is carried to travel therewith in an orbital path **46**, see FIG. 3, within the basket **32**. This orbital movement is

also described in Patent No. 2,416,611 to J. A. Castricone. During the operation of the dasher **34** the basket **32** is held stationary and upon completion of the wash operation the basket **32** is rotatably spun to centrifuge the wash water from the basket into the stationary tub **22** for disposal. During the spinning or centrifuging operation the dasher **34** is locked in rotation with the spinning basket **32**. The filtering device **36** is particularly effective in a machine wherein the dasher moves in an orbital path.

The dasher **34** is formed at its upper end with a tubular neck or post section **50** carried upon the crankarm **40** and locked thereto by a cap **52** which threads upon a threaded stud **54** carried by the crankarm **40**. The cap **52** is formed with a circumferential collar section **56** adapted to engage upon and clamp by circulating and filtering device **36** to a shoulder **58** formed on the neck or post section **50** of the dasher **34**.

The circulating and filtering device **36** comprises a ring type container **60** that extends in a spaced concentric relation about the post section **50** of the dasher. The container **60** is formed having a horizontally extended perforated bottom wall **62** joined to concentrically spaced inner and outer imperforate vertically extending walls **64**, **66**. The outer wall **66** extends above the height of the inner wall **64** to be joined to a top wall **68** in which is formed a central opening **70** to provide access therethrough into the chamber **72** of the container. The inner wall **64** is in a spaced concentric relation to the post section **50** to form an open ended passage **74** therebetween that leads from the basket **32** into the chamber **72**.

Extending across the upper or outlet end of the passage **74** is a plate or deflector **76**. The deflector is connectively joined to and held in spatial relation from the inner wall **64** by radially extending ribs **78**. The deflector **76** is shaped from adjacent its inner circumferential edge to extend in a radius upwardly and outwardly with the outer circumferential edge terminating in a spaced relation above the terminated end of the inner wall **64** to direct the outlet of the passage **74** in a horizontal direction into the chamber **72**. The inner circumferential edge of the deflector is flanged, as at **80**, to seat upon the shoulder **58** of the dasher and is clampingly held thereupon by the securement of the cap **52** upon the threaded stud **54**.

The dasher **34** is provide with a plurality of radially outwardly extended vanes or paddles **82**. Some of the paddles **82** extend substantially the longitudinal or vertical axial length of the dasher with their upper ends tapering to terminate adjacent the neck or post section **50**. Preferably the container **60** is arranged upon the post section **50** so that the tapering ends of the paddles **82** project into and terminate within the lower portion of the passage **74**.

Secured in a spaced relation to and above the cap **52** by spacer studs **88** is the dispensing device **38** for automatically dispensing a conditioning agent which is substantially set forth in a patent application Serial No. 763,666, filed September 26, 1958 by Henry W. Altorfer and assigned to the same assignee as the present application. Briefly, the dispenser comprises a cup shaped container or receptacle **92** having a top access opening **94** closed by a lid **96** and an outlet opening **100** closed by a valve **102**. The valve **102** is operatively held in closed position by a spring pressed latch member **104** adapted to engage a shoulder **106** formed on a valve stem **108**. The latch member **104** is provided with a weighted section **110** which is responsive to centrifugal force to move the latch member **104** out of engagement with the shoulder **106** permitting a spring **112** to lift or unseat the valve **102** and open the outlet opening **100** to permit an outlet flow of the contents from the receptacle **92**. The contents may be a conditioning agent such as bleach,

detergent, water softening agent, or the like. The contents are emptied upon the surface of the cap **52** and the deflector **76** from which the flow is downwardly to pass into and through a passage **114**, formed in the deflector **76**, to enter the basket **32**.

In the operation of the machine the basket **32** is filled with a load of clothes and cleaning fluid or water so that the level of the wash water is approximately at the level **120**. It is to be noted that the filtering device **36** is positioned in the basket above the static or normal wash water level **120**. This location of the filtering device **36** also locates the entrance to the passageway **74** above the water level **120** which necessitates that the washing fluid, particularly the surface water, be splashed upwardly into the filtering device, and this action is continuously effected by the continuously moving agitator during the washing period. For the wash and the rinse cycle the basket **32** is held stationary and the agitator or dasher **64** is operated to travel within the basket **32**. The movement of the dasher **64** agitates the body of water to circulate in a path downward adjacent the dasher, outward along the bottom of the basket, upward along its sides and inward towards the dasher. The surface water, particularly as the agitator is moving in an orbital path, is forced inwardly against the post section **50** to be directed in an upward travel through the passage **74** and against the deflector **76** to flow into the chamber **72**. From the chamber **72** the water drains through the perforated bottom wall **62** back into the basket. The bottom wall **62** is formed with openings, or perforations **122** of such size as to entrap and separate lint and other foreign matter for retention in the chamber **72**.

By my present arrangement the scum, lint, dirt and other foreign matter that floats or is carried during the agitation of the water at and near the surface is continuously being removed during the period or periods that the agitator is in motion. Thus the surface is kept clean without requiring additional water in the basket for an overflow to carry off the foreign substances during the washing period. In the rinse operation where an overflow is considered necessary to carry off suds the walls of the container together with the position of the container on the agitator is such that the overflow cannot wash or flood out the lint and other foreign matter that was collected during the wash operation into the rinse water.

The container **60** is readily removable from the dasher for cleaning by unthreading the cap **52** from the threaded stud **54**. The cap **52** and the dispenser **90** are preferably removable as a unit.

Before the washing operation the valve **102** of the dispenser **38** is manually moved to closed position whereupon the spring pressed latch automatically locks the valve in closed position to permit filling the dispenser with a suitable detergent or the like. After the washing operation the wash water is centrifuged from the basket into the stationary tub. The dasher is locked in spinning rotation with the basket and this spinning causes the weighted section to move and release the latch member from the valve to allow unseating of the valve. As the spinning or rotational movement ceases the contents in the receptacle **92** will flow out the opening **100** towards and through the passage **114** into the basket refilling with rinse water.

From the foregoing it will be noted that we have provided a new and improved splash filter system. In the present instance the dasher has radial fins or paddles and moves in an orbital path to cause the surface water to be splashed upwardly into the opening of the filter. This avoids the use of a pump.

Although only a preferred from of the invention has been illustrated, and that form described in detail, it will be apparent to those skilled in the art that various modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

We claim:

1. A washing machine having a basket adapted to contain fluids, a dasher having a vertically extending axis and paddles extending substantially radially outwardly and longitudinally to the axis of said dasher, means for actuating said dasher for continuously moving said fluids upwardly adjacent thereto, filter means carried by said dasher in spaced relation therewith, an opening being a spatial distance above the static level of the fluid in said basket and being cooperatively formed between said dasher and said filter means for receiving said upwardly moving fluids therethrough, and a deflector for directing said fluids towards the filter part of said means.

2. A washing machine having a basket adapted to contain fluids, a dasher having a vertically extended axis and paddles extending substantially radially outwardly and longitudinally to the axis of said dasher, means for actuating said dasher in an orbital path for continuously moving said fluids upwardly adjacent thereto, filter means being above the static level of the fluid in said basket and being carried by said dasher in spaced relation therewith, an opening between said dasher and said filter means for receiving said upwardly moving fluids therethrough, and a deflector for directing said fluids toward the filter part of said means.

3. A washing machine having a basket adapted to contain fluids, a dasher, means for continuously splashing said dasher in an orbital path for moving said fluids upwardly externally adjacent thereto, and filter means carried by said dasher, said filter means being laterally spaced from said dasher to provide an opening therebetween for passage therethrough of said upwardly splashed fluids to said filter means, and said opening being above the static level of the fluid in said basket.

4. A washing machine having a basket adapted to contain fluids, a dasher movable within said basket to actuate said fluids, drive means connected for moving said dasher, said dasher having a vertically extended axis and including paddles extending substantially radially outwardly and longitudinally to the axis of said dasher and a neck section, said neck section being concentric to the axis of said dasher and extending from and above the terminable ends of said paddles, a container having a chamber, support means extending from said container and being secured to said dasher, said container being formed to extend circumferentially about in a spaced relation to said neck section to cooperatively form therewith a longitudinally directed passageway therebetween, said container being longitudinally extended relative to the axis of said dasher to include in said passageway a portion of said paddles, said passageway having its lower end open for access thereinto from said basket, baffle means across the upper end of said passageway, an opening in said container between said baffle means and the lower end of said passageway for interconnecting in open communication said passageway with said chamber, said container having communicating means between said chamber and said basket including filtering means, a dispenser means being secured to said dasher, said dispenser means being above said baffle means for dumping its contents thereupon, and an opening in said baffle means for conducting the dumped contents into said passageway.

5. A washing machine having a movable basket adapted to contain fluids, a dasher movable within said basket adapted to actuate said fluids, drive means connected and arranged to rotatably move said basket and said dasher in unison or to move said dasher independently while said basket is held stationary, said dasher having a vertically extended axis and including paddles extending substantially radially outwardly and longitudinally to the axis of said paddles and a neck section, said neck sec-

tion being concentric to the axis of said dasher and extending from below to and above the terminable ends of said paddles, a predetermined distance, a container formed to extend circumferentially about said dasher comprising a pair of spaced concentric, vertical, imperforate walls interconnected by a horizontally extended perforated wall, one of said imperforate walls being in spaced concentric relation to said neck section cooperatively forming therewith an open ended passageway therebetween extending from below to above the terminable ends of said paddles a predetermined distance, an annular imperforate wall member extending transversely across said passageway and being in spaced relation above the terminable end of said last named imperforate wall, means interconnecting said last named imperforate wall and said annular imperforate wall, and securing means attaching said annular imperforate wall to said neck portion of said dasher, a dispenser means attached to said dasher above said annular imperforate wall, said dispenser means being arranged to dump its contents upon said annular imperforate wall, and passage means in said annular wall for conducting the dumped contents into said passageway.

6. In a washing machine including a basket adapted to receive cleaning fluids to a predetermined level, a dasher having a vertically extended axis and movable within said basket to actuate said fluids, drive means connected to for moving said dasher in an orbital path within said basket, and said dasher being formed to extend above the level of fluid maintained in said basket, an open top container carried by said dasher above the level of fluid maintained in said basket, said container being formed to extend in spaced relation about said dasher, said container comprising spaced apart inner and outer imperforate vertical walls interconnected by a perforated horizontally extended bottom wall, said inner wall being in spaced relation to said dasher to form therebetween an open ended passageway, said open ended passageway having its lower open end a spatial distance above the static level of the fluid in said basket, a deflector member extending transversely across said passageway, rib members interconnecting said deflector member in securement with said inner wall, said deflector member being in engagement with said dasher, means for securing said deflector member to said dasher, and said deflector member being arranged to extend over the terminable edge of said inner wall in spaced relation therewith to direct the flow from said passageway over said inner wall into said container.

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