Nov. 25, 1941. E. G. H. BARRY 2,263,963

WASHING AND RINSING MACHINE

Filed July 10, 1939 2 Sheets-Sheet 1

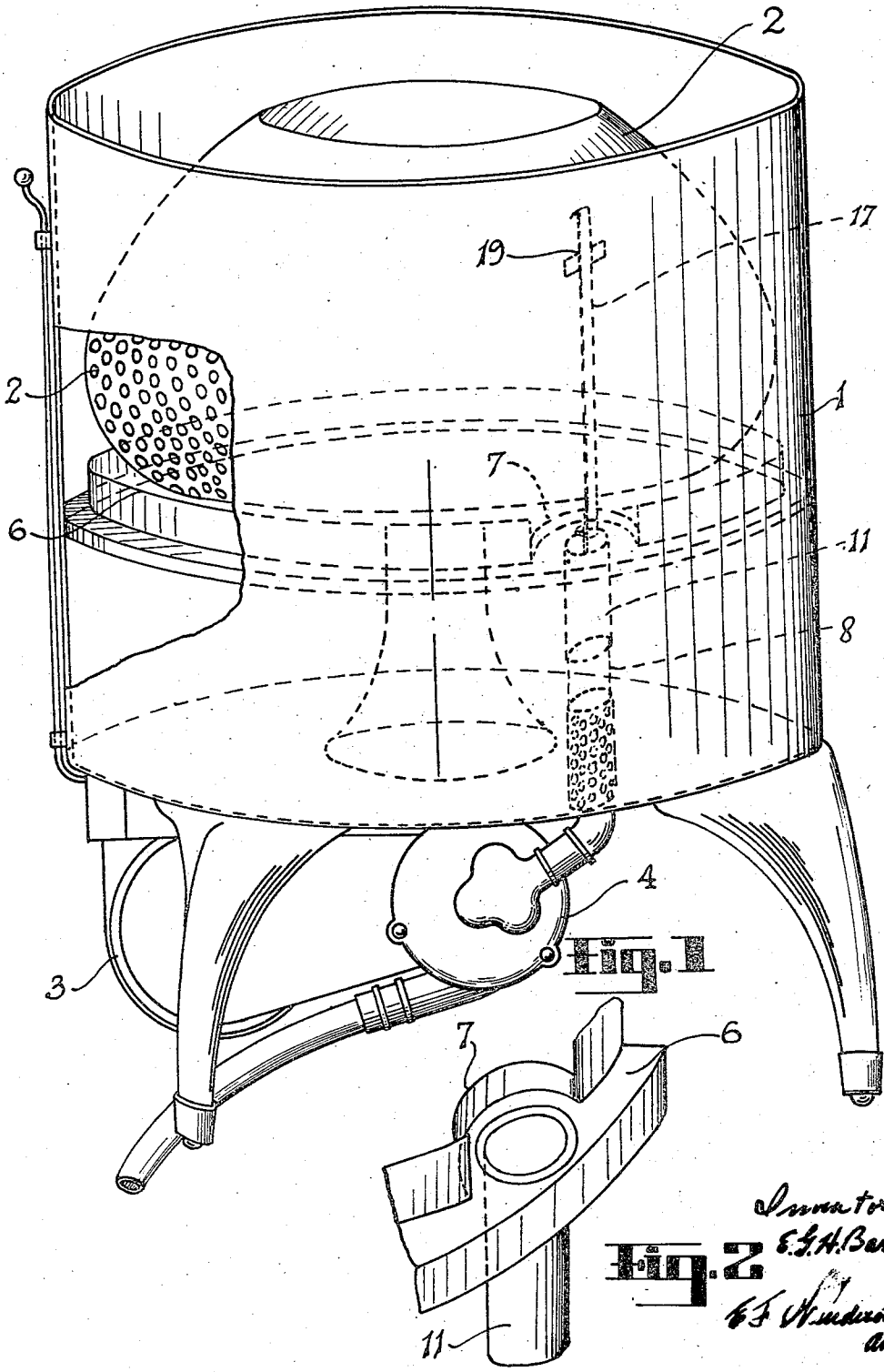



Fig. 1




Fig. 2

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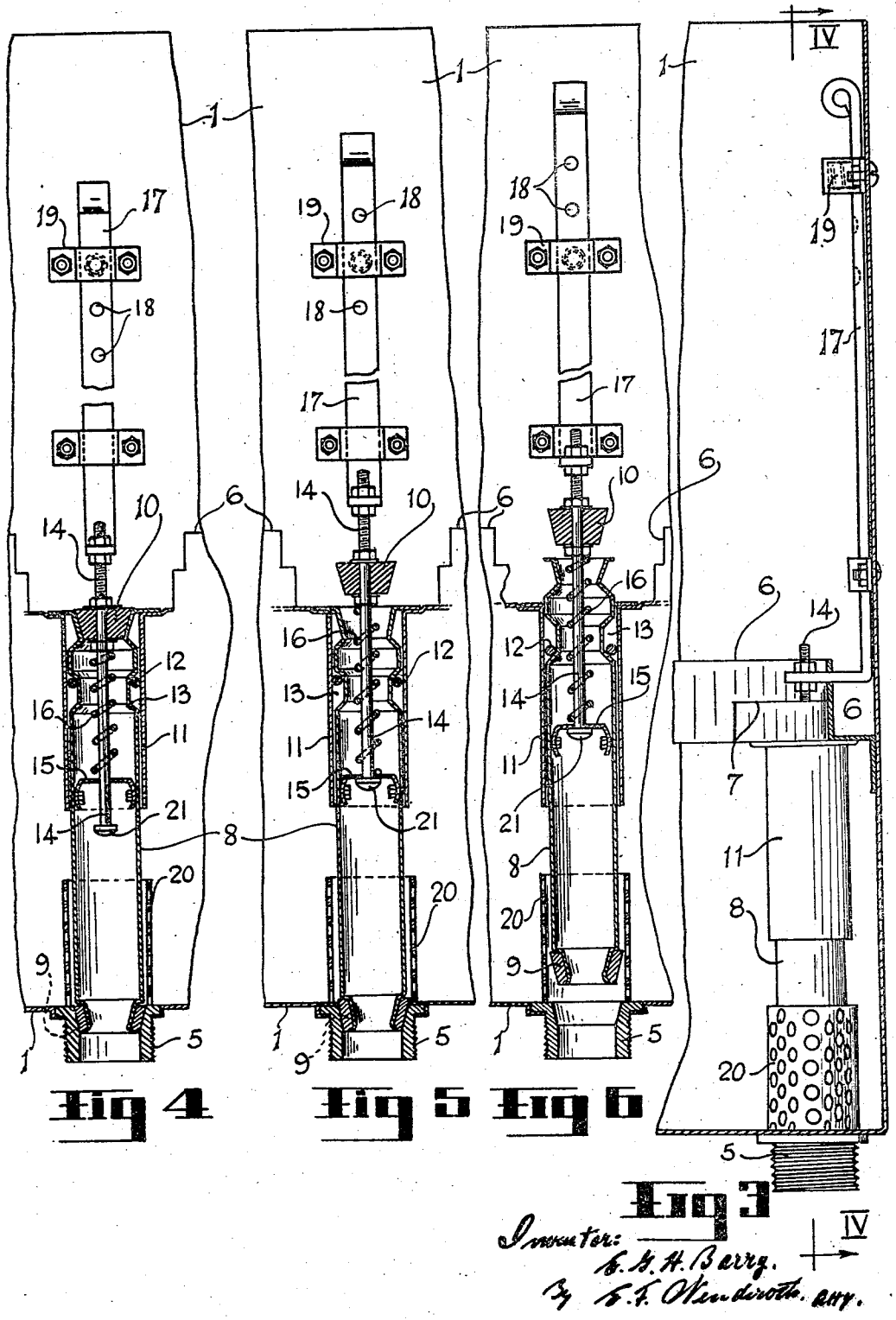



Fig 4 Fig 5 Fig 6

Fig 3

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# UNITED STATES PATENT OFFICE

2,263,963

## WASHING AND RINSING MACHINE

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2 Claims. (Cl. 210—75)

This invention relates to improvements in combined washing and rinsing machines of the type in which the soiled washing is contained in a perforated container or spinner basket which is adapted to rotate or spin inside a circular tank or tub in which the hot soapy washing water is also contained. The arrangement is such that during the washing operation, the spinner basket is adapted to rotate in a position in which its axis is horizontal so that it is partly submerged in the hot soapy washing water in the lower portion of the tank. During the rinsing and drying operation the spinner basket is turned into a position where it rotates about a vertical axis so as to be elevated above the washing water level.

During this rinsing operation the rinsing water, usually cold, is introduced while the spinner basket is rotating and by centrifugal action this water is carried through the articles being washed, from which it carries the particles of soap and dirt. Thereafter, on passing through the perforations in the periphery of the spinner basket, it is flung against the inside surfaces of the walls of the tank, whence it trickles down to join the washing water in the lower part of the washer. Where successive washes are to be undertaken with the same washing water, it is undesirable to have the rinsing water diluting and/or cooling the washing water.

Objects of the invention are to provide means for overcoming these disadvantages of dilution and cooling during the rinsing operation, while at the same time providing means whereby, during the washing operation, the soapy water may be returned to the lower part of the washer for reuse.

According to the present invention an annular gutter or trough is secured to the inside of the tank or outer casing in a position above the normal washing water level, so that the rinsing water, gravitating down the inside of the tank, is collected in the said gutter, the gutter being provided at its lowest point with a discharge outlet through which the rinsing water is discharged to waste or to an automatic discharge pump by means of which the water is removed from the washer.

In a preferred construction the discharge outlet, connecting the gutter and the waste outlet, is provided with a closure in the form of a plug, operable from the outside of the tank, whereby during washing operations, the hot soapy washing water collecting in the gutter will be diverted back to the washing water, while during rinsing operations the plug will cause discharge of the water from the gutter to waste or to the discharge pump. The operation of the plug may be effected manually but may also be effected automatically by interconnection with the spinner basket so that when the basket is turned to either of its operating positions the plug is simultaneously changed to its corresponding position.

In the preferred construction the plug referred to is interconnected with a hollow drain plug forming a closure for the waste outlet, in such a manner that a single control member in its lowest position causes both openings to be closed, in an intermediate position it causes the gutter discharge outlet only to be opened, and in its highest position, causes said hollow drain plug to be opened for emptying purposes.

To enable the invention to be more clearly understood and carried into practice, reference is now made to the accompanying drawings in which like reference numerals denote like parts throughout the several views.

In the drawings:

Fig. 1 is a perspective view, partly cut away, of a washing machine of the type described and embodying the invention.

Fig. 2 is an enlarged perspective view of portion of the gutter.

Fig. 3 is a side elevation of the closure means shown in relation to the gutter and the tank.

Fig. 4 is a vertical section taken on line IV—IV of Fig. 3, showing lowest position of closure means.

Fig. 5 is a similar view to Fig. 4 but showing intermediate position of closure means, and

Fig. 6 is a similar view to Fig. 4 but showing the highest position of the closure means.

Referring to the drawings, reference 1 denotes the tank or tube of a washing machine of the type referred to, within which a perforated spinner basket 2 is mounted for rotation about both a horizontal and a vertical axis. The spinner basket 2 is shown positioned for rotation about a vertical axis, the necessary power for which is obtained from an electric motor 3 which likewise drives an ejector pump 4 connected to a waste outlet 5.

An annular gutter 6 is shown fixed to the interior surface of the walls of the tank 1 at a position slightly above the normal level of the washing water. When therefore, during the rinsing operation, the spinner basket is rotated in the position shown, the water is flung outwardly by centrifugal action on to the inside walls of the tank and, on trickling downwardly, is caught by the gutter 6, whence it is discharged by way

of the waste outlet 5 without causing dilution or cooling of the washing water in the lower part of the tank 1.

When the spinner basket 2 is being rotated about a horizontal axis, during the washing operation, the soapy water which then collects in the gutter 6 will be required to be returned to the body of washing water in the lower portion of the tank 1. To achieve this result, closure means are provided for the discharge outlet from the gutter 6, whereby such water may be caused to return at will for reuse by passing over the weir portion 7 of the gutter 6. The closure means will now be described with reference to Figs. 3 to 6.

The closure for the waste outlet 5 consists of a tubular drain plug 8 provided with a sealing ring 9 of rubber or the like on its lower end, while its top open end is adapted to be closed by the solid plug 10. The hollow drain plug 8 is slidably located in a sleeve 11 projecting downwardly from an opening in the bottom of the gutter 6. To prevent leakage, a rubber sealing ring 12, of circular cross section, is interposed between the hollow drain plug 8 and said sleeve 11, with which surfaces it is adapted to make continuous rolling contact when relative sliding movement takes place therebetween. To prevent displacement said sealing ring 12 is located in an annular recess 13 formed by a reduced portion of the hollow drain plug 8.

The plug 10 is interconnected with the hollow drain plug 8 by a lost motion device consisting of a rod 14, slidably movable in a hole in a cross bar 15 fixed inside the hollow drain plug 8, and a compression spring 16 threaded over said rod 14 and tending to press the plug 10 upwardly and away from the hollow drain plug 8. The rod 14 after passing centrally through the plug 10, is connected to a slidably mounted hand-operated lever 17, the top end of which is conveniently accessible by terminating adjacent the top edge of the tank 1. The lever 17 has three positions defined by the depressions or notches 18 which are adapted to co-act with the spring-pressed locating stop 19. A strainer 20 surrounds the lower end of the hollow drain plug 8.

During the washing operation, when it is desired to return the water collected in the gutter 6 to the main body of water, the several parts are in the positions shown in Figs. 3 and 4, whereby the top open end of the hollow drain plug 8 is closed. This causes the collected water to flow over the weir 7 back into the lower part of the tank 1.

During the rinsing operation, when it is desired to permit the rinsing water to flow to waste so as not to dilute and/or cool the washing water, the lever 17 is raised to the intermediate notch as shown by Fig. 5. This action raises the plug 10 but, due to the lost motion connection, it does not open the hollow drain plug 8. The collected rinsing water is now free to flow from the gutter 6, down the hollow drain plug 8 and to waste by way of the waste outlet 5. When it is desired to empty the tank 1, the lever 17 is moved to the position shown by Fig. 6. This movement causes the enlarged end 21 of the rod 14 to contact with the cross bar 15 and thereby to raise the hollow drain plug 8 bodily so as to open the waste outlet 5.

What I claim is:

1. A washing machine of the character described comprising a liquid-holding casing provided with a waste outlet in the bottom thereof, a container mounted for rotation within said casing, an annular gutter on the inside wall of said casing for the reception of liquid thrown against the said wall by said container, said gutter having a discharge outlet in communication with said waste outlet, said discharge outlet being provided with a closure plug whereby, when said plug is in place, liquid from said gutter is returnable to the interior of said casing, a hollow drain plug constituting the closure for said waste outlet; means interconnecting said closure plug and drain plug for selectively opening both plugs, closing both plugs, and opening the closure plug while retaining said drain plug closed, a sleeve extending downwardly from said discharge outlet, said hollow drain plug being arranged for slidable movement in said sleeve, the upper end of said hollow drain plug being in substantial coincidence with the bottom level of said gutter and being closable by said closure plug, and the means interconnecting said closure plug and hollow drain plug being a lost motion connection.

2. A washing machine of the character described comprising a liquid-holding casing provided with a waste outlet in the bottom thereof, a container mounted for rotation within said casing, an annular gutter on the inside wall of said casing for the reception of liquid thrown against the said wall by said container, said gutter having a discharge outlet in communication with said waste outlet, said discharge outlet being provided with a closure plug whereby, when said plug is in place, liquid from said gutter is returnable to the interior of said casing, a hollow drain plug constituting the closure for said waste outlet; means interconnecting said closure plug and drain plug for selectively opening both plugs, closing both plugs, and opening the closure plug while retaining said drain plug closed, a sleeve extending downwardly from said discharge outlet, said hollow drain plug being arranged for slidable movement in said sleeve, the upper end of said hollow drain plug being in substantial coincidence with the bottom plug, and a sealing ring of resilient material interposed between said sleeve and hollow drain plug and sealing the space therebetween, said sealing ring being mounted for continuous rolling contact with the surfaces of said sleeve and hollow drain plug when relative movement takes place therebetween.

EDWARD G. H. BARRY.