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H. R. MERSELES

WASHING MACHINE

Filed July 8, 1922

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2 Sheets-Sheet 1

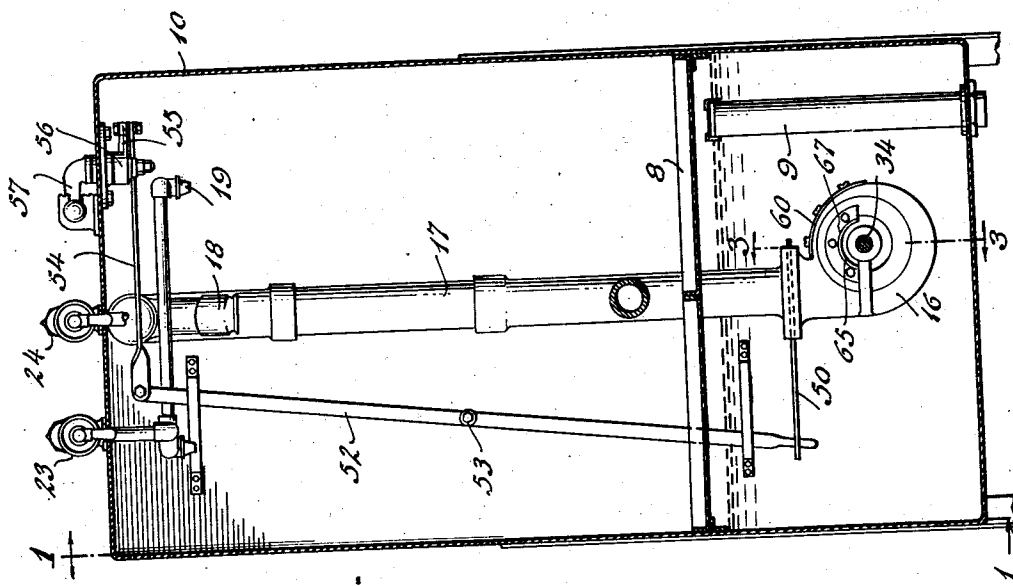


Fig. 1.

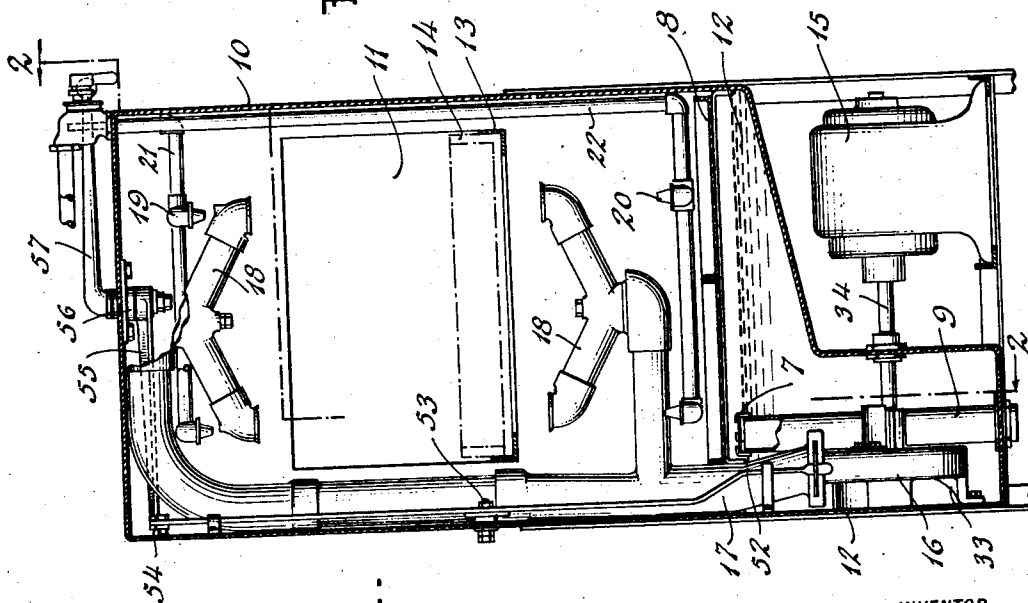


Fig. 2.

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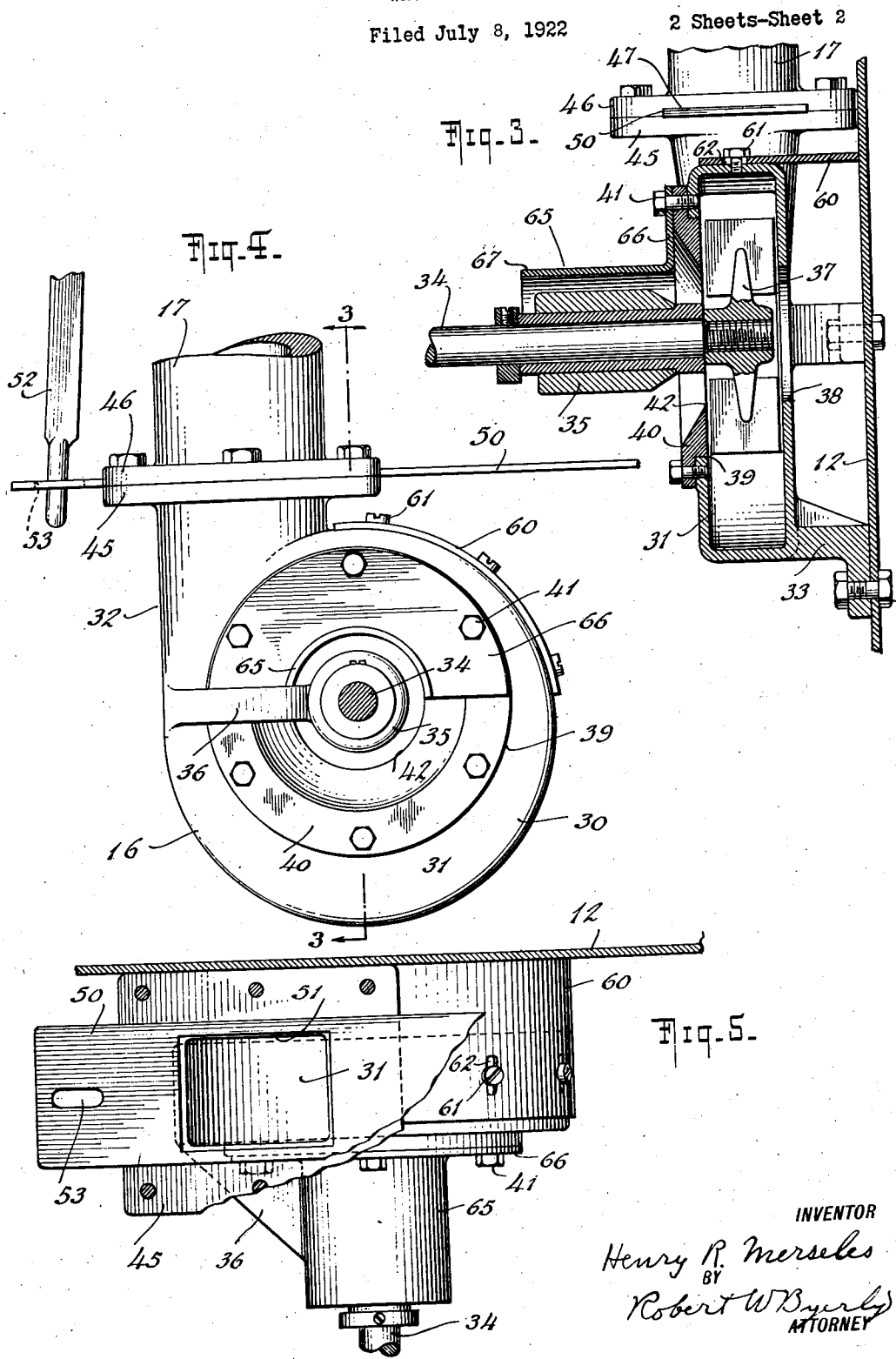
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UNITED STATES PATENT OFFICE.

HENRY R. MERSELES, OF BRONXVILLE, NEW YORK, ASSIGNOR TO HERBERT E. MERSELES, OF BRONXVILLE, NEW YORK.

WASHING MACHINE.

Application filed July 8, 1922. Serial No. 573,682.

To all whom it may concern:

Be it known that I, HENRY R. MERSELES, a citizen of the United States, residing at Bronxville, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Washing Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to dish washing machines, and particularly to those in which the washing and rinsing take place in the same chamber, and aims to facilitate the operation of such machines so as to increase the number of dishes or other articles which may be washed in a given period of time.

A specific object of the invention is to provide means for cutting off the flow of wash water during the rinsing operation without causing an agitation of the surface of the water in the tank of the machine, which would prevent decanting the grease floating on this water.

The invention may best be understood from a description of a complete dish washing machine incorporating apparatus embodying the invention. Such a machine is illustrated in the accompanying drawings, in which:—

Fig. 1 is a side elevation of the dish washing machine sectioned on the line 1—1 of Fig. 2;

Fig. 2 is a front elevation of the machine sectioned on the line 2—2 of Fig. 1;

Figs. 3, 4 and 5 are enlarged detail views of the pump and cut off valve, Fig. 3 being a vertical section on the lines 3—3 of Figs. 2 and 4, Fig. 4 a front elevation, and Fig. 5 a plan view with parts removed.

The dish washing machine illustrated has a casing 10 which encloses the dish chamber 11. A tank 12 is provided at the bottom of the dish chamber. Horizontal supports 13 extend through the dish chamber 11 and provide means for supporting a dish rack 14 therein.

A screen 8 is located between the dish chamber 11 and the tank 12. The water level in the tank 12 is maintained slightly below the screen 8 by means of an overflow pipe 9 having a strainer cap 7.

The washing mechanism includes a motor 15 which is directly connected to the im-

pel of a centrifugal pump 16 located in the tank 12 and adapted to draw water from the tank and force it through a standpipe 17 into rotary wash water projectors 18 located above and below the dish rack. The rinsing mechanism includes spray nozzles 19, 20 located respectively above and below the dish rack and pipes 21, 22 leading to the spray nozzles and provided with manually operable valves 23, 24.

In the operation of dish washing machines having the parts thus far described, the water contained in the tank 12 has been used over and over again in the washing of the dishes, this water being forced up from the tank by the pump 16 and falling back into the tank after it has passed over the dishes. After the dirt adhering to the dishes has been removed by projecting the wash water against them, it has been customary to stop the supply of dish water to the rotary projectors 18 by stopping the motor 15. Clean rinse water has then been projected against the dishes from the nozzles 19, 20 by opening the valves 23, 24. This water has fallen into the tank 12 and caused an overflow through the pipe 9. As the overflow has been gradual, the grease which floated on the top of the water in the tank 12 after the dishes had been washed has been decanted through the pipe 9, leaving the water in the tank comparatively clean. After the washed dishes have been removed and replaced by soiled dishes the motor 15 and the pump 16 have been again placed in operation.

In operating the machine in the manner described, considerable time has been consumed in stopping and starting the pump and motor, owing to the inertia of the moving parts. As it has been necessary to stop and restart the motor for each rinsing operation, much time has been wasted this way.

The present invention eliminates this waste of time by providing means for cutting off the supply of wash water to the rotary projectors 18 without stopping the pump and motor and without interfering with decanting the grease during the rinsing operation. Apparatus embodying the invention includes a cut off valve between the pump and the wash water projectors and means for preventing the water thrown out by the pump when the cut off valve is closed from

agitating the upper surface of the water in the tank. In the drawings is shown a specific form of such apparatus applicable for use in connection with a centrifugal pump submerged in the water in the tank.

The pump 16 is submerged in the water in the tank 12. The pump casing 30 is substantially cylindrical and has a tangential portion 32 at the end of which is the discharge opening 31 of the pump. The casing 30 is provided at one side with projections 33 which are bolted to the back wall of the tank 12 so as to hold the pump casing in spaced relation to this wall. The shaft 34 of the motor 15 extends through a stuffing box in the front wall of the tank 12 and enters the pump casing 30. A bearing 35 for the shaft 34 is provided on a fin 36 projecting from the front side of the pump casing. An impeller 37 is mounted on the end of the shaft 34 within the pump casing 30. The outer wall of the pump casing is provided with a central opening 39 of sufficient size to permit the introduction of the impeller 37. The opening 39 is partially closed by a ring 40 which is secured to the front side of the pump casing by bolts 41 after the impeller has been placed in the casing. The inner wall of the pump casing contains a central opening 38 which is opposite the central opening 42 of the ring 40. The openings 38 and 42 serve as intake openings in the normal operation of the pump.

The upper end of the tangential portion 32 of the pump casing is provided with an external flange 45 to which is bolted a similar flange 46 formed on the lower end of the standpipe 17. The two flanges lie below the water level in the tank 12. The flange 46 contains a transverse recess or way 47 in which a valve member 50 is slidably mounted. The valve member 50 has the form of a flat plate and contains an opening 51. The valve member 50 is operated by means of a lever 52 whose lower end enters a slot 53 in the valve member. The lever 52 is fulcrumed on the casing 10 at 53. The upper end of the lever 52 is connected by a rod 54 with an arm 55 projecting from a short shaft 56 which extends through the top of the casing 10. An operating arm 57 extends from the shaft 56 above the top of the casing 10.

It is apparent from the arrangement described that by moving the end of the operating arm 57 the valve member may be made to slide in the way 47 so as to bring its opening 51 into and out of alignment with the discharge opening 31 of the pump casing. When the arm is moved to the left to position the valve member as shown in Fig. 2, the valve member 50 cuts off the discharge opening of the pump casing. When the valve is thus closed while the pump is in operation, some of the water forced into the

tangential portion 32 of the casing by the impeller leaks out through the way 47 under the valve member 50. As, however, the valve is submerged in the water in the tank 12, the water which comes out under the valve member does not agitate the upper surface of the water in the tank.

But it is only a small portion of the water normally discharged out of the pump that passes out through the way 47 under the valve member 50 when the valve is closed. It has been found that the rotation of the impeller, when the discharge is thus cut off, results in drawing water into the pump casing through the lower portions of the openings 38 and 42, and projecting this water outwardly and upwardly through the upper part of these openings.

In order to prevent the water thus discharged from the upper part of the opening 38 from causing an agitation on the surface of the water in the tank, a curved deflector 60 is secured to the upper edge of the pump casing. This deflector extends from the pump casing to the back wall of the tank 12 and thus effectively prevents water discharged through the upper part of the opening 38 from reaching the surface of the water in the tank. The deflector is secured to the pump casing by screws 61 which pass through elongated slots 62 in the deflector so as to permit such adjustment of the deflector as will bring its inner end tightly against the back wall of the tank 12.

A deflector 65 is provided to prevent the water thrown out through the upper portion of the opening 42 from reaching the upper surface of the water in the tank. The deflector 65 has a flange 66 which is secured to the front of the pump casing by the bolts 41 which hold the ring 40, and a semi-cylindrical portion 67 which extends around the upper side of the bearing 35. It is apparent that this deflector serves to direct the water discharged to the upper part of the opening 42 in a horizontal direction so that it causes no agitation at the surface of the water in the tank.

In the operation of the washing machine provided with the apparatus embodying the invention which has been described, the motor and pump are allowed to operate continuously. During each rinsing operation and during the removal of the washed dishes and the introduction of soiled dishes, the arm 57 is placed in a position shown in Fig. 2, so that no wash water is supplied to the rotary projectors 18. During the washing, the arm 57 is moved to the right (Fig. 2), sliding the valve member 50 to the position shown in Fig. 5, so that the pump forces water into the standpipe 17 and the projectors 18. Upon moving the arm 57 to the left, or to the right, the water is cut off from the projectors 18, or supplied to them, instan-

taneously. The waste of time formerly involved in stopping and starting the pump and motor is, thus, altogether eliminated. In consequence, the number of dishes or

flow outlet thereof and said portion containing a transverse slot extending therethrough, and a loose fitting cut off valve mounted in said slot.

5 other articles which may be washed in a given period of time is materially increased. It will be apparent to those skilled in the art that the cut off and deflecting elements illustrated in the drawings may be modified to adapt them to washing machines differing in construction from that illustrated. It should be understood, therefore, that the invention is by no means limited to the particular form and arrangement of parts

4. The combination with a dish washing machine having a dish chamber containing a wash water projector and a rinse water projector, a tank located at the bottom of the dish chamber, an overflow outlet for said tank, a centrifugal pump located in said tank below said overflow outlet and having a central intake opening and a tangential discharge opening, and a conduit leading from the discharge opening of the pump to the wash water projector, of a cut off valve in said conduit, and a deflector projecting outwardly from the casing of the pump above its intake opening.

15 What is claimed is:

1. The combination with a dish washing machine having a dish chamber containing a wash water projector and a rinse water projector, a tank located at the bottom of the dish chamber, an overflow outlet for said tank, a pump having an intake opening in communication with said tank and a discharge opening, and a conduit leading from the discharge opening of the pump to the wash water projector, of a cut off valve in said conduit, and means for preventing the water forced out of the pump when the cut off valve is closed from agitating the surface of the water in the tank.

5. The combination with a dish washing machine having a dish chamber containing a wash water projector and a rinse water projector, a tank located at the bottom of the dish chamber, an overflow outlet for said tank, and a centrifugal pump located in said tank below said overflow outlet and having a central intake opening in each side of its casing and a tangential discharge opening, of a conduit leading from the discharge opening of the pump to the wash water projector and containing a transverse slot located below the overflow outlet of the tank, a loose fitting cut off valve mounted in said transverse slot, and deflectors projecting outwardly from the casing of the pump above its intake openings.

2. The combination with a dish washing machine having a dish chamber containing a wash water projector and a rinse water projector, a tank located at the bottom of the dish chamber, an overflow outlet for said tank, a pump having an intake opening in communication with said tank and a discharge opening, and a conduit leading from the discharge opening of the pump to the wash water projector, of a cut off valve in said conduit, and means for directing the water forced out of the pump when the cut off valve is closed into the body of water in the tank below the surface thereof and in a direction toward a part of the tank below said surface.

6. The combination with a dish washing machine having a dish chamber containing a wash water projector and a rinse water projector, a tank located at the bottom of the dish chamber, an overflow outlet for said tank, a centrifugal pump having a rotary impeller and a casing having one of its sides secured to one of the walls of said tank in spaced relation thereto and having a central intake opening in said side and having a tangential discharge opening, and a conduit leading from the discharge opening of the pump to the wash water projector, of a cut off valve in said conduit, and a deflector extending from the pump casing to the wall of the tank to which said casing is secured and lying above said intake opening of the casing.

3. The combination with a dish washing machine having a dish chamber containing a wash water projector and a rinse water projector, a tank located at the bottom of the dish chamber, an overflow outlet for said tank, and a pump having an intake opening communicating with said tank and a discharge opening, of a conduit leading from the discharge opening of the pump to the wash water projector and having a portion located within the tank and below the over-

In testimony whereof I have hereunto set my hand.

HENRY R. MERSELES.