B. S. McCUTCHEN.

WASHING MACHINE.

APPLICATION FILED OCT. 5, 1920.

1,433,216.

Patented Oct. 24, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

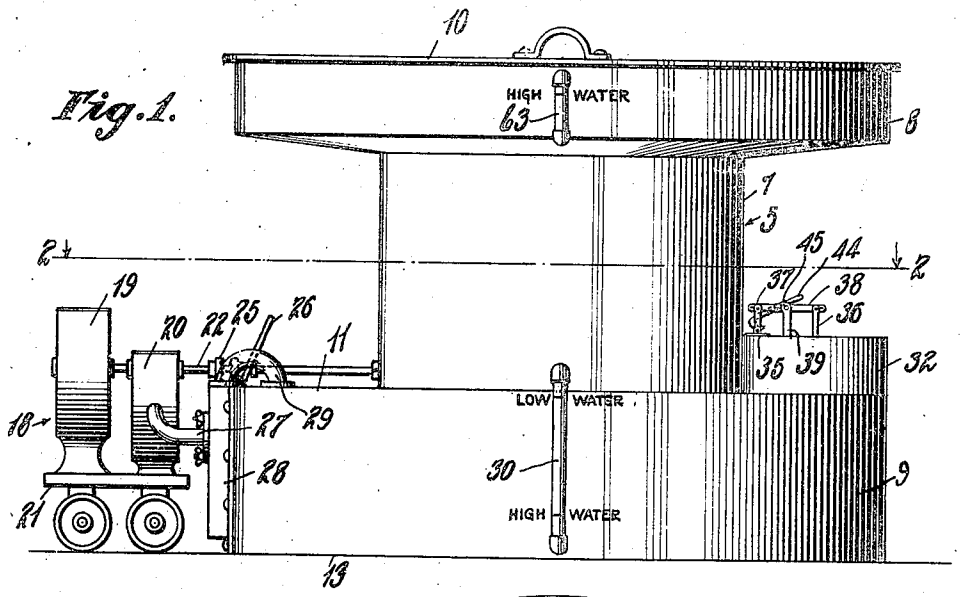


Fig. 2.

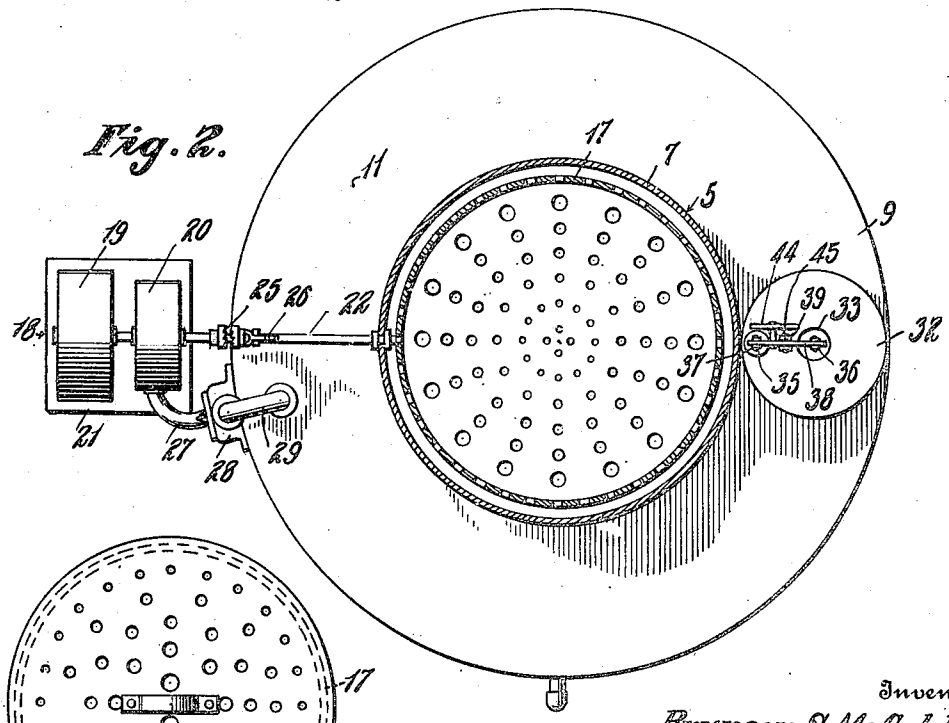


Fig. 5.

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2 SHEETS—SHEET 2.

Fig. 3.

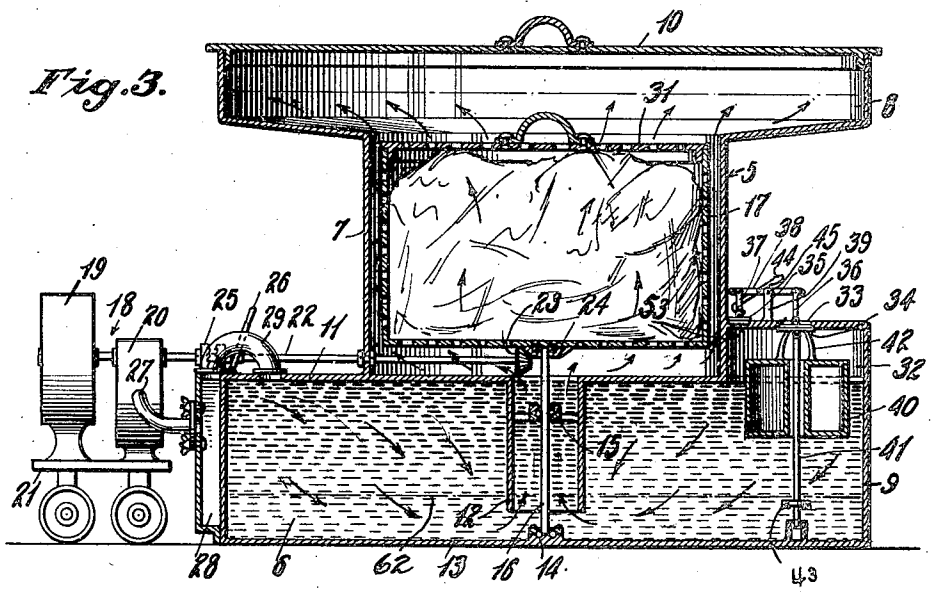
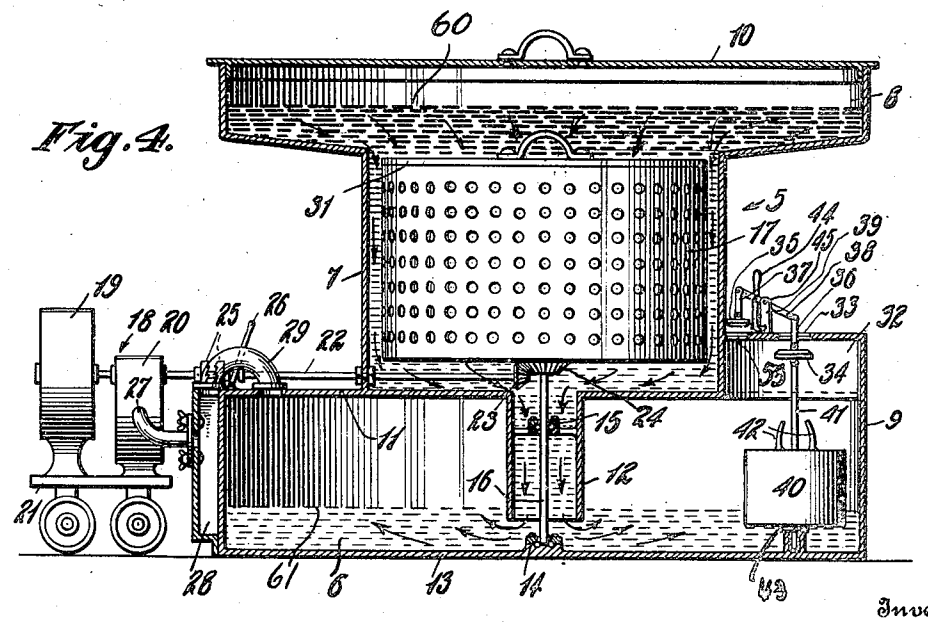


Fig. 4.



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UNITED STATES PATENT OFFICE.

BRUNSON S. McCUTCHEN, OF PLAINFIELD, NEW JERSEY.

WASHING MACHINE.

Application filed October 5, 1920. Serial No. 414,883.

To all whom it may concern:

Be it known that I, BRUNSON S. McCUTCHEN, a citizen of the United States of America, residing at Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Washing Machines, of which the following is a specification.

The object of my invention is to provide a compact simple and efficient form of motor power operated washing machine designed to both wash and dry domestic laundry.

Another further object of my invention is to provide means for alternately forcing soapy water through and draining the same from the clothes.

A still further object of my invention is to provide a pump for circulating the soapy water, which can at will be converted into a motor for operating the drier.

Other and further objects will be in part described and in part apparent as the description is proceeded with.

In the accompanying drawings forming part of this specification:

Figure 1 is a side elevation of my invention;

Figure 2 is a horizontal sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a longitudinal vertical sectional view showing the relief valve closed and water being forced upwardly through the rotary clothes container;

Figure 4 is a view similar to Figure 3 but showing the valve open and the water draining back through the clothes container; and

Figure 5 is a plan view of the rotary clothes container.

Referring more particularly to the drawings wherein like reference numerals refer to corresponding parts throughout the several views 5 designates a sheet metal watertight tub or container adapted to contain a soapy water or other suitable washing fluid 6. This container, which is preferably cylindrical in shape is formed with an intermediate constricted portion 7 communicating with the upper and lower enlarged portions or chambers 8 and 9 respectively, the former being provided with a removable lid or cover 10. The top wall 11 of the lower chamber 9 extends inwardly beyond the wall of the constricted portion 7 and is formed with a depending tubular member or passage 12, the lower end of which terminates a short distance above the bottom wall 13 of the container 5, said bottom 13 also forming the bottom of the lower chamber 9.

Mounted in bearings 14 and 15 formed respectively in the bottom 13 and the tubular member 12 is a vertical shaft 16 which carries a perforated clothes container or basket 17 arranged in the constricted intermediate portion 7 in spaced relation to the sides or walls thereof. The clothes container may be utilized as a drier when driven from a power unit 18, comprising a motor 19 and blower 20 mounted upon a portable wheeled base 21, the motor being connected to the clothes container or drier through the medium of a horizontally disposed power shaft 22 having a bevel gear 23 in mesh with a corresponding bevel gear 24 on the vertical shaft 16. A clutch 25 operable by means of a hand lever 26 permits of the motor shaft being connected to or disconnected from the clothes container at will. The blower 20 is connected through a pipe or the like 27 to a small air compartment 28 in turn positioned at one end of the lower chamber 9. An elbow 29 places the top of the air compartment 28 in communication with the top of the lower chamber of the tub 5 for a purpose presently to be described.

Assuming that a washing fluid such as soapy water indicated as at 6 has been poured into the tub 5 until the water rises to the level indicated by the words "Low water" in Figure 1, this level being determined by means of a sight glass 30. The clothes to be washed are then placed in the basket 17 and the covers 10 and 31 of the tub and basket respectively closed, due care being taken to see that the centrifugal drier drive clutch 25 is in inoperative position before starting the motor 19. It might here be noted that the chamber 9 is formed with a valve housing 32 having openings 33 and 53 in which are adapted to seat balanced valves 34 and 35 connected by links 36 and 37 to a walking beam 38 in turn pivoted to a support 39 on the valve housing. When the chamber 9 has been filled the float 40 slidably mounted on a rod 41 pivotally connected to the valve 34 is caused to rise until the fingers 42 on the float engage and raise the valve 34 to closed position, it of course being obvious that the closing of the

valve 34 automatically causes the valve 35 to lower to closed position. If the motor is now started, rotation of the shaft, 18 which operates the blower will cause air to be forced from the blower into the air compartment 28 and through the elbow 29 to the top of chamber 9. As the air is forced into this chamber the displaced water or washing fluid is expelled up through the passage 12, and through the clothes in perforated container or basket 17. At the completion of this part of the cycle of operation, the water or washing fluid will have risen until it reaches the level indicated by the "High water" mark indicated on the sight glass 63 mounted on the chamber or enlargement 8. At the same time the water level in chamber 9 will have fallen until it reaches its corresponding level also indicated as "High water" mark on sight glass 30, these levels also being clearly shown in full lines in Figure 4 as at 60 and 61 and in dotted lines Figure 3 as at 62, the full lines Figure 3 showing the water level after the tub has been "filled" but before the motor has been started. As the level of the water falls in chamber 9, the float 40 descends on its guide rod 41 until it rests upon the stop 43 fixed to the lower end of the rod, whereupon the float will of its own weight cause the valves 34 and 35 to open in an obvious manner, thus providing an escape for the air in the chamber 9 and permitting the washing fluid to surge back or down through the clothes until it reaches its original or Figure 3 level. The float at this time will have risen to its Figure 3 position thereby closing the valves, and as the blower continues in operation during the interval between opening and closing of the valves, the cycle is repeated. This surging of water back and forth through the clothes results in a most thorough cleansing action without injury to even the most delicate fabrics.

It will of course be understood that the relative sizes of the valves 34—35 and their respective seats or valve openings 33—53 are so proportioned that they will normally be maintained in closed position by the air pressure within the container, but will open when the weight 40 descends and enables the inwardly opening larger valve 34 to overcome the air pressure from within the container.

When the clothes have been thoroughly washed and assuming the water to have fallen to its original or Figure 3 level, the operator throws in the clutch 25 by means of the lever 26, and thereby causes the container or basket 17 to function as a centrifugal drier. During the drying operation the valves 34 and 35 are held open by means of a cam lever 44 pivoted to the walking beam 38 at a point slightly offset from the point of pivotal connection 45 of the latter to the support 39, consequently the surging action of the water, during this operation will be stopped.

Any suitable means (not shown) may be employed for draining the tub.

While I have described my invention as being particularly adapted for washing laundry, it is to be understood that the same can with or without modification be utilized for washing dishes, in which event the centrifugal basket or drier would be used as a container for the dishes.

Having thus described my invention, what I claim is:

1. A washing machine comprising a cylindrical tub adapted to contain a washing fluid, said tub comprising upper and lower chambers and an intermediate restricted communicating chamber, a perforated clothes container in said restricted chamber, and means for causing the washing fluid to intermittently surge upwardly through and around said clothes container into said upper chamber, whereby it falls by gravity downwardly through and around said clothes container into said lower chamber.

2. A washing machine comprising a main container adapted to hold a washing fluid, said container comprising upper and lower chambers and an intermediate chamber communicating therewith, a basket in said intermediate chamber, pneumatic means for intermittently expelling water from said lower chamber upwardly through said basket into said upper chamber, whereby it falls by gravity downwardly from said upper chamber through said basket into said lower chamber.

3. A washing machine comprising a cylindrical tub adapted to contain a washing fluid, said tub comprising upper and lower chambers and an intermediate restricted communicating chamber, a perforated clothes basket mounted in said restricted chamber, a depending tubular passage in said lower chamber terminating adjacent the bottom wall thereof, and means for intermittently forcing the washing fluid upwardly through said tubular passage way, through said perforated basket into said upper chamber whereby it falls by gravity downwardly through said perforated basket and through said tubular passage into said lower chamber.

4. A washing machine comprising a main container adapted to hold a washing fluid, said main container comprising upper and lower chambers and an intermediate communicating chamber, a foraminous basket rotatably mounted in said intermediate chamber, means for intermittently forcing the washing fluid upwardly through said basket into said upper chamber, whereby it falls by gravity downwardly through said

basket into said lower chamber and means for rotating said basket.

5. A washing machine comprising a main container adapted to hold a washing fluid, a conduit in said chamber terminating adjacent the bottom wall thereof, a basket in said main container, a blower and motor therefor, said blower communicating with the lower part of said container whereby when said blower is operated the washing fluid is said lower part of said container will be forced upwardly through said conduit and basket into the upper part of said container, and means for relieving the air pressure in said container whereby the flow of said washing fluid is reversed.

6. A washing machine comprising a main container adapted to hold a washing fluid, and having an upper and lower chamber and an intermediate communicating chamber, a conduit in said lower chamber terminating adjacent the bottom wall thereof, a basket in said intermediate chamber between said upper and lower chambers, a blower and motor therefor, said blower communicating with said lower chamber whereby when said blower is operated the washing fluid in said lower chamber will be forced upwardly through said conduit and basket into said upper chamber, and automatic means for relieving the air pressure in said lower chamber whereby the flow of said washing fluid is reversed.

7. A washing machine comprising a main container adapted to hold a washing fluid, and having an upper and lower chamber and an intermediate communicating chamber, a conduit in said lower chamber terminating adjacent the bottom wall thereof, a basket in said intermediate chamber between said upper and lower chambers, a blower and motor therefor, said blower communicating with said lower chamber whereby when said blower is operated the washing fluid in said lower chamber will be forced upwardly through said conduit and basket into said upper chamber, and automatic means for relieving the air pressure in said lower chamber whereby the flow of said washing fluid is reversed, and means for rotating said basket.

8. A washing machine comprising a main container adapted to hold a washing fluid, and having an upper and lower chamber and an intermediate chamber, a conduit in said lower chamber terminating adjacent the bottom wall thereof, a basket in said intermediate chamber between said upper and lower chambers, a blower and motor therefor, said blower communicating with said lower chamber whereby when said blower is operated the washing fluid in said lower chamber will be forced upwardly through said conduit and basket into said upper chamber, and a valve housing on said lower chamber having openings therein, balanced valves adapted to seat in said openings in normally closed position, and a float valve adapted to open said valves to relieve the air pressure in said lower chamber and cause a reversal of the flow of said washing fluid.

9. A washing machine comprising a main container adapted to hold a washing fluid, a clothes container in said first mentioned container, pneumatic means communicating with said main container for forcing the washing fluid by pneumatic pressure upwardly through said clothes container and means for relieving said pressure whereby the washing fluid will drain back down through said clothes.

10. A washing machine comprising a main container adapted to hold a washing fluid, a clothes container in said first mentioned container, pneumatic means communicating with said main container for forcing the washing fluid by pneumatic pressure upwardly through said clothes container, a valve in said main container, means for opening said valve for relieving said pressure whereby the washing fluid will drain back down through said clothes container and means for locking said valve in open position.

11. A washing machine comprising a main container adapted to hold a washing fluid, a clothes container in said first mentioned container, pneumatic means communicating with said main container for forcing the washing fluid by pneumatic pressure upwardly through said clothes container, a valve in said main container, and automatic means for opening said valve and relieving said pneumatic pressure whereby the washing fluid will drain back down through said clothes container.

12. A washing machine comprising a main container adapted to hold a washing fluid, a clothes container in said first mentioned container, pneumatic means communicating with said main container for forcing the washing fluid by pneumatic pressure upwardly through said clothes container, a valve in said main container, and automatic means for opening said valve and relieving said pneumatic pressure whereby the washing fluid will drain back down through said clothes container, means for locking said valve in open position and means for rotating said clothes container.

In testimony whereof I affix my signature.

BRUNSON S. McCUTCHEN.