

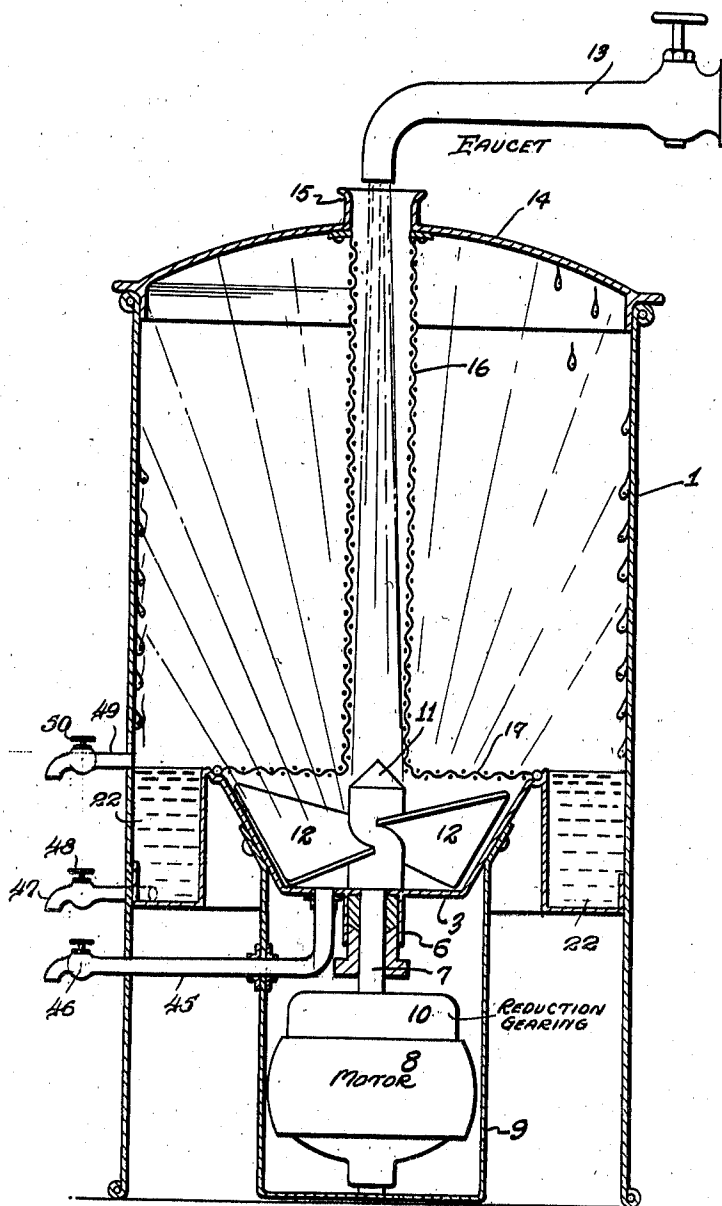
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PORTABLE DISH WASHER AND DRIER

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PORTABLE DISH WASHER AND DRIER

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8 Claims. (Cl. 141—9)

This invention is a portable dish washing machine adapted to set into an ordinary kitchen sink for the automatic washing of dishes by power. The object of the invention is to produce a simple and compact construction which will efficiently wash dishes through the employment of a minimum quantity of water and with low current consumption.

Heretofore it has been the common practice to provide a relatively large body of water adapted to be thrown upon the dishes by an impeller to which water is generally fed from the under side. The water is picked up by the impeller and thrown upwardly upon the dishes, generally draining back into the main body from which it is again fed to the impeller.

The present invention is primarily directed to the utilization of a relatively small well, positioned below the dishes to be washed, and adapted to receive water through the open top thereof. In this well is positioned an impeller, so shaped and formed as to substantially conform to the shape of the well and substantially fill the same, so that in the normal operation of the washer, very little water remains in the well but the water attempting to drain or fall back into the well is immediately engaged by the impeller which again throws it onto the dishes with considerable force. The impeller is thus fed by water from above and during its normal operation is not required to lift an appreciable body of water. By this arrangement the power required for the normal operation of the impeller and the consequent current draw, when electricity is used, is relatively low.

The washer of this invention is particularly adapted to be driven by an electric motor which is mounted in said base of the casing of the apparatus. This motor may, if desired, be mounted upon a detachable cover or it may be mounted on the side of the body of the container or in the base thereof, and it may form a permanent part of the apparatus or may be independently removable when desired to lighten the weight of the apparatus, so that it can conveniently be handled by the housewife. The whole construction is so constituted as to be simple in construction, readily operable by the uninitiated and thoroughly efficient in use.

Features of the invention, other than those adverted to, will be apparent from the hereinafter detailed description and claims, when read in conjunction with the accompanying drawing.

The accompanying drawing illustrates one practical embodiment of the invention, but the construction therein shown is to be understood as

illustrative, only, and not as defining the limits of the invention.

The figure is a vertical section through a portable dish washer embodying this invention, showing the same in cooperative relation to the water faucet of a conventional sink.

Referring to the drawing, it will be noted that the apparatus comprises a casing or vessel adapted to be set into an ordinary conventional sink. Intermediate the top and bottom of the casing is a central well 3 with a peripheral reservoir 22.

The well 3 is shown as of inverted frustoconical form and is provided in the center of its bottom with a stuffing box 6 through which extends a shaft 7 of an electric motor 8. The motor is supported within a water-tight housing 9 and is preferably of the induction type. It may have a direct connection with the shaft 7, if desired, but speed reducing connections are preferably employed, and are contained within a chambered cap 10, as is frequently the case in conventional motors. The purpose of this speed reducing gearing is to drive the shaft 7 at the desired speed and at the same time allow of the use of a relatively high speed motor which will develop appreciable power in a motor of small size. The shaft 7 extends into the confines of the well 3 and has fixed thereto an impeller 11, the blades 12 of which are shaped to closely fit into the confines of the well and are inclined, so that water entering through the top of the well will be thrown upwardly by the blades.

The wall of the well 3 is imperforate except for an outlet drain 45 having a valve 46, and the wall of the reservoir is like imperforate except for an outlet drain 47 having a valve 48. An outlet or overflow 49 is provided at the level of the plane of the top of the well 3 and reservoir and has a valve 50 which may be manually controlled.

Water may be introduced into the apparatus in any one of several ways. As shown, the water is introduced through the top from a conventional faucet 13. To permit of this, the casing has a cover 14 provided with a central opening 15 and a tubular screen sleeve 16 extends downwardly from its central opening and is secured at its bottom to a strainer 17, covering the open top of the well. The screen 16 may, however, be omitted.

The present invention may be operated in various ways depending upon the manipulation of the valves 50 and 48. For example, the valve 48 may be closed and the valve 50 open and water then introduced into the well until it fills the well 3 and reservoir 22 and flows out of the overflow 55

drain 49. The faucet may then be turned off and the valve 50 closed. This will give a predetermined water level with both the well and the reservoir filled. As an alternate mode of operation the valve 50 may be left closed and the valve 48 opened and the water allowed to flow constantly into the well from the faucet 13, while the dishes are being washed as presently described or the valve 48 may be left closed and the valve 50 may be left open while water continues to flow from the faucet during the washing of the dishes. The use of the several valves will allow of the operations which I have referred to.

In use, the dishes are manually packed loosely into the vessel 1, or may be introduced into the vessel in a wire basket in such a way as to be positioned about the tubular screen 16 and the motor is then energized and the impeller 11 caused to operate. The faucet is thereupon turned on causing water to flow downwardly through the tubular sleeve 16, as shown, onto the center of the impeller 11. As this water impinges the impeller blades 12 the rapidly moving blades will throw the water upwardly against the dishes to cause a cleaning thereof. The speed of the impeller, however, may be such that it will throw the water with appreciable force in a not too finely divided condition. It is for this reason that I preferably employ reducing gearing with the motor as stated, for I have found that, in order to obtain satisfactory washing, the water must be thrown in appreciable mass upon the dishes.

The advantage of the construction shown is that this can be accomplished and at the same time the impeller is not required to lift water from below, but simply throws the water which is fed to it from above. With this arrangement, the impeller need not at any time operate within a body of water and consequently a very small and light motor may be used. The water, after impinging the dishes, will drain therefrom.

If both the valves 48 and 50 are closed and the motor turned on the first operation of the impeller will be to clear the well of water and thereafter water will be fed to the well by gravitation from above or by flowing in over the edge of the well from the reservoir 22, as the water drains into such reservoir. The arrangement has the advantage of using a relatively large body of water over and over, while requiring the impeller only to move only a relatively small portion thereof at any one time while the same is in operation.

For rinsing an additional quantity of water may be introduced into the vessel at any time to cause a quantity of the soiled water to overflow through the outlet 49 or the drain 47. The machine may then be further operated to rinse the dishes already washed.

It will be understood that instead of washing the dishes with both of the valves 48 and 50 closed, the valve 50 may be left opened and the water supply from the faucet 13 may be continuous, so that there will be a constant overflow from the reservoir which will tend to keep the water clean by the continual overflow of extraneous matter washed from the dishes.

The advantage of the reservoir is that there is always a body of water available to supply a water feed through the top of the well and into direct cooperation with the impeller without, however, requiring a body of water in the well and in which the impeller must work.

The apparatus which I have described con-

sumes but little power for its operation when normally in use. It may require more power during the starting of the operation in such cases where the impeller must start in a body of water within the well, but after this body has been displaced, following initiation of the operation, the well is practically free from water except for that small quantity that flows continually thereinto to be immediately thrown back upon the dishes by the impeller. In some cases I may desire to include a friction clutch in the connection between the motor and the impeller in order to cushion the motor during sudden starts and until the impeller can pick up speed and attain its proper operating velocity.

One of the outstanding features of this invention, as will be apparent from the foregoing detailed description, is the fact that the well in which the impeller operates is relatively small, and that the impeller substantially fills the well and operates in close conformity to the wall thereof, so that during the normal operation of the impeller, there is no large body of water in the well. The feed of water to the well is from the top so that, when the impeller is operated, it is not required to lift a body of water, but simply throws on to the dishes the water which is fed thereto from its top. The impeller is therefore not subjected to constant heavy duty as in the majority of cases heretofore common in the art, but operates almost under idling condition at normal times.

The foregoing description sets forth the invention in its preferred practical form, but the invention is to be understood as fully commensurate with the appended claims.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. A dish washing machine comprising a vessel provided therein with a horizontally disposed well of inverted substantially frusto-conical form having an open top, a closed bottom and imperforate side wall and centrally spaced from the sides of the vessel by an interposed annular reservoir, an impeller operable within the well and extending into close conformity with the wall thereof to substantially fill the well, and means for operating said impeller to throw water, contained in the well, on to dishes positioned in the vessel above the same and to thereafter maintain the well substantially clear of water by immediately throwing on to the dishes water which drains from the dishes either directly back into the well or overflows from the reservoir into the well.

2. A dish washing machine comprising a vessel provided therein with a horizontally disposed water-tight well having an open top and centrally spaced from the sides of the vessel by an interposed water-tight annular reservoir also having an open top in the same horizontal plane as the open top of the well, an impeller operable within the well and extending into close conformity with the walls thereof to substantially fill the well, and means for operating said impeller to throw water, contained in the well, on to dishes positioned in the vessel above the same and to thereafter maintain the well substantially clear of water by immediately throwing on to the dishes water which drains from the dishes either directly back into the well or overflows from the reservoir into the well.

3. A dish washing machine comprising a vessel provided therein with a horizontally disposed

water-tight well having an open top and centrally spaced from the sides of the vessel by an interposed water-tight annular reservoir also having an open top in the same horizontal plane as the open top of the well, an impeller operable within the well and extending into close conformity with the walls thereof to substantially fill the well, means for operating said impeller to throw water, contained in the well, on to dishes positioned in the vessel above the same and to thereafter maintain the well substantially clear of water by immediately throwing on to the dishes water which drains from the dishes either directly back into the well or overflows from the reservoir into the well, and valved draw-off drains at the base of both the well and reservoir.

4. A dish washing machine comprising a vessel provided therein with a horizontally disposed water-tight well having an open top and centrally spaced from the sides of the vessel by an interposed water-tight annular reservoir also having an open top in the same horizontal plane as the open top of the well, an impeller operable within the well and extending into close conformity with the walls thereof to substantially fill the well, means for operating said impeller to throw water, contained in the well, on to dishes positioned in the vessel above the same and to thereafter maintain the well substantially clear of water by immediately throwing on to the dishes water which drains from the dishes either directly back into the well or overflows from the reservoir into the well, valved draw-off drains at the base of both the well and reservoir, and a valved overflow drain at the plane of the open top of the reservoir.

5. A dish washing machine comprising a vessel provided therein with a horizontally disposed well of inverted substantially frusto-conical form having a water-tight side wall, a closed bottom and an open top and centrally spaced from the sides of the vessel by an interposed annular reservoir having water-tight walls and an open top, the open top of the well and the open top of the reser-

voir in substantially the same horizontal plane which is below the plane of the top of the vessel to provide above the well and reservoir a space within the vessel for dishes to be washed, an impeller within the well, and means for rotating the impeller.

6. A dish washing machine comprising a vessel provided therein with a horizontally disposed well of inverted substantially frusto-conical form having an open top, a closed bottom and im- perforate side wall and centrally spaced from the sides of the vessel by an interposed annular reservoir from which water may flow into the well, and an impeller operable within the well to throw water therefrom on to dishes contained in the vessel above said well and reservoir.

7. A dish washing machine comprising a vessel provided therein with a horizontally disposed well having an open top and centrally spaced from the sides of the vessel by an interposed annular reservoir from which water may flow into the well, an impeller operable within the well to throw water therefrom on to dishes contained in the vessel above said well and reservoir, and a walled passage coaxial with the impeller and extending upwardly therefrom to the top of the vessel and having an open upper end through which water may be fed to and coaxial with the impeller.

8. A dish washing machine comprising a vessel provided therein with a horizontally disposed well having an open top and centrally spaced from the sides of the vessel by an interposed annular reservoir from which water may flow into the well, an impeller operable within the well to throw water therefrom on to dishes contained in the vessel above said well and reservoir, a walled passage coaxial with the impeller and extending upwardly therefrom to the top of the vessel and having an open upper end through which water may be fed to and coaxial with the impeller, and an overflow drain positioned at substantially the horizontal plane of the top of the well.

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