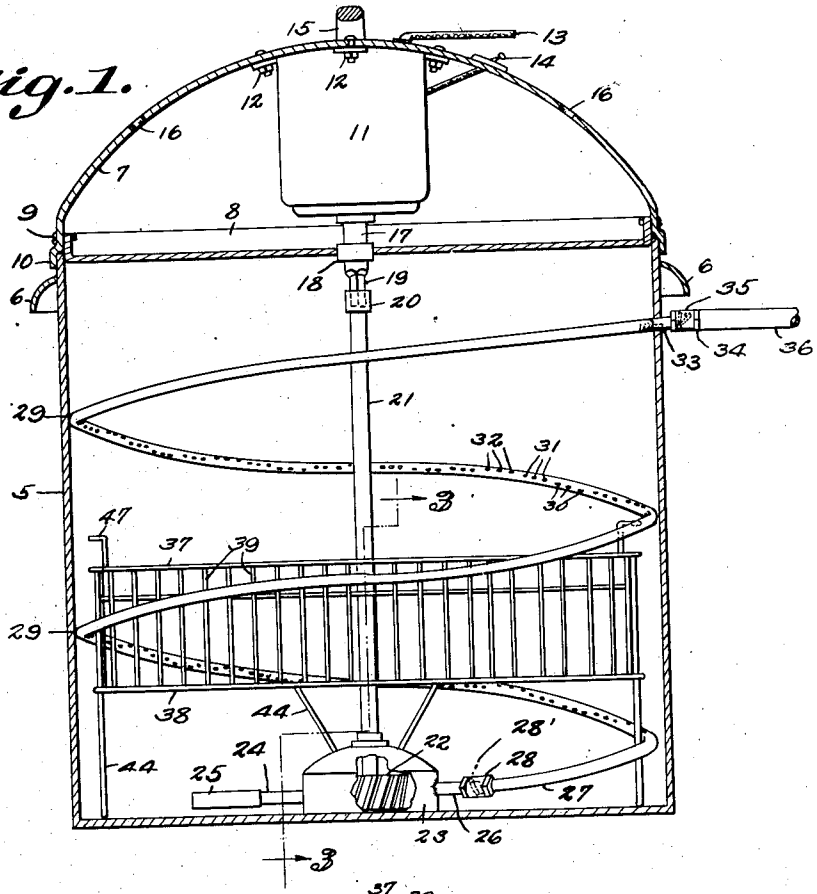
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PORTABLE DISHWASHER

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Fig. 1.



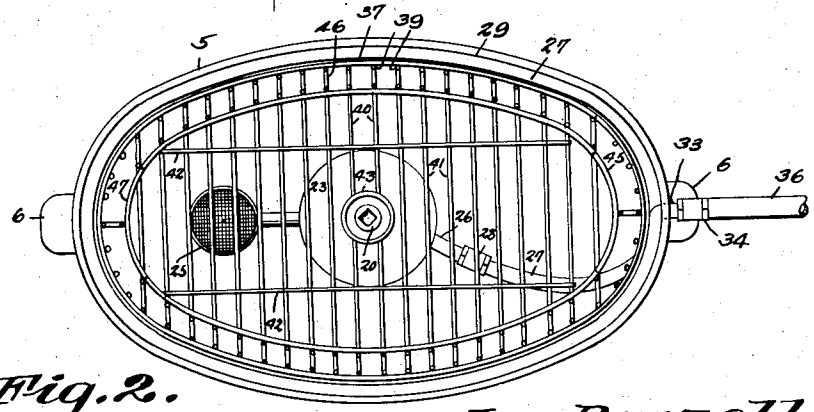


Fig. 2.

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Fig. 3.

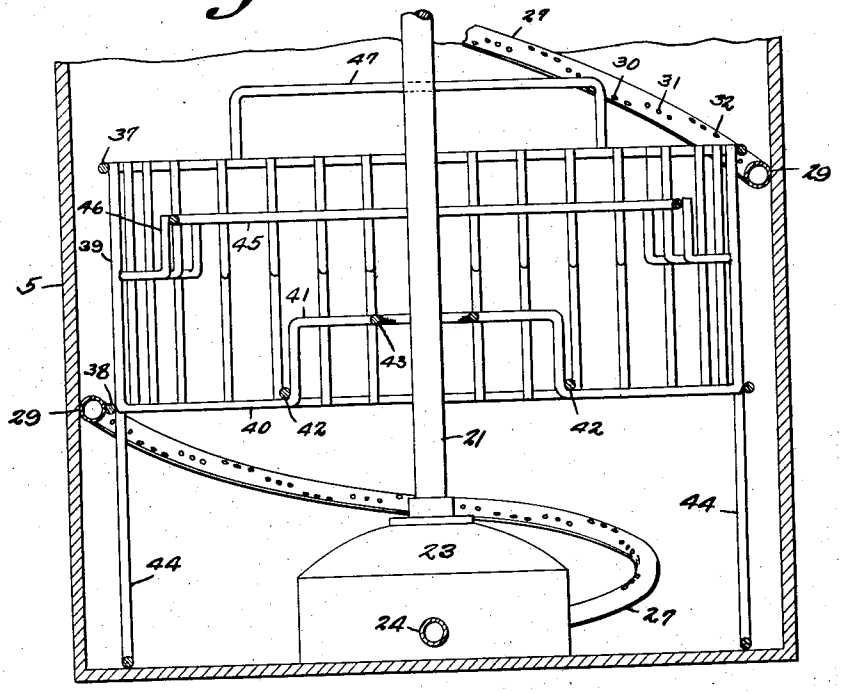
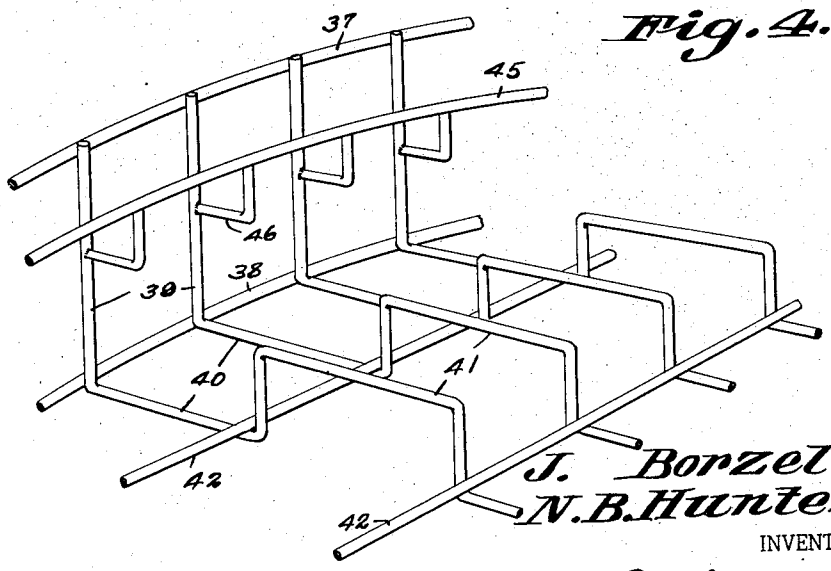


Fig. 4.



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PORTABLE DISHWASHER

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Application October 21, 1947, Serial No. 781,054

2 Claims. (Cl. 134—94)

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This invention relates to dish-washing machines of the portable type.

It is an important object of the invention to provide a machine of the type stated which will be unusually economical both as to the initial cost of the machine itself, and as to the cost of regular operation thereof in discharging its functions.

Still another important object of the invention is to provide a dish washer of the character described that will be fully portable, whereby it can be moved to any place desired with a minimum of effort.

Still another object of the invention is to provide a dish-washing machine which, by reason of the novel design and operation thereof, is adapted to discharge its functions with unusual efficiency, without, however, reducing in any way its economical cost and full portability.

Briefly, the invention embodies a casing containing a motor and a pump, and a spray tube of novel formation and arrangement, disposed along the inner surface of the casing, whereby to direct a cleansing, and a rinsing, spray in an efficient manner upon dishes contained in a special rack, water being forced through the spray tube in one direction for the purpose of cleaning the dishes, and in the other direction for the purpose of rinsing them.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

Referring to the drawings

Figure 1 is a longitudinal vertical section through a dish-washing machine constructed in accordance with the invention, the inner parts thereof remaining in elevation, a portion of a pump housing being broken away to show details of construction.

Figure 2 is a top plan view with the lid removed.

Figure 3 is a view taken substantially on line 3—3 of Figure 1.

Figure 4 is a fragmentary perspective view, on an enlarged scale, showing a portion of the dish rack.

Referring to the drawings in detail, 5 is a tub or casing fully enclosed as to its bottom and fully open as to its top. Preferably, the tub is substantially elliptical in outer conformation when

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viewed in top plan, as clearly shown in Figure 2, this having been found to be the most efficient arrangement for the device. However, as will be apparent from the description to be provided hereinafter, it is not essential to the invention that the tub be elliptical, and it can as well be circular, or of some other shape, without departure from the spirit of the invention.

Handles 6 are fixedly attached to the walls of the tub, to provide ease in carrying it to the point at which it is to be used, or stored away.

A lid 7, preferably of dome-like form, has a bottom plate 8, flanged for attachment by fastening means 9 to the lid. As clearly shown in Figure 1, this construction defines a chamber within the lid 7, for a motor, the mounting of which will be described. When the lid is mounted upon the tub 5 the bottom plate 8, as will be recognized, protects the motor from the damaging effects of steam or water, and additionally, serves to retain the hot steam fully within the tub part of the machine.

The periphery of lid 7 is outwardly and annularly flanged as at 10, and this flange, cooperating with the periphery of the bottom plate 8, defines an annular recess receiving the upper edge of the tub 5, so that the lid 7 and the motor carried thereby will be retained tightly and relatively immovably, upon the tub.

An electric motor is designated at 11, and this is dependingly attached to the under side of the lid by bolts 12 or the like, or by any other means suitable for providing a firm and fixed connection. A cable 13 leads to a house circuit (not shown), to provide power for the motor, and a switch 14 is mounted in a readily accessible position upon the lid.

The lid 7 preferably has a handle 15, and additionally, air vents 16 are formed in the lid, communicating with the motor chamber within the lid.

A short shaft 17 extending from the motor is supported in a bearing 18 mounted in the bottom plate 8 and centrally thereof. The shaft 17 has a squared end 19 which, when the lid is placed upon the tub, is received in a squared socket 20 on the upper end of a pump shaft 21 mounted vertically and centrally in the tub 5. Pump shaft 21 is adapted to rotate pump 22, contained in a housing 23 fixedly mounted, by any suitable means, on the bottom of the tub.

At this point, it is pertinent to note that in the uses of the machine, water is first poured directly into the tub, and surrounds the pump housing, the water being poured to a level above the top

of the pump housing, and an inch or two below the bottom of the dish rack. This operation will be described in more detail hereinafter.

Laterally extended from the side of the pump housing 23, and spaced a slight distance above the bottom of the tub 5, is an inlet pipe 24 for the pump, the free end of which carries a head 25. Head 25 is preferably flattened, and is screened, against the admission of foreign elements into the inlet pipe.

Laterally extended from the opposite side of the housing 23 is an outlet 26, that is connected to the lower end of a spray tube 27 by means of a coupling 28, in which is a check valve 28'. When the pump is in operation, this check valve is adapted to open, so that water may be forced upwardly through the spray tube 27. However, the check valve is adapted to close against water backing up, or being forced downwardly, through the spray tube.

The spray tube 27 may be a suitable length of copper tubing or the like, and this is mounted in a spiral arrangement within the tub 5, as clearly shown in Figure 1. The outer portion of the tube surface is in engagement with the inner surface of the tub throughout the spiral courses of the tube, and can be welded to said inner surface at the points 29, extending the length of the spiral courses, as shown in Figure 2.

The spray tube 27 is adapted to spray water under strong pressure in such a way as to direct the jets against all the surfaces of the dishes or silverware positioned in the rack of the machine. For the purpose of accomplishing this, I prefer to perforate the tube substantially throughout the spiral courses thereof, these perforations being arranged in adjacent rows 30, 31, and 32.

These rows are staggered as best shown in Figures 1 and 3, so that the perforations in row 30 direct jets obliquely and downwardly, those in row 31 direct the jets substantially horizontally, and those in row 32 direct the jets upwardly and obliquely. It has been found that with a spiral arrangement as described, and with perforations formed as indicated, dishes and silverware carried by the rack are exposed to the cleansing action of the jets directed under pressure through the perforations at substantially all the points.

The upper end 33 of the spray tube 27 projects through the wall of tub 5 near the top thereof, and is adapted to receive coupling 34, carrying check valve 35, coupling 34 being also attachable to a length of hose 36, the other end of which (not shown) can be attached to a sink faucet or the like. The check valve 35 is adapted to close against water moving upwardly through the spray tube 27, but opens for water entering the tub through the hose 36.

A removable dish rack is embodied in the invention, this being a wire framework. This rack preferably has upper and lower outer elliptical members respectively designated 37 and 38, and by reference to Figure 2, it is seen that the circumference of these members is slightly less than the circumference of the inner surface of the spirally arranged spray tube 27, so that the rack may be placed in or removed form the tub without contact with the tube, but nevertheless will substantially fill the tub.

The members 37 and 38 are joined by transverse frame members having upstanding ends 39 that extend between the members 37 and 38 as best shown in Figure 4, the transverse members having intermediate portions 40 extending substantially horizontally across the tub, and providing a bottom for the rack. Centrally of the intermediate portions 40 are raised dish-holders 41 between which dishes can be placed in spaced upstanding relation.

Longitudinal frame members 42 provide further support for the framework, and prevent the dishes from falling through the bottom of the rack, as will be readily recognized. Centrally of the rack is provided an open space defined by ring 43, so that the rack may be placed over, without touching, the rotatable pump shaft 21.

Suitable legs 44 are provided for the dish rack, for the purpose of spacing the bottom thereof from the bottom of the tub.

For the purpose of providing a place on the rack in which to deposit silverware, an inner rail 45 of less circumference than the outer rails or frame members 37 and 38, is mounted near the top of the rack, so as not to interfere with the dishes, by means of angular supports 46. As may be readily seen, silverware can thus be deposited on the suports 46, so as to interfere little, if at all, with the space required for the dishes.

At the ends of the rack are provided handles 47, whereby the rack may be raised from or lowered into the tub.

All the parts of the rack are readily bent from lengths of wire material, which are soldered or otherwise fastened together to provide a dish rack as described.

In the use of our dish-washing machine, the machine is readily placed in the position in which it is to be used, and can be, for example, positioned upon a sink drain board or the like. The lid 7 is removed, and water is poured into the tub with, of course, a detergent or soap powder. The amount of water poured in should be enough to keep the head 25 always covered, even when water is within the pump housing and spray tube 27. It is readily perceived from this that only a small amount of water and soap is necessary, therefore, since the amount of water which will be in the spray tube 27 at any time is relatively small. The top level of the water can be substantially below the bottom of the dish rack, and we have found that two to three gallons is entirely sufficient, this being no more than is required for a manual dish-washing. Only a small amount of soap or detergent, it follows, is necessary.

Dishes are next placed in the rack, and the rack lowered into the tub. Lid 7 is then placed upon the tub, and the motor 11 started by switch 14.

If desired, the preliminary steps described above can be varied as follows. Before any water is placed in the tub, the dish rack can be lowered therein, soap sprinkled in the tub, and the sink faucet turned on so as to force water through the hose 36 and downwardly within the spray tube. In this way, the very act of depositing in the tub the necessary amount of cleansing water serves to remove much of the food particles from the dishes before the operation of the machine is even begun.

When the motor is turned on, the soapy water will immediately be drawn through the head 25 and will be forced by the pump 22 upwardly within the spray tube 27. Check valve 28' of course opens, but check valve 35 remains closed, and thus, when the tube 27 is filled with water, cleansing jets will issue under considerable pressure through the perforations 30, 31, and 32.

All the water that issues through the perforations of course returns immediately to the bottom

of the tub, and thus is in continuous use as long as the cleansing action is to be continued. It is by reason of this construction that the small amount of water specified is permitted, and it is further noted that with a small amount of soap, a maximum amount of suds results.

When the dishes and silverware have been subjected to this action for a short time, they can be rinsed. All that is necessary in this connection is to turn off the motor 11, and turn on the sink faucet.

This causes check valve 35 to open and check valve 28' to remain closed. Thus, the hot rinse water is forced downwardly within the spray tube 27 and finds outlet therefrom only through the perforations of the tube. It has been found that this causes the dishes to be quickly rinsed. The rinse water of course adds to the cleansing water now in the bottom of the tub, but since only a small amount of cleansing water was required initially, the level thereof does not rise to the bottom of the dishes.

After the dishes have been washed and removed, the tub is simply turned on its side so that the water may be poured out, and is capable of being readily cleaned either by positioning it under the sink faucet, or by forcing additional water through hose 36.

What is claimed is:

1. A dish washing machine comprising a container having an interior constituting, in its entirety, an undivided washing space; a pump mounted directly upon the floor of said washing space so as to be seated in a body of water deposited in the container, said pump having an inlet submerged below the surface of said body of water; means for driving the pump; a perforated spray tube rising spirally within said container in engagement for substantially its entire length with the inner surface of the container side wall so as to project into said washing space to a minimum extent, said spiral spray tube having perforations on the inside wall of the spiral formed by the tube along substantially the entire length of the tube, said spray tube being connectable at its lower end to the outlet of the pump and at its upper end being adapted for connection to a hydrant; check valves in the opposite ends of the spray tube; and a dish rack substantially filling the cross-sectional area of said washing space and surrounded by said spray tube, the spray tube extending above and below the dish supporting portion of said dish rack, said dish rack including legs supporting the dish rack a substantial distance above the floor of the washing space and the body of water deposited within the container.

2. A dish washing machine comprising a container in the nature of an open tub the entire interior of which constitutes an undivided space in which dishes are to be washed; a lid for said container; a motor mounted in the lid; a pump mounted directly upon the floor of said washing space so as to be substantially submerged within a body of water deposited within the container, said pump having an inlet submerged below the level of said body of water; a pump shaft extending upwardly from the pump through the center of said washing space and having a separable driving connection with the motor; a spirally disposed spray tube extending upwardly within said washing space and in engagement for substantially its entire length with the wall of the container thus to define a clear center space within the container extending from top to bottom and side to side thereof, said spiral spray tube having perforations on the inside wall of the spiral formed by the tube along substantially the entire length of the tube; a dish rack substantially filling said space and surrounded by the spray tube, the spray tube extending above and below the dish supporting portion of said dish rack; and legs on the disk rack supporting the dish rack in elevated position above the level of said body of water.

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