T. HUGGINS.

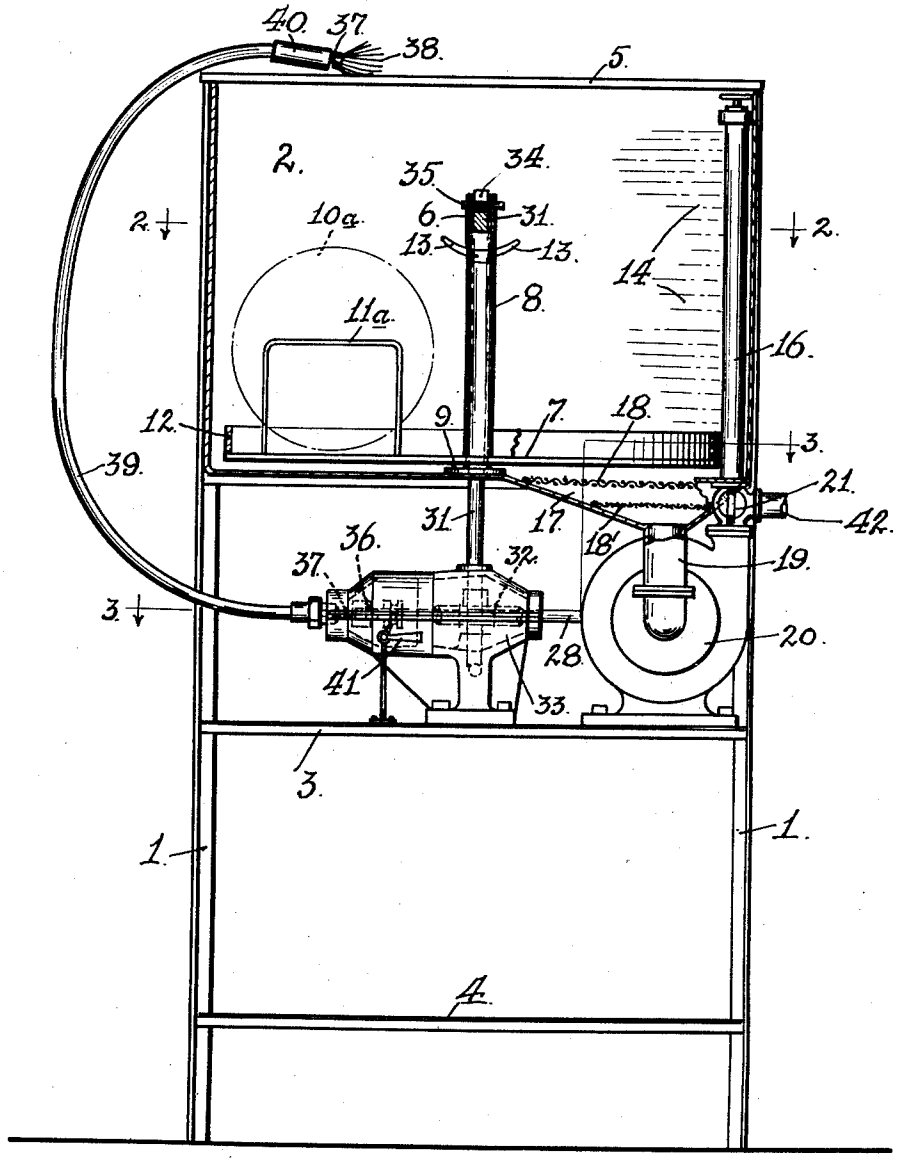
DISH WASHING MACHINE.

APPLICATION FILED SEPT. 23, 1920.

1,382,915.

Patented June 28, 1921.

2 SHEETS—SHEET 1.



WITNESS

Wm. H. Drew

Fig. 1

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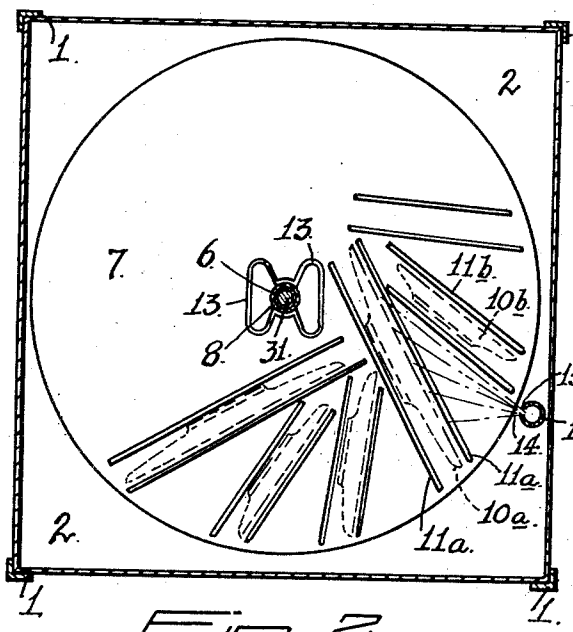


Fig. 2.

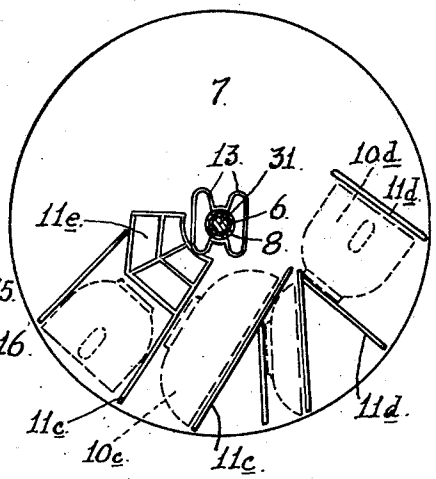


Fig. 4.

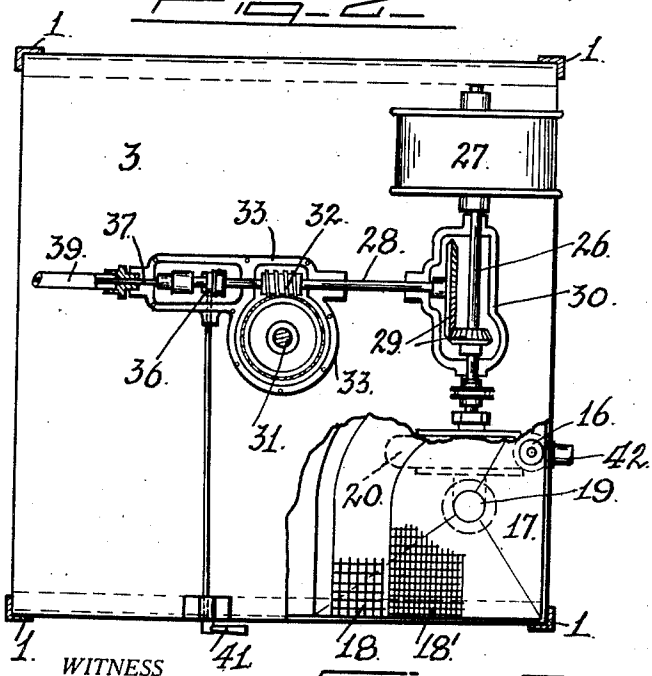


Fig. 3.

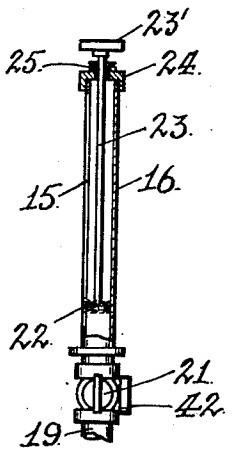


Fig. 5.

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UNITED STATES PATENT OFFICE.

THEODORE HUGGINS, OF OAKLAND, CALIFORNIA.

DISH-WASHING MACHINE.

1,382,915. Specification of Letters Patent. Patented June 28, 1921.

Application filed September 23, 1920. Serial No. 412,170.

To all whom it may concern:

Be it known that I, THEODORE HUGGINS, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Dish-Washing Machines, of which the following is a specification.

My invention relates to machines for washing dishes or other articles of like nature.

The object of my invention is to provide a simple and efficient machine for the described purpose, which is capable of effectually performing its work with a minimum amount of power and water, and whose interior parts are easily accessible for cleaning.

My invention will be hereinafter described, and is herewith illustrated, in its preferred form. It is to be understood, however, that changes may be made in the form and construction of the apparatus, within the scope of the claims hereto appended, without departing in any way from the spirit of the invention.

The invention will now be fully described with reference to the accompanying drawings, wherein—

Figure 1 is a part sectional side elevation of my dish-washing machine.

Fig. 2 is a sectional plan view taken on the line 2—2 of Fig. 1, showing one arrangement of dishes on the dish-holding tray.

Fig. 3 is a sectional plan view taken on the line 3—3 of Fig. 1.

Fig. 4 is a plan view of a second dish-holding tray, showing a different arrangement of dishes thereon.

Fig. 5 is a part-sectional side elevation, enlarged, of the water-jet nozzle.

In the drawings, the reference numerals 1 designate the four corner posts of a frame, preferably rectangular in plan. Said posts 1 support a water-tight tank 2, and below said tank and spaced therefrom, a horizontal deck 3, Fig. 1. A second and lower deck 4 may be provided, to serve both for stiffening the lower end portions of the posts 1, and as a shelf for storage purposes.

The tank 2 is provided with a removable or hinged cover 5, Fig. 1, and a central vertical tube 6 rising from its bottom. The upper end of said tube is open, and its lower end is secured to the bottom of the tank in some suitable manner to form a water-tight joint, as by soldering.

A rotatable circular tray 7, Figs. 1 and 2, having a central vertical tube 8, which fits loosely over the stationary tube 6, is adapted to rest upon a thrust collar 9 surrounding said tube 6. Said tray 7, which is thus rotatably supported within the tank 2, slightly above the bottom thereof, is adapted to hold the dishes to be washed in any suitable manner. In the drawings, I have shown preferred arrangements of said dishes which are designated 10^a, 10^b, 10^c, and 10^d, and are standing on edge on the tray 7, and supported between vertically disposed spaced racks 11^a, 11^b, 11^c and 11^d. An elevated rim or guard rail 12 is also provided around the edge of said tray.

In Fig. 2 of the drawings, I have shown the tray 7 filled with plates or other relatively flat dishes, the racks 11^a being longer than the racks 11^b, so that larger plates 10^a may be placed within said racks 11^a, and smaller plates 10^b within said racks 11^b, in order to conserve space. In Fig. 4 is shown a similar tray 7 adapted for supporting relatively deep dishes, such as bowls 10^c and cups 10^d, said dishes being supported by suitably positioned racks 11^c and 11^d respectively. In addition, suitable racks 11^e are provided for holding cutlery and other small articles to be washed. The racks 11^a, 11^b, 11^c, 11^d and 11^e, Figs. 1, 2 and 4, are preferably constructed of wire, bent to the desired shape and secured to the trays 7 in any well known manner.

Handles 13 are secured to the central tubes 8 of the trays 7, near the upper ends thereof, by which said trays may be lifted into and out of the tank 2. It is intended to provide two or more trays 7 with each machine, so that one tray can be emptied and refilled with dishes while the other is in the tank 2, and the dishes thereon are being washed.

The washing of the dishes upon the tray 7 is accomplished by a jet of water 14, Figs. 1 and 2, in the form of a vertical sheet, issuing from a nozzle formed by a vertical slit 15, Figs. 2 and 5, in a pipe 16 rising from

the bottom of the tank. This jet 14, which issues with considerable force, strikes the dishes at an angle of about 45°, as shown in Fig. 2, as said dishes are carried past the nozzle 15 by the rotation of the tray 7. This angle has been found to give the most rapid and satisfactory results.

The water for the jet 14 is drawn from the tank 2 itself. In one corner of said tank 2 is a sump 17, Fig. 1, in which are screens 18 and 18′, the lower screen 18′ being preferably of smaller mesh than the upper screen 18. From the bottom of the sump 17 a pipe 19 leads to a pump 20, shown in the drawings as a centrifugal pump. The discharge of said pump connects, through a three-way valve 21, with the nozzle pipe 16. The water within the tank 2 is thus circulated by the pump 20.

In order to prevent clogging of the narrow nozzle opening 15, I provide means for cleaning said nozzle comprising a wire brush 22, Fig. 5, carried within the nozzle pipe 16 upon the lower end of a rod 23 which passes through and is slidably mounted in the closed head 24 of said nozzle pipe 16, and is provided with a handle 23′ above said head. Packing 25 is preferably provided to prevent leakage around said rod 23. Thus by moving the rod 23 up and down, the brush 22 is moved along the jet orifice 15, and effectually removes all foreign matter therefrom.

The impeller (not shown) of the pump 20 is mounted upon a shaft 26, Fig. 3, whose other end is connected with the rotor, (not shown) of an electric motor 27. Both the motor 27 and the pump 20 are supported by the deck 3. The motor shaft 26 drives a second shaft 28, preferably at a slower speed, by means of bevel gears 29 inclosed within a housing 30. Said second shaft 28 drives a vertical shaft 31, Figs. 1 and 3, by means of worm gearing 32 inclosed within a housing 33. Said vertical shaft, which is thus rotated at a comparatively low speed, extends upwardly through the vertical tube 6 of the tank 2, and its upper end is slotted, as shown at 34, in Fig. 1, to receive a transverse pin 35 carried by the upper end of the tube 8 of the tray 7. Said tray 7 is thus rotated at a slow speed, preferably about ten revolutions per minute, by the vertical shaft 31, said shaft being rotated by the same motor 27 which drives the pump 20.

The second horizontal shaft 28 carries at its end a clutch mechanism 36, Figs. 1 and 3, by means of which it may be connected with a flexible shaft 37, whose outer end carries a rotating brush or scrubber 38, Fig. 1. A flexible tube 39 surrounds said flexible shaft 37, and carries a handle 40 by means of which the brush 38 may be manipulated for any desired purpose, as for example, cleaning cooking utensils and similar objects. A hand lever 41, Fig. 3, operates the clutch 36 by which said scrubber 38 is controlled.

The three-way valve 21 has an outlet 42, Fig. 1, which is preferably threaded to receive the coupling of a hose (not shown) through which the tank 2 may be emptied. Thus, by opening the three-way valve 21 and starting the pump 20, the water within said tank 2 is pumped out through the outlet 42.

In the operation of the machine, the dishes are placed in a tray 7, and the tray placed in the tank 2, its tube 8 surrounding the tube 6 and the pin 35 engaging the slot 34 in the vertical shaft 31. A small amount of hot water, which may or may not contain soap in solution, as desired, is poured into the tank 2, the cover 5 is closed, and the motor 27 started. The quantity of water used need only be sufficient to fill the sump 17, the pipe 19, the pump 20, and the vertical nozzle pipe 16, as said water is continuously circulated. After the machine has been run a sufficient length of time to clean the dishes, the valve 21 is opened and the dirty water discharged through the outlet 42. Said valve 21 may then be closed, and fresh clear water put into the tank for rinsing the dishes, if desired. When a second tray 7 is used, the first tray can be lifted out of the machine and the second substituted therefor without removing the water, the dishes of both trays being washed in the same water.

I claim:—

1. A dish-washing machine comprising a tank adapted to contain a supply of cleansing fluid, said tank having a fixed central tube rising from its bottom; a dish-holder having a central tube rotatably mounted upon and extending above the fixed tube of the tank; a nozzle within the tank for directing a jet of cleansing fluid upon the dishes in the holder; a pump for circulating the cleansing fluid through the tank and nozzle; a motor; a vertically disposed shaft extending up through the tank bottom and journaled in the fixed tube of said tank, said shaft extending above said tube and having a slotted top; a cross pin secured in the central tube of the dish-holder and removably seated in the slotted top of said shaft; and power transmitting connections from the motor to drive the pump and the vertically disposed shaft.

2. A dish-washing machine comprising a tank adapted to contain a supply of cleansing fluid, said tank having a fixed central tube rising from its bottom; a dish-holder having a central tube rotatably mounted upon the fixed tube of the tank; a nozzle within the tank for directing a jet of cleansing fluid upon the dishes in the holder; a pump communicating on its suction side with the cleansing fluid in the tank and on its discharge side with the nozzle; a motor

having a driving shaft connected with and operating the pump; a counter-shaft driven by the motor shaft; a vertically disposed shaft passing upwardly through the tank bottom and journaled within the fixed central tube of said tank; driving connections between said counter-shaft and the vertically disposed shaft; and a connection between said vertically disposed shaft and the central tube of the dish-holder for rotating said holder.

In testimony whereof I have signed my name to this specification.

THEODORE HUGGINS.