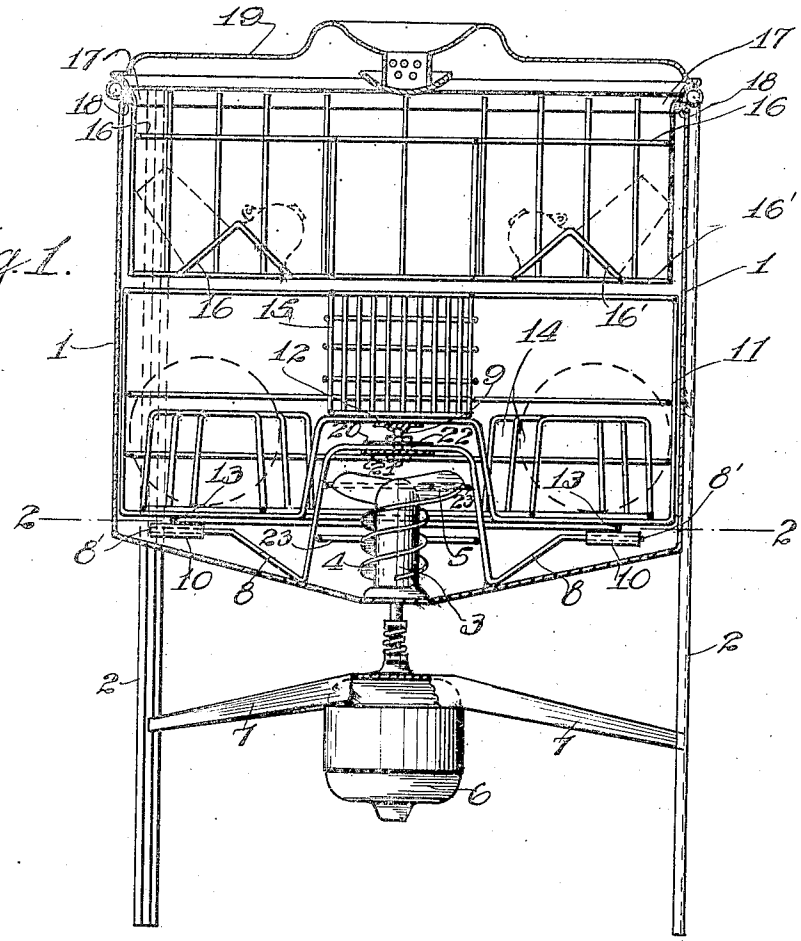
June 20, 1933. E. D. WATT 1,915,079

DISHWASHING MACHINE

Original Filed March 24, 1927 2 Sheets-Sheet 1

Fig. 1.



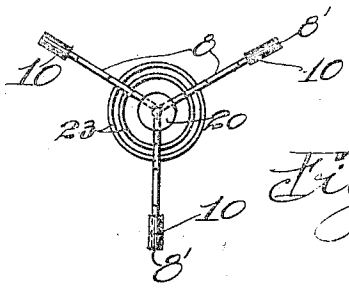


Fig. 2

INVENTOR,
ELIHU D. WATT,
BY Thomas G. Steward
ATTORNEY.

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Fig. 3.

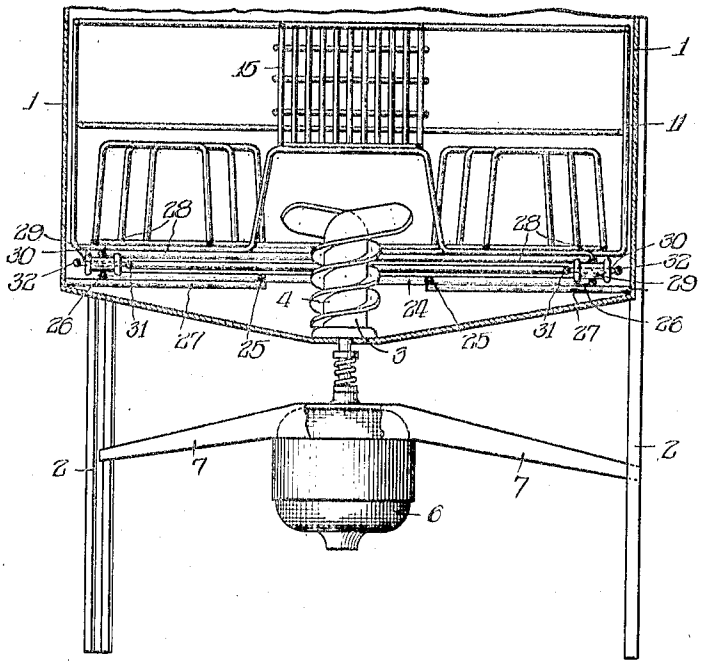


Fig. 4.

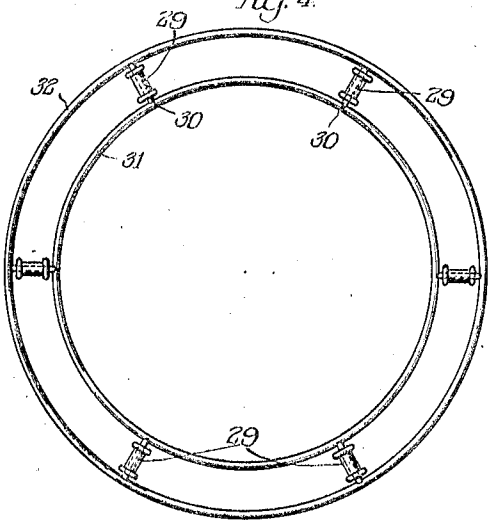
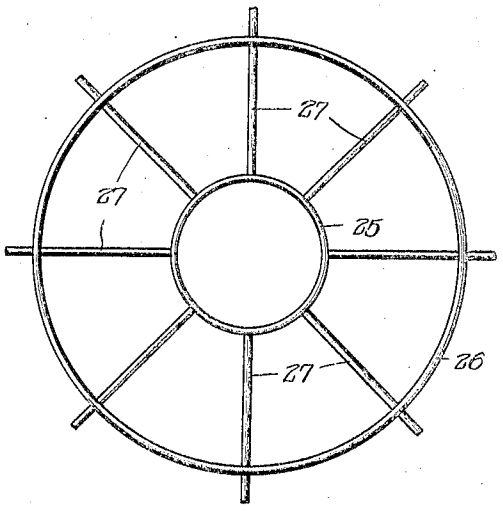


Fig. 5.



Inventor:
Elihu D. Watt,
By Cromwell, Greist & Warden
Attys

Patented June 20, 1933 1,915,079

UNITED STATES PATENT OFFICE

ELIHU D. WATT, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO THE CONOVER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

DISHWASHING MACHINE

Application filed March 24, 1927, Serial No. 178,102. Renewed May 28, 1932.

The invention relates to dish-washing machines, and it includes, not only means for holding and washing table articles, kitchen utensils and other devices, but means for moving these devices relatively to currents of water which are forced against them during the cleansing operations. The means for thus relatively moving said devices may be forceful currents of the water which obliquely impinge upon the devices that are being cleansed, but the nature of the impelling power is immaterial provided the desired relative motion is produced.

The dirty articles are mounted on a revoluble cage which carries said articles progressively through successive circumferential positions, thereby causing streams of cleansing water to impinge upon the surfaces of those devices at different altitudes and ensuring elimination of foreign substances from all portions of said surfaces.

The invention will be better understood if reference be had to the drawings accompanying this specification, in which—

Figure 1 shows a vertical section of the machine, certain parts being shown in elevation;

Figure 2 shows a mounting for the revoluble cage as seen from above, and

Figures 3, 4 and 5 show the details of construction of another mounting for the cage.

1 is the receptacle in which the dish-holding devices are enclosed, and 2 are the legs on which said receptacle is sustained.

3 is an impeller having helical flanges 4 for lifting water from a pool in the bottom of the receptacle, and also having blades 5, constituting continuations of said helical flanges, for forcing or flinging the water upward and obliquely against the articles within the receptacle 1.

6 is a motor, preferably of the electrical type, for driving the impeller 3, and 7 are arms supporting said motor from the legs 2.

Specifically considered, the impeller 3 and the motor 6 are not features of the present invention, although the impeller, regarded as an instrument for obliquely delivering water to the surfaces of the articles being cleansed, is an important element of the combination in the sense that it, in the preferred form of the invention, is, at once, the means for forcing the water to its work and, at the same time, producing rotation of the dish-holding devices.

8 is a spider carrying at its terminals 8′ rollers 10, and at its raised central portion an upstanding pivot bearing 9. This spider rests on the bottom of the receptacle 1, the impeller 3 being accommodated within said raised central portion.

11 is a rotary cage having a raised central portion into which the raised central portion of the spider 8 upwardly extends, and this cage carries at its top a depending socket 12 which receives the pivot bearing 9 to thus form a support on which said rotary cage may freely turn. Adjacent to the margin of the cage is a ring 13 which rests on the roller bearings 10 to prevent tilting of said cage and to render its rotation easy of accomplishment. The impeller 3 is given a very high speed of rotation, and the water is therefore impelled with great force. The energy of the upwardly-moving oblique currents is entirely adequate to rotate the cage and its maximum load even if the rollers 10 are not employed, but the use of these rollers is preferable since friction is thereby lessened and noise reduced to a minimum.

14 are radially disposed pockets for the reception of plates and similar articles, and 15 is a supplemental and circular cage for the reception of spoons, forks and other like implements. This supplemental cage rests upon and rotates with the rotary cage 11.

16 is a stationary cage having racks 16′ for holding cups and glasses in angular positions relative to streams of water which pass through the cage 11, the object being to enable said streams to reach the interior surfaces of said utensils. The outwardly-flared rim 17 of this stationary cage extends over a bead inside the receptacle 1 to thereby sustain said cage in the upper part of said receptacle.

The receptacle 1 has a suitable vented cover which is no part of the present invention.

The pivot bearing 9 may be secured to the spider 8 by discs 20 and 21 which receive

between them the inner ends 22 of the spider arms, said spider arms being united by rings 23, 23.

In the construction shown in Figs. 3 to 5 a spider 24 consisting of an inner ring 25, an outer ring constituting a track 26 and radial arms 27 for uniting said rings, is employed. Said arms 27 extend to the inner surface of the receptacle 1 to thereby center the spider.

The rotary cage 11 has secured to its under side a ring 28 spaced from and coinciding with the track 26, and between said track and said ring are disposed grooved anti-friction rollers 29. These rollers are hollow and are mounted on wires 30 which are sustained by rings 31 and 32. These parts eliminate sliding friction, and thus enable the cage 11 to rotate with maximum ease. This is important since the cleansing operation is rendered most effective if the articles to be cleaned frequently alter their positions relatively to the streams of water impelled against their surfaces.

When the machine is to be operated, water is placed in the receptacle 1 in quantity to reach the level indicated by the line 2—2, Figure 1, the object being to submerge the lower portions of the helical flanges 4 of the impeller 3, leaving the blades 5 above the water level. The water used in the cleansing operation is hot and is charged with a suitable saponaceous agent.

The dishes are then placed in their respective positions within the receptacle 1, and the motor 6 is started, whereupon the screw-threads 4 of the rapidly-revolving impeller 5 lift water from the pool in the bottom of the receptacle 1 and cause it to flow over the blades 5 from which, due to centrifugal action, it is flung with great force against the plates in the pockets 14 and in such relation to their surfaces as to produce rotation of the cage 11 and the supplemental cage 15. These impelling streams of water also clean said plates, and certain portions thereof pass onward through the rotating cages 11 and 15 to reach and clean the dishes held in the stationary cage 16.

The ever-changing positions of the articles carried by the cage 11, ensure impingement of the water upon all portions of said articles, as well as upon the small articles held by the cages 15 and 16.

After the cleansing of the dishes has been accomplished, the dirty water in the receptacle is replaced by clean water, and the dishes are rinsed in a similar manner and allowed to dry.

Having thus described my invention, what I claim is:

1. A washing machine including a receptacle, a rotary rack structure within the receptacle having a ring on its lower surface, a spider open at its center and carrying a ring on its upper surface disposed within the receptacle and anti-friction rollers having grooved peripheries engaging said rings.

2. A washing machine including in combination a receptacle, a spider having a track disposed within the receptacle, spaced rings united by wires constituting axles, rollers mounted on said axles and engaging and resting upon said track, and a rotary rack structure having a ring engaging and resting upon said rollers.

3. A dishwashing machine including in combination, a receptacle adapted to hold a body of liquid, a vertically cylindrical freely rotatable rack mounted therein to turn on a substantially vertical axis and provided with dish holders, and an impeller rotatable on a substantially vertical axis positioned adjacent the bottom of the rack structure, said holders extending below and around the top of the impeller.

4. A dishwashing machine including in combination a receptacle adapted to hold a liquid, a lower rotary rack for holding articles to be cleansed and an upper stationary rack above said lower rack, an impeller positioned in the lower portion of the receptacle adjacent the bottom of the rotary rack adapted to elevate and hurl said liquid against the dishes in the rotary rack, the rotary rack being provided with holders adapted to sustain dishes in position to receive forceful impact of the hurled liquid and deflect some of said liquid onto articles held in the upper rack.

5. A dishwashing machine including in combination a receptacle adapted to hold a liquid, a lower rotary rack rotatable upon a vertical axis for holding the articles to be cleansed above the liquid in the receptacle and an upper stationary rack, an impeller positioned in the lower portion of the receptacle adjacent the bottom of the rotary rack and approximately coaxial therewith adapted to elevate and hurl said liquid against the dishes in the rotary rack, the rotary rack being provided with holders adapted to hold dishes in position to receive forceful impact from the hurled liquid and transmit force therefrom to the rotary rack to rotate it and also deflect some of the hurled liquid through the upper rack.

6. A dishwashing machine including in combination a receptacle adapted to hold liquid, a lower rotary rack for holding articles to be cleansed, an upper stationary rack above the lower rack, and a water actuating device adapted to hurl water into the lower rack, the lower rack being provided with holders adapted to sustain dishes in position to receive forceful impact of the hurled water and transmit force therefrom to said rack to rotate same, said holders arranged also to hold the dishes therein in position such that they

will deflect the hurled water upon the dishes in the upper rack.

7. In a dishwashing machine, a tank, a stationary upper rack, a lower rack rotatable with respect to said upper rack, and a spray-projecting impeller for projecting water consecutively through said racks in the lower portion of said tank, said lower rack being positioned between the spray from said impeller and said upper rack.

8. In a dishwashing machine, a tank, a spray-projecting impeller mounted in the bottom of said tank, a lower dish rack mounted adjacent said impeller and being rotatable by the spray projected therefrom, and an upper stationary dish rack of substantially the same diameter as the diameter of said tank, said lower rack being positioned between the path of spray from said impeller and said upper rack.

In testimony whereof I affix my signature.

ELIHU D. WATT.