

June 20, 1933.

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1,915,162

DISHWASHING MACHINE

Filed March 7, 1931

3 Sheets-Sheet 1

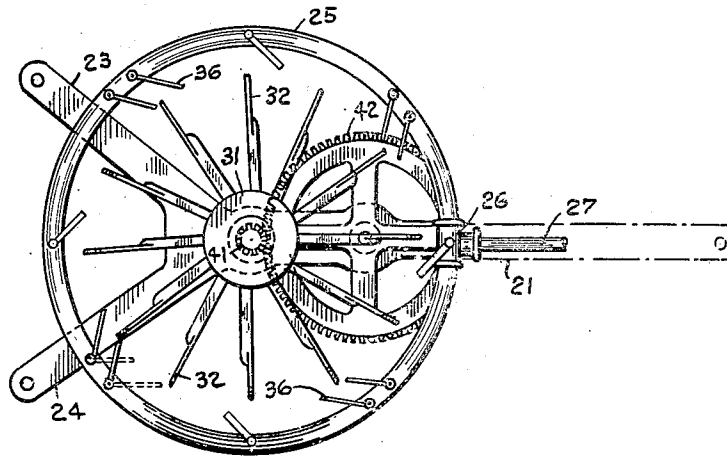


Fig 2

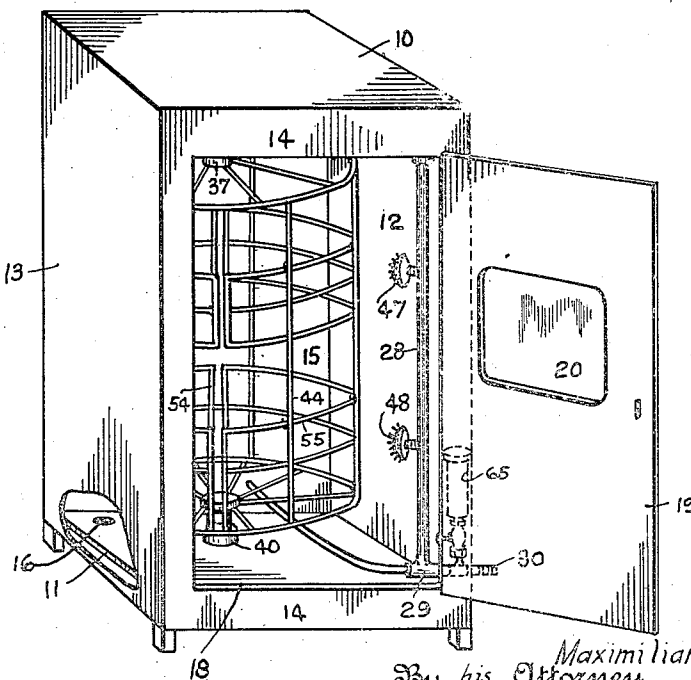


Fig 1

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3 Sheets-Sheet 2

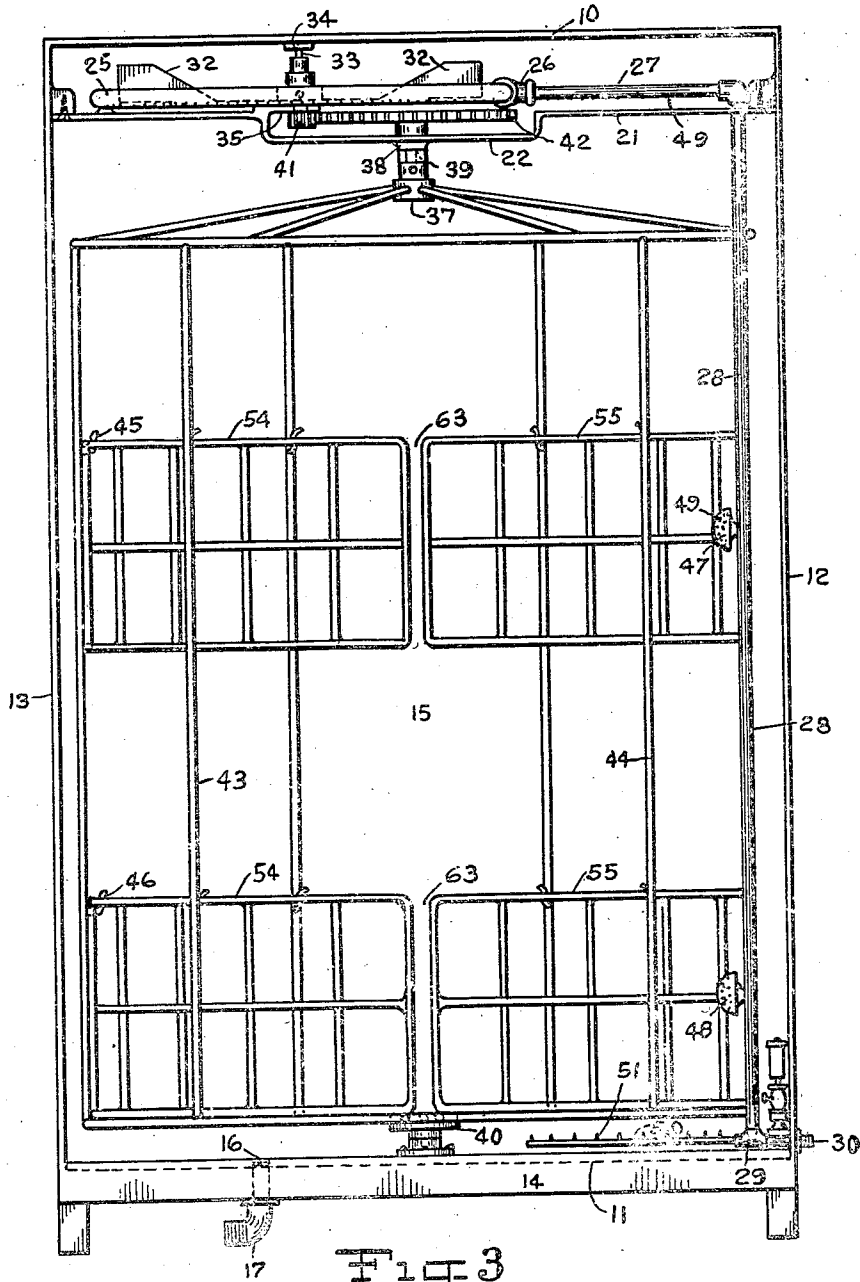


Fig. 3

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3 Sheets-Sheet 3

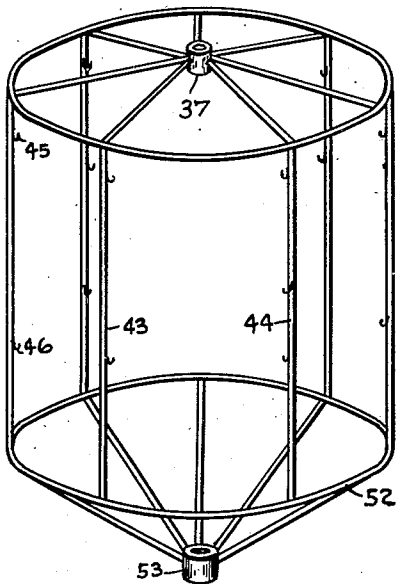


Fig. 4

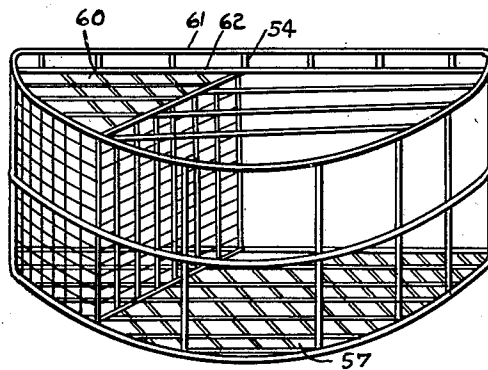


Fig. 5

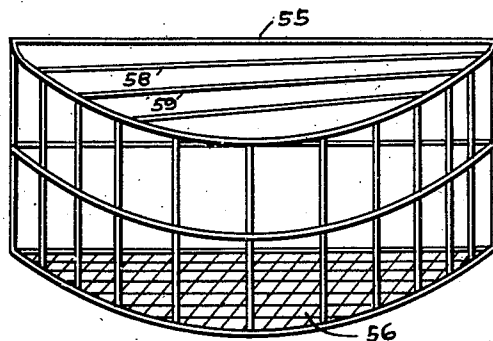


Fig. 6

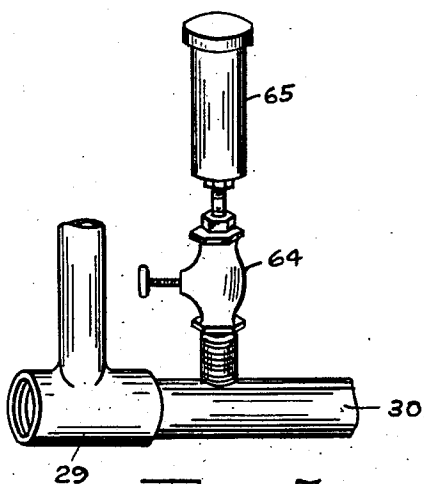


Fig. 7

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# UNITED STATES PATENT OFFICE

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## DISHWASHING MACHINE

Application filed March 7, 1931. Serial No. 520,838.

This invention relates to an improvement in dish washing machines.

The principal object of the invention is to provide a machine of this character in which the motive power to operate the same is supplied by the flow of water simultaneously utilized for the cleaning of the dishes and in which the rotating speed of the dish supporting means is maintained sufficiently low to insure the proper cleaning of the dishes.

The invention also contemplates the utilization of an improved driving mechanism which obviates any manual assistance in starting the device and which insures a substantially constant rotating speed of the dish carrier.

A further object of the invention is to provide a machine of this character which is operable by a relatively small pressure of water and which obviates the need of regulation or adjustment after the machine has been started.

Another object of the invention is to provide a portable dish washing machine so constructed that it may be placed in the sink and connected to the faucet thereof by means of a flexible tubing. If desired the machine may also be maintained in any fixed position in the kitchen and suitably connected for operation to a source of water supply.

A further object is to provide a machine which is simple and positive in operation and in which an improved construction for the rotatable dish carrier is utilized to maintain the dishes in a position which insures a passage of water over their entire surface and thereby facilitate their proper cleaning.

The invention further includes other objects, advantages and novel features of design, construction and arrangement herein-after more particularly referred to and which will be apparent from the accompanying drawings in which I have illustrated the preferred form of the invention.

In the drawings Figure 1 is a perspective view of the improved dish washing machine showing the interior thereof.

Fig. 2 is a detailed plan view of the preferred embodiment of the driving mechanism.

Fig. 3 is an enlarged front elevation of the machine, the front portion of the casing being removed.

Fig. 4 is a perspective view of a modified form of the rotatable basket support.

Fig. 5 is an enlarged perspective view of one of the utensil and dish supporting baskets.

Fig. 6 is an enlarged perspective view of another of the supporting baskets, and

Fig. 7 is a detailed view of the soap dispenser and the control valve therefor.

Referring to the drawings, and more particularly to Figs. 1 and 3, I prefer to illustrate the embodiment of the invention as employed within a suitable casing of any desired shape or dimension. As herein illustrated the casing is constructed in the form of a box having a top wall 10, bottom wall 11, side walls 12 and 13 and front and rear walls 14 and 15 respectively.

The bottom wall 11 is provided with a suitable opening 16 for discharging the soiled water from the interior of the casing. An L connection 17 may be associated with the discharge opening 16 so that a flexible tubing can be connected to the same if desired. The front wall 14 of the casing is open, as indicated at 18, to permit the insertion of the utensil supporting baskets on the rotatable carrier within the machine as will be hereinafter more particularly described.

A door 19 suitably hinged on the side of the wall forms a closure for the opening 18 when the device is in operation. A window 20 is located in the door 19 so that the operator may observe the extent to which the machine has washed the dishes.

Referring more particularly to Figs. 2 and 3, a cross bar 21 is suitably connected to the inwardly extending lugs on the upper portion of the casing. The cross bar 21 is adapted to form a support for the driving mechanism of the machine. An off-set portion of the cross bar 21 is indicated at 22, the purpose of which will be hereinafter more particularly described.

To assure rigidity and firmness in the support the cross bar 21 integrally includes

forked arms 23 and 24 extending from one end thereof as clearly shown in Fig. 2. A hollow annular ring member 25 is suitably fixed in position on the cross bar 21 and arms 23 and 24 thereof.

A connection 26 associated with said ring 25 has an overhead horizontally disposed pipe 27 connected thereto. The pipe 27 is connected to a vertical water supply pipe 28 within the casing which extends substantially to the bottom wall 11. A T connection 29 unites the same with a horizontally disposed pipe 30 extending through an opening in the side wall 12 of the casing. Any suitable means, such as a flexible tubing, may be utilized to connect the end of the pipe 30 to a convenient source of water supply.

Centrally located within said annular ring 25 is a disk member 31 having a plurality of blades extending therefrom, one of which is indicated at 32. The multi-blade disk 31 is rotatably associated with the fixed annular member 25 by means of a shaft 33 suitably journaled in the top wall 10 of the casing as indicated at 34 and in an opening in an extending portion 35 of the cross bar 21.

A plurality of nozzles are suitably located on the annular member 25, one of which is indicated at 36, for directing the flow of water against the blades of the disk 31 to rotate the same. As herein illustrated the nozzles are arranged in groups about the periphery of the member 25 in such a manner that the power transmitted by the flow of water therefrom will exert a continuous effect against each blade of the disk throughout its circular travel. Because of this distribution of effort simultaneously operative against the entire number of blades utilized, the device can be successfully operated by a relatively small pressure of water. As soon as the starting inertia of the rotatable dish support is overcome, a constant speed is maintained without the need of regulation. A further material advantage is obtained inasmuch as manual assistance by the operator in starting the device is obviated.

A rotatable basket support is indicated at 37, the upper portion of which is journaled in the off-set portion 22 of the cross bar 21 as indicated at 38 by means of a shaft 39 suitably connected thereto. The lower portion of the support 37 is journaled in the bottom wall 11 of the casing as indicated at 40. The parallel shafts 33 and 39 are connected by means of a reduction gearing, the pinion on the shaft 33 being indicated at 41. The pinion located on the shaft 39 is indicated at 42. This gearing is located within the off-set portion 22 of the basket 21 to be out of contact with the other moving parts of the driving mechanism. By the use of this reduction gearing the basket support rotates at a sufficiently reduced speed to insure a thorough cleaning of the dishes. While I have illus-

trated the preferred form of the driving mechanism, it is obvious that various modifications and alterations in the form of construction herein used may be resorted to without departing from the nature and spirit of the invention.

The basket support 37 is preferably constructed in the form of a circular frame including vertically disposed rods connecting the upper and lower portions thereof, two of the rods being indicated at 43 and 44. Each rod is suitably provided with a set of inwardly disposed hook members as indicated at 45 and 46 and form a fastening means by which the dish carriers may be firmly mounted therein. The rods 43 and 44 are placed sufficiently far apart to enable the dish supporting members to be placed on the hooks within the basket support. As herein illustrated the basket support 37 provides an upper and lower position for maintaining the dish carriers. It is obvious, however, that the basket support could be constructed to maintain any desired number of dish carriers.

Spray nozzles 47 and 48 are connected to the vertical supply pipe 28 and adjacent to the upper and lower positions of the dish support baskets. The lower surface of the annular ring member 25 and pipe 27 may be provided with a number of pin hole openings therein, one of which is indicated at 49 for directing an overhead spray of water upon the dish carriers.

Also extending from the T member 29 is a suitably located horizontal pipe 50 on the bottom wall 11 of the casing. This pipe may be provided with a number of pin hole openings, one of which is indicated at 51 for directing an upward flow of water against the lower portion of the rotatable basket support. As herein illustrated, a single vertically disposed pipe 28 is located within the casing. If desired, a plurality of such pipes may be utilized in corresponding parts of the casing without departing from the nature and spirit of the invention.

Referring more particularly to Fig. 4, a modified form of the rotatable basket support 37 is illustrated. In this form of the basket the lower circular rim 52 thereof is elevated to a relatively higher position from the bottom wall 11 of the casing than that illustrated in Fig. 3. The lower frame work is formed in a conical shape tapering to an apex at which point an integral bearing 53 is located. The use of such a basket support member facilitates a freer movement of the soiled water in the bottom of the casing in flowing out of the discharge opening 16.

Referring more particularly to Figs. 5 and 6, the preferred form of dish carriers or baskets is illustrated. In this construction the dish carriers comprise basket sections as indicated at 54 and 55, the cross bars on the

upper portion thereof forming maintaining means for holding the dishes in a proper position therebetween. The bases upon which the dishes rest are indicated at 56 and 57.

5 The cross bars, two of which are indicated at 58 and 59, in Fig. 6, are spaced farther apart on one side of the carrier than on the other. The dishes are consequently maintained in the basket in a fan like formation. A portion  
10 of the basket, or carrier, 54, Fig. 5, is suitably provided with a section 60 for maintaining silverware or similar articles therein. Adjacent cross bars 61 and 62 of the carrier 54 form an opening extending across the entire  
15 basket into which may be inserted a large platter or dish. The dish carriers are loaded outside the casing and are adapted to be readily placed on adjacent sides of the basket support 37 on the hooks 45 and 46 provided  
20 therefor. The basket sections 54 and 55 are constructed to provide a suitable clearance as indicated at 63 between their adjacent portions when in position in the support 37. This facilitates the ready insertion or re-  
25 moval of the carriers from the support without interfering with one another.

Referring to Fig. 7, a valve structure 64 is located on the horizontal pipe 30 for controlling communication to the same with a  
30 reservoir indicated at 65 for liquid soap or other suitable cleaning solution. The reservoir and valve are preferably situated adjacent to and within the side wall 12 of the casing. The valve handle for the valve is  
35 situated so that the operator can readily manipulate the same when the door 19 is open. In the operation of the machine the dish carriers or baskets 54 and 55 are first loaded and then placed in position within the sup-  
40 port 37. The valve 64, controlling the flow of cleaning solution, is then opened to any desired degree depending upon the condition of the soiled dishes. After the door 19 is closed, the end of the pipe 30 is suitably connected to the source of hot water supply.  
45 The flow of water and cleaning solution enters the pipes 27, 28, 50 and annular ring member 25 and simultaneously discharges from the spray nozzles 47 and 48, pin hole openings 49 and 51 and from the nozzles 36  
50 of the member 25. The multi-blade disk 31 is rotated by means of the flow of water impinging against the blades. This rotation is transmitted to the basket support 37 through the reducing gears 41 and 42. The relatively  
55 slow rotation of the dish carriers on the support 37 and the fan like arrangement of the dishes facilitates the passage of cleaning solution and water over the entire surface of the dishes as they pass adjacent the spray  
60 nozzles 47 and 48. The soiled water is discharged through the opening 16. After the dishes have been thoroughly cleaned the valve 64 is turned off and the apparatus is  
65 suitably connected to a source of cold water

supply to rinse the dishes and clean the various discharge outlets.

I claim as my invention:

1. A dish washing machine comprising in combination, a casing, a rotatable dish carrying member mounted in a vertical position  
70 therein, a rotatable disk having a plurality of radial blades extending therefrom located in an offset central position in the upper portion of the casing, speed reduction gearing  
75 connecting the disk and dish carrying member, an annular tube member encircling said disk and blades and having thereon a plurality of fluid directing discharge outlets, said tube member communicating with a  
80 source of water supply, the outlets being situated about the periphery of the tube so that water therefrom will impinge upon the entire blade surface of the disk, continuously, upon operation of the machine thereby rotat-  
85 ing the dish carrying member at a constant reduced speed, the water passing from the blade surfaces in a downwardly direction to assist in the washing operation.

2. A dish washing machine comprising in combination, a casing, a rotatable dish carrying member mounted in a vertical position  
90 therein, a vertical pipe within said casing communicating with a source of water supply, spray nozzles connected to said pipe adjacent the dish carrying member for direct-  
95 ing a flow of water across the surfaces of the articles therein, a rotatable disk having a plurality of radial blades extending therefrom located in an offset central position in  
100 the upper portion of the casing, an annular tube member encircling said disk and blades and having thereon a plurality of fluid directing discharge outlets, a horizontal pipe controlling communication between said ver-  
105 tical pipe and annular tube member, the outlets being situated about the periphery of the tube so that water therefrom will impinge upon the entire blade surface of the disk, continuously, upon the flow of water in the ma-  
110 chine, gearing means connecting the dish carrying member and disk by which the dish carrier is rotated at a reduced speed, the water passing from the blade surfaces in a down-  
115 wardly direction to assist in the washing operation.

3. A dishwashing machine comprising a casing, a rotatable dish carrying member, mounted in a vertical position within the cas-  
120 ing, a vertical pipe within said casing communicating with a source of water supply, spray nozzles connected to said pipe adjacent the dish carrying member for directing a flow of water across the surface of the articles  
125 therein, a lower horizontal pipe communicating with said vertical pipe and having a plurality of openings therein for directing a flow of water upwardly, an upper horizontal pipe controlling communication between said  
130 vertical pipe and an annular tube member,

said tube member and pipe having openings for directing an overhead flow of water therefrom, a plurality of nozzles located on said annular tube member, a multi-blade disk rotatably mounted in an offset central position in the upper portion of said casing and encircled by said tube member, the nozzles being arranged about the periphery of the tube so that water therefrom will impinge upon the entire blade surface of the disk, continuously, upon the operation of the machine, gearing means connecting the dish carrying member to said disk by which the same is rotated at a reduced speed, the water passing from the blade surfaces in a downwardly direction to assist in the washing operation.

Signed by me this 20th day of February 1931.

MAXIMILIAN KLAIBER.