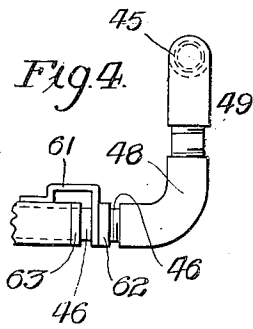
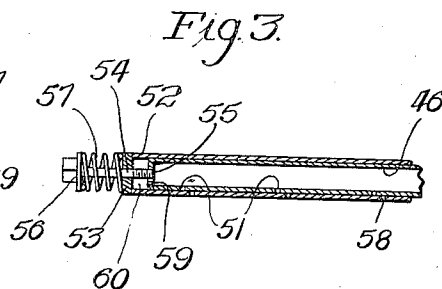
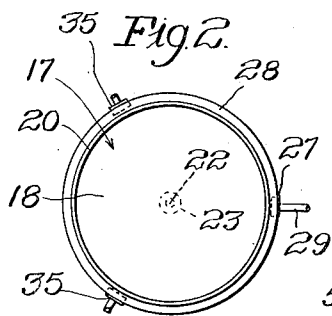
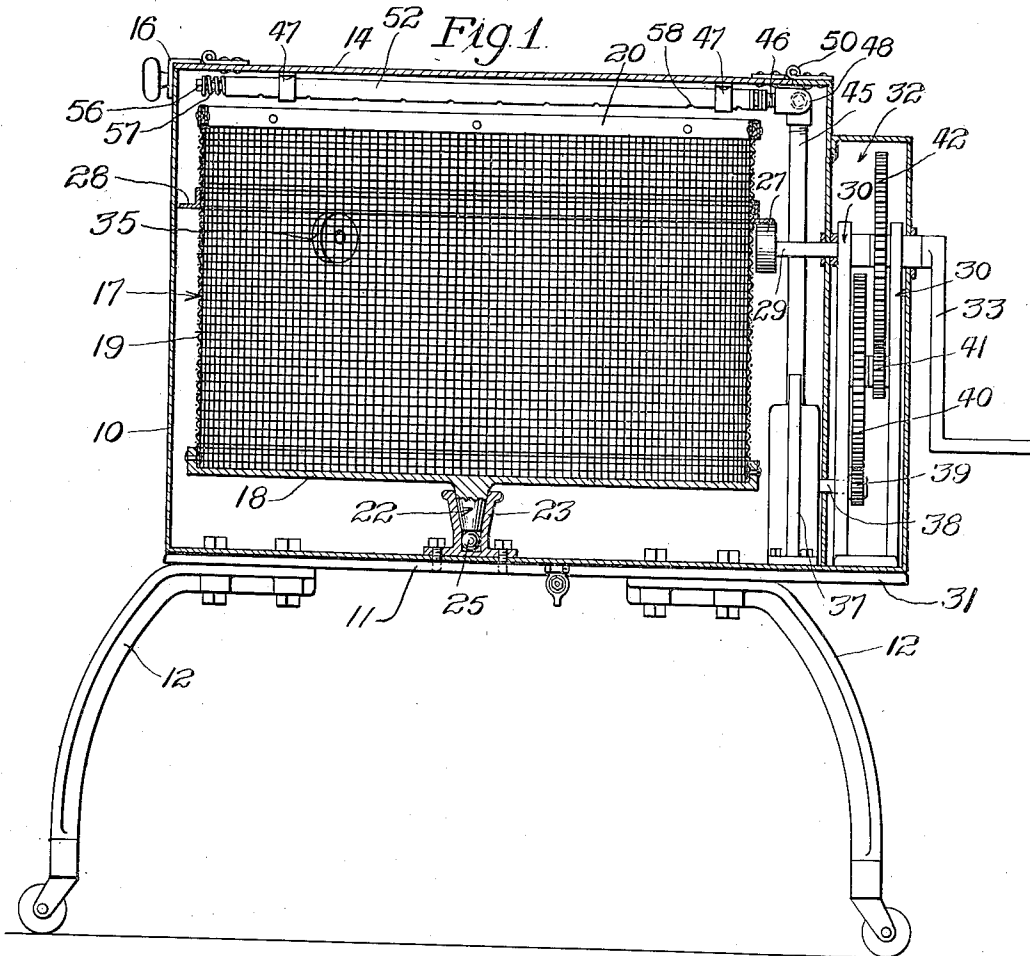


J. T. McGRATH.
DISH WASHING MACHINE.
APPLICATION FILED JUNE 19, 1914.

1,143,217.

Patented June 15, 1915.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN THOMAS McGRATH, OF BLOOMINGTON, ILLINOIS.

DISH-WASHING MACHINE.

1,143,217.

Specification of Letters Patent.

Patented June 15, 1915.

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To all whom it may concern:

Be it known that I, JOHN THOMAS McGRATH, a citizen of the United States, and a resident of Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in Dish-Washing Machines, (Case C;) and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a novel dish washing machine of that kind embracing a casing which contains a dish receiving basket to receive the dishes or other articles to be cleansed and upon which wash water is forcibly discharged to dislodge dirt therefrom, the wash water passing downwardly among the dishes to the bottom of the casing and being again lifted and discharged upon the dishes. Some of the improvements herein shown are adapted more particularly to that type of machine in which water is discharged upon the dishes through a spray pipe suitably connected to a circulating pump within the casing, while other improvements are capable of more general adaptation.

Among the objects of the invention is to provide a machine of this general character which is simple and economical in construction to thereby enable the device to be produced at a cost that will make it feasible for small households, and which may also be used for more extensive work.

A further object of the invention is to provide a machine of this character which may be operated with a comparatively small expenditure of power.

A still further object of the invention is to provide a novel means for rotatively mounting the dish basket in the casing so that by rotation thereof it presents all parts of the basket contents to the wash water discharged thereon, and, further to provide a simple driving mechanism common to and operating both the wash water circulating pump and the basket turning means.

Other objects of the invention are to improve and simplify dish washing machines, and the invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings Figure 1 is a vertical sectional view of a dish washing machine embodying my invention. Fig. 2 is a top plan view, on a smaller scale, of the dish receiving basket. Fig. 3 is a longitudinal detail section of the wash water spray pipe and the controlling valve therefor. Fig. 4 is a fragmentary plan section of the rotative joint between the spray pipe and the fixed pump discharge pipe.

As shown in the drawings, 10 designates the inclosing casing of the washer to receive the wash water. It is mounted on a frame base 11 having supporting standards 12, preferably supported on casters. The top wall 14 of the casing is hinged at 15 to constitute a lid or cover to afford access to the interior of the machine. The said lid or cover is provided with a suitable latch 16 to lock the lid closed. As herein shown, the said casing is made cylindrical in plan view. Arranged within the casing is a cylindrical basket 17 to receive and support the dishes or other articles to be washed. The said basket is herein shown as formed with a rigid bottom wall 18 and a perforate side or inclosing wall 19. It is open at its top and the upper edge of the surrounding wall may be strengthened by a binding strip 20. The said basket is adapted to be rotated within the casing 10 while water is being sprayed thereon. As herein shown the basket is provided with a central bearing stud 22 which is carried by the bottom wall 18 thereof and extends downwardly from the said bottom wall and is seated in a bearing socket 23 which is attached to and extends upwardly from the base plate 11. An anti-friction roller bearing, in the form of a ball 25, is interposed between the bottom of said socket and the lower end of the bearing stud 22. The said bearing stud is herein shown and preferably will be made tapered.

The basket may be rotated in any suitable manner, either by mechanical or manual power. As herein shown, it is rotated through the medium of a roller 27 which engages the under side of an annular rail 28 that is fixed in any suitable manner to and surrounds the basket. The roller 27 is fixed to the inner end of a horizontally rotative shaft 29 that extends through the adjacent side wall of the casing 10 and is mounted to rotate in bearings carried by the upper ends of standards 30, 30 which are supported on

and extend upwardly from an extension 31 of the bed plate 11 and inclosed by a gear chamber 32 at one side of the machine. Said shaft 29 is provided exterior to said gear chamber with a crank 33 by which the shaft and roller 27 are rotated to transmit rotary movement to the basket. If desired the said basket 17 may be further sustained and held from tilting by one or more bearing rollers 35 mounted on studs attached to the wall of the inclosure 10. The said roller 27 is preferably made of or faced by rubber or other friction material to give tractive power to the roller.

The means for delivering water to the basket 17 consists, as herein shown, of a centrifugal pump 37 which is supported within the casing 10 at the bottom thereof and with its inlet opening submerged in the wash water. The driving shaft 38 of the said pump is provided with a gear wheel 39 that is connected through the medium of speed increasing gears 40, 41, 42, supported by the standards 30, with the shaft 29 whereby the pump may be rotated at a suitably high speed to circulate the wash water through the machine.

The eduction pipe 45 of the said pump is connected to one or more spray pipes 46 arranged horizontally over the basket and supported through the medium of suitable hangers 47 on the lid or cover 14. The said spray pipe is connected to the eduction pipe 45 through the medium of a rotative joint 48, of suitable construction, fitted to rotate on an inwardly directed branch 49 of said eduction pipe, whereby the spray pipe may be swung relatively to the stationary eduction pipe when the lid or cover is opened or closed. In a construction where the hinges of the spray pipe and the swinging cover are not co-axial, said spray pipe is movably supported in the hangers 47, or is otherwise movably supported on the cover so as to permit the cover to move relatively thereto when the cover is swung on its hinges. In order to lessen this relative movement, I may hinge said cover to an overhanging ledge 50 of the end wall of the casing, so as to thereby bring the hinge axis of said parts closer together. The said spray pipe is provided with a plurality of relatively small discharge openings 51 at the lower side thereof. The passage of water through said discharge openings may be controlled by a valve mechanism that is so constructed and operated as to maintain the spray pipe closed until a predetermined pressure is induced in same from the pump 37, so that when said pipe is opened to discharge the wash water into the basket, said water is discharged at a considerable pressure. The valve means herein shown is made as follows:

52 designates a sleeve that surrounds and

closely fits upon the discharge or spray pipe 46. The said sleeve is closed at its outer end by an end wall 53.

54 designates a bolt that extends loosely through the end wall 53 of the valve sleeve and is screw-threaded or otherwise attached to the closed end 55 of the spray pipe. Interposed between the closed end 54 of the valve sleeve and a head 56 of the said bolt is a compression spring 57 that acts on said valve sleeve to hold the apertures or ports 58 thereof out of register with the apertures 51 of the spray pipe. The said end wall 55 of the spray pipe is provided with one or more openings 59 which permit water to pass from said pipe into a pressure chamber 60 of the valve sleeve between the end walls of said sleeve and the spray pipe.

In operation, the spray pipe is maintained closed by the spring 57 until the pressure in the spray pipe and the chamber 60, developed by the pump 37, is sufficient to overcome the strength of the spring 57. Thereupon the valve sleeve moves outwardly until the discharge openings 51, 58 of the spray pipe and the valve sleeve, respectively, are brought into register, whereupon the water will be forcibly discharged from the spray pipe upon the dishes in the basket; and the water will be sprayed on the dishes in the basket so long as the circulating pump is operated to maintain the required pressure in said spray pipe. In order to control the range of movement of the valve sleeve I may provide said sleeve at its rear end with a stop arm 61 having a terminal that extends into a space between two shoulders 62, 63, on the spray pipe 46. The said arm, when the machine is not in operation, will rest against the stop or shoulder 62, and the shoulder 63 limits the endwise movement of the valve sleeve so that an increase of pressure within the spray pipe beyond that necessary to bring the spray openings into register will not have the effect to further move the valve sleeve so as to cut off said openings.

In the type of machine herein shown, the basket 17 is rotated continuously while the water is sprayed upon the contents of the basket so as to more uniformly spray the wash water on the dishes within the basket. The pump which receives wash water from the bottom of the inclosure 10 maintains a constant circulation of the water through the machine and over and among the dishes as long as the pump is operated. It, therefore, becomes practical to discharge the water upon the dishes through a single spray pipe arranged diametrically over the basket.

I claim as my invention:—

1. In a dish washing machine, a casing for the wash water, a dish basket therein, a central anti-friction bearing between the bot-

tom of the basket and the casing, a rail surrounding the basket at the upper end thereof and supporting and driving means engaging the lower side of said rail.

5 2. In a dish washing machine, a casing for the wash water, a dish basket therein, a bearing stud depending from the bottom wall of the basket, a fixed socket to receive said stud, an annular member surrounding
10 said basket at its upper side, and a rotative driving and supporting roller engaging the lower side of said annular member.

3. In a dish washing machine, a casing for the wash water, a dish basket therein, an
15 anti-friction bearing between the bottom of the basket and the casing, a rail surrounding the upper end of the basket, a rotative driving and supporting roller frictionally engaging the lower surface of said rail to
20 rotate said basket, a plurality of idle supporting rollers also engaging the lower sur-

face of said rail, and a rotative shaft to which said driving roller is attached, with means whereby it may be rotated.

4. In a dish washing machine, a casing 25 for the wash water, a dish basket therein, a central anti-friction bearing between the bottom of the basket and the casing, a rail surrounding the basket, a rotative driving and supporting roller to engage said rail 30 to rotate said basket, and idle supporting rollers also engaging said rail to steady and support the basket.

In testimony, that I claim the foregoing as my invention I affix my signature in the 35 presence of two witnesses, this 1st day of June A. D. 1914.

JOHN THOMAS McGRATH.

Witnesses:

F. J. BANK,
N. McDERMOTT.