T. E. MURRAY.

MACHINE FOR WASHING DISHES.

APPLICATION FILED OCT. 19, 1914.

1,156,424.

Patented Oct. 12, 1915.

3 SHEETS—SHEET 1.

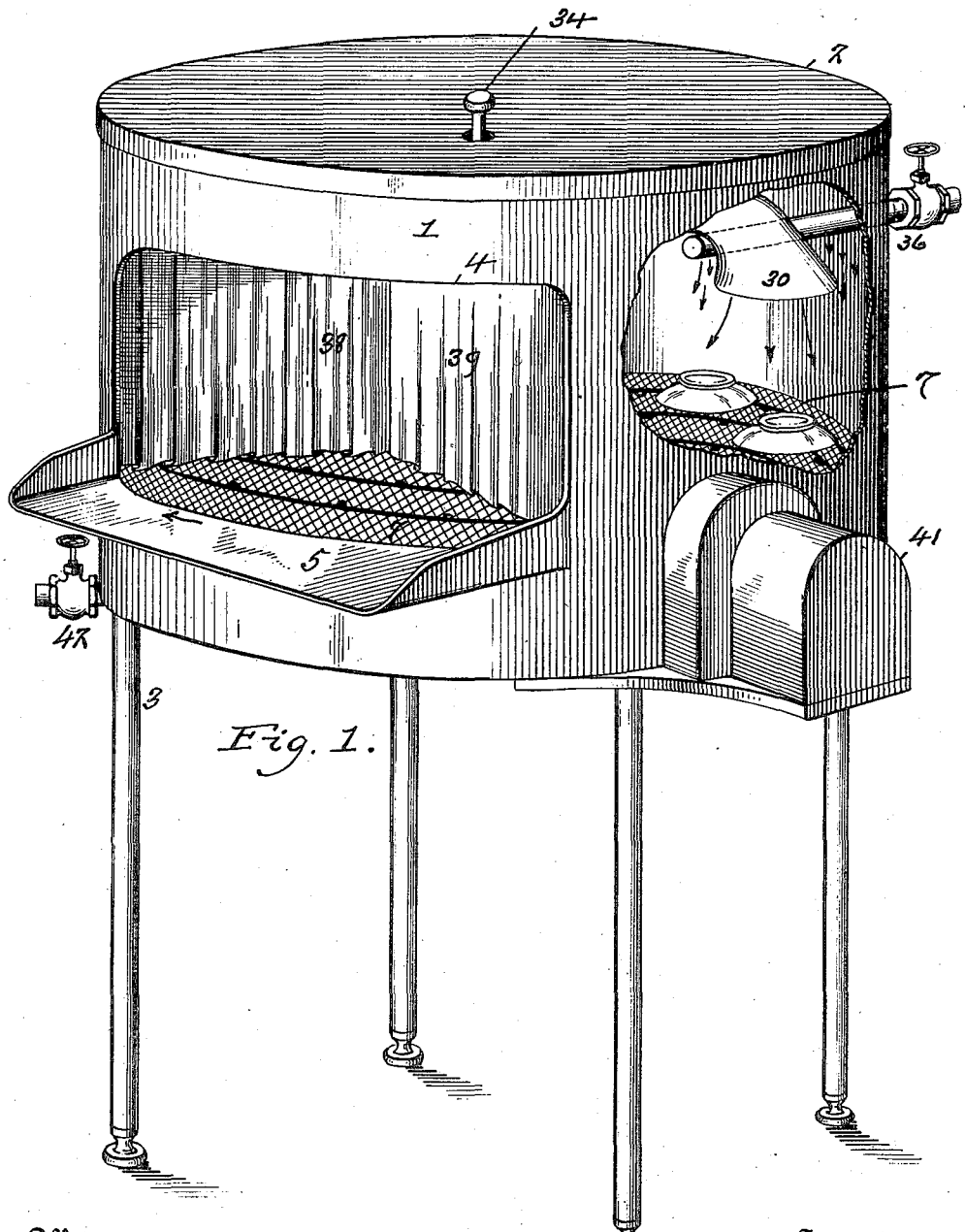

Fig. 1.

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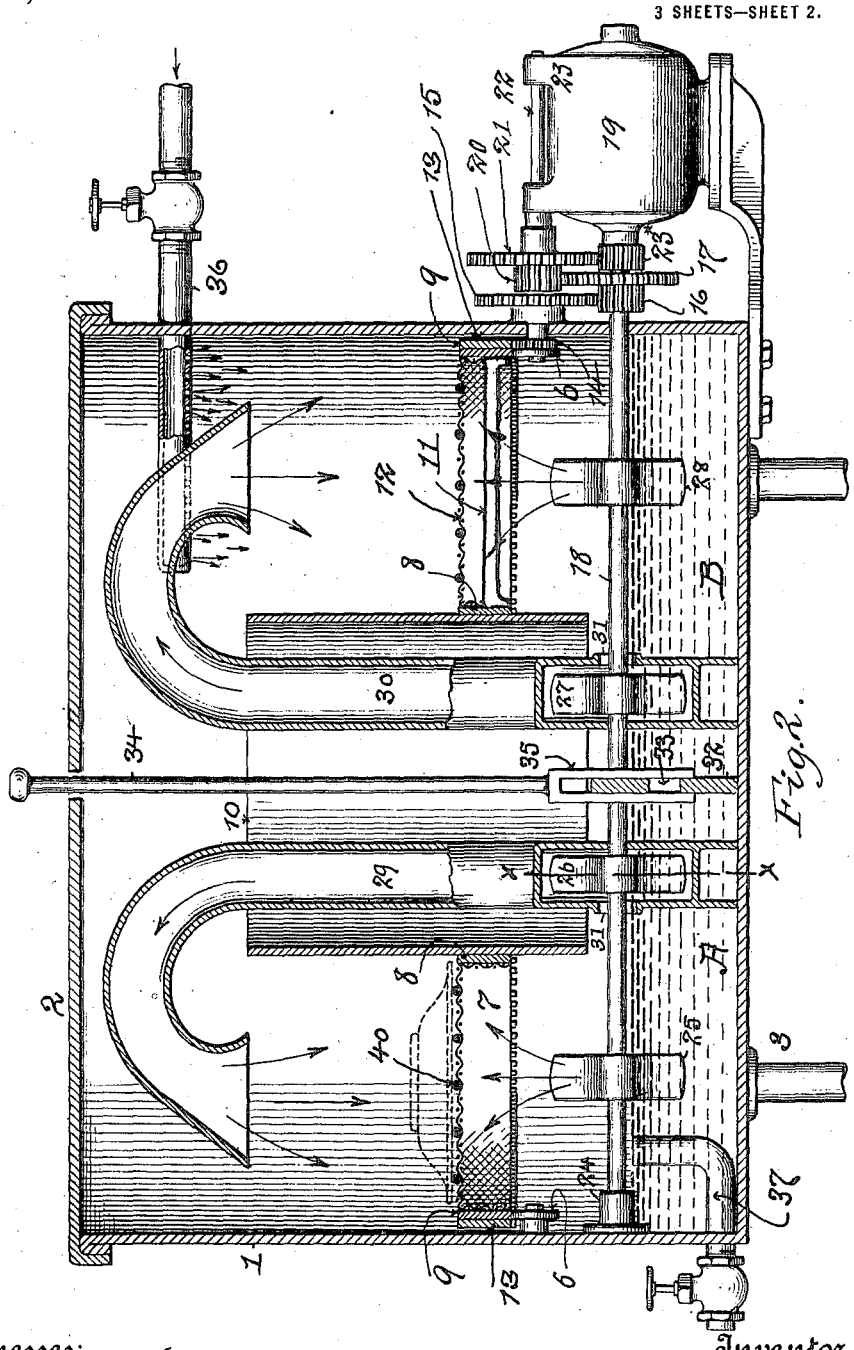

Fig. 2.

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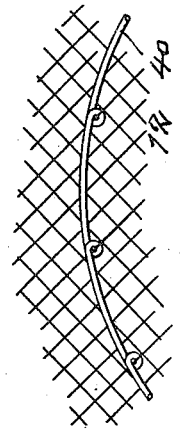

Fig. 4.

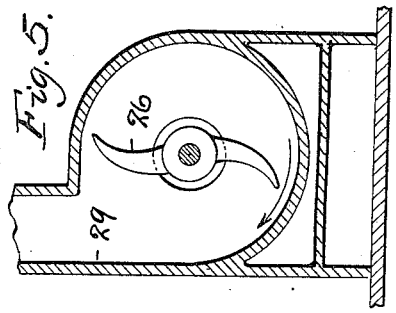

Fig. 5.

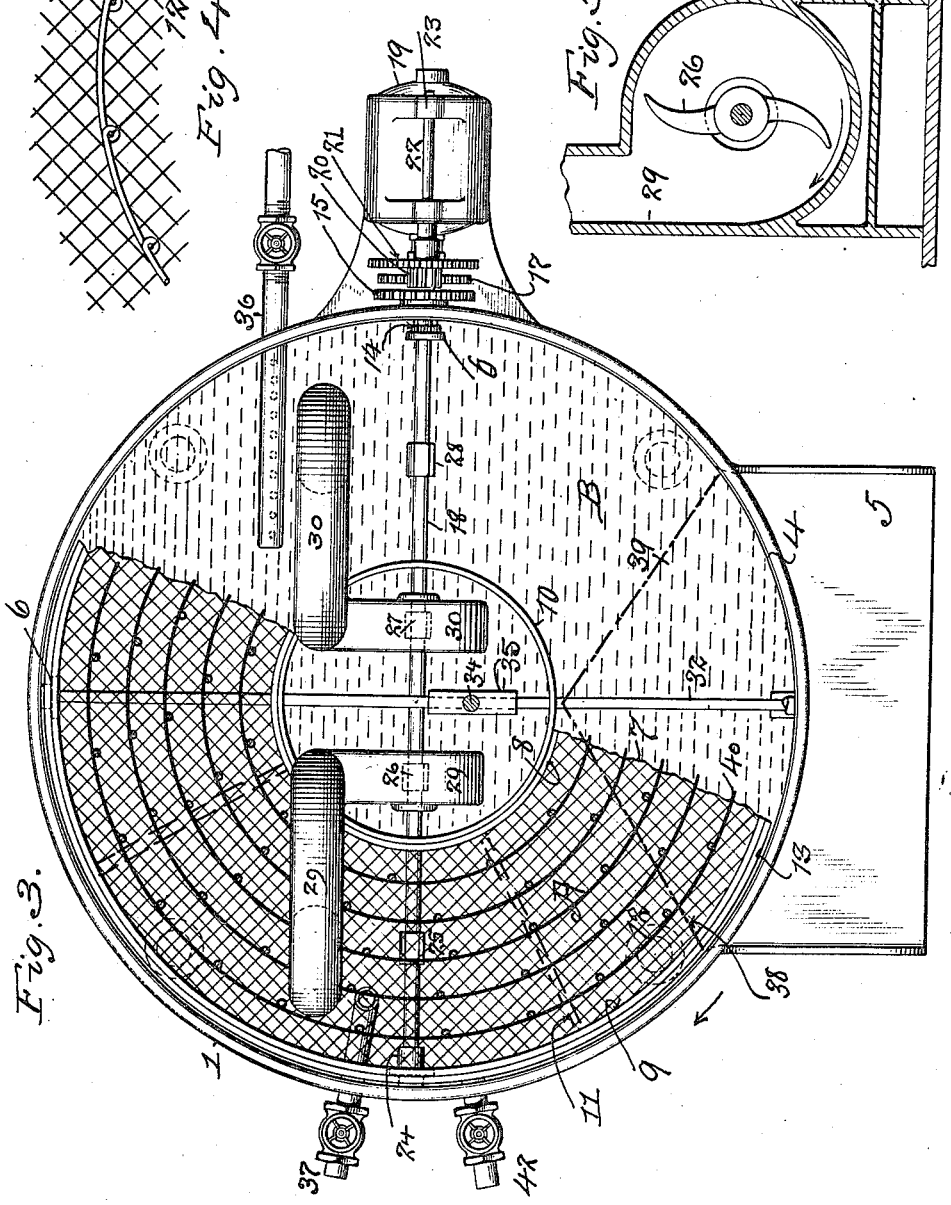

Fig. 3.

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UNITED STATES PATENT OFFICE.

THOMAS E. MURRAY, OF NEW YORK, N. Y.

MACHINE FOR WASHING DISHES.

1,156,424. Specification of Letters Patent. Patented Oct. 12, 1915.

Application filed October 19, 1914. Serial No. 867,291.

To all whom it may concern:

Be it known that I, THOMAS E. MURRAY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Machines for Washing Dishes, of which the following is a specification.

The invention is a machine for washing dishes.

It comprises a tank in which is a rotary horizontal table covered with foraminated, reticulated or perforated material upon which the dishes are placed and which receives the discharge of washing liquid on its upper and under surfaces, so that both sides of the dishes on the table are subjected to the action of said liquid. The liquid is projected against the under side of the table and through the perforations thereof by means of a rotary beater or impeller entering said liquid in the bottom of the tank. A second impeller forces said liquid also through a pipe which is bent over to deliver upon the upper surface of said table. The impellers are driven by a suitable motor which also actuates the rotating table, a speed reducing gear being interposed between motor and table to insure that said table shall have a travel sufficiently slow to permit of the thorough cleansing of the dishes. The tank is divided into two compartments by a partition extending upwardly for a short distance from the bottom. Into one of these compartments water is admitted, and said water passes into the other compartment when a valve in said partition is opened. In the second compartment is an overflow pipe and a drainage pipe. In said second compartment is placed any suitable washing powder or other detergent material which is brought into solution. The dishes are subjected first to said solution and then to rinsing in clear water in the compartment first-named. An opening in the wall of the tank is provided for the insertion and removal of the dishes, and the escape of water or liquid from said opening is prevented by angularly disposed curtains, the inner vertical edges of which meet, and the outer vertical edges of which make contact with the wall of the tank on each side of said opening.

In the accompanying drawings—Figure 1 is a perspective view of my dish-washer, a portion of the wall being broken away to show internal construction. Fig. 2 is a vertical section of the tank. Fig. 3 is a plan view, the tank cover being removed and a portion of the dish-receiving table being broken away. Fig. 4 illustrates the mode of interweaving the rubber bands on which the dishes rest with the wire netting of the dish-receiving table. Fig. 5 is a section on the line x, x of Fig. 2 showing one of the impellers in elevation.

Similar letters and numbers of reference indicate like parts.

1 is a circular tank, provided with a cover 2, supporting legs 3 and having in its wall an opening 4 for the introduction and removal of the dishes, in front of which opening there is a receiving tray or platform 5. Pivoted on the inner wall of the tank are a number of roller disks 6, upon which rests the annular dish-supporting table 7. Said table is formed of two concentric rings 8, 9, the ring 8 being secured to a large tubular hub 10 and the ring 9 resting upon the roller disks 6 and being connected to ring 8 by radial spider arms, one of which is shown at 11, Fig. 2. Between the rings at their upper edges is stretched wire-netting 12 which when the table is in place is on the same level as the tray or platform 5.

Surrounding the outer ring 9 and secured thereto is a ring 13 having rack teeth on its lower edge which engage with a pinion 14. Said pinion is carried by a sleeve which receives the pivot pin of one of the roller disks 6 and extends through the wall of the case, outside of which it terminates in an enlarged portion which carries a pinion 15. Pinion 15 engages with a pinion 16, integral with which is a larger pinion 17. Pinions 16 and 17 are loose on the shaft 18 of an electric motor 19. Pinion 17 engages with a pinion 20, integral with which is a larger pinion 21, and pinions 20, 21 may be loose upon the fixed shaft 22 which is supported in projections 23 on the upper side of the motor casing. Pinion 21 engages with a smaller pinion 23* which is fast on the motor shaft 18. It will be obvious that by means of the above-described gear train motion is communicated from the motor to the dish-receiving table 7, causing the same to rotate in a horizontal plane at a speed much less than the speed of revolution of the motor.

The precise relation of speed of travel of the table 7 to the speed of rotation of the motor is not material so long as the speed of

travel of the table be made such as to cause the dishes to be subjected to the action of the washing water or solution for a suitable length of time, as hereinafter explained. Hence my invention is not limited to the particular gear train shown, but includes any speed reducing mechanism interposed between table and motor which will cause the table to be driven by the motor at a predetermined rate of speed—conformably to the purpose in view.

The motor shaft 18 extends across the tank and is journaled at its end in a fixed socket 24, secured on the inner surface of the tank wall. Said shaft carries four beaters or impellers 25, 26, 27, 28, one of which is shown in elevation in Fig. 5. Two of these beaters 25 and 28 are placed directly below the table 7, and two, 26 and 27, are placed in pipes 29 and 30 which are closed at the bottom, extend upwardly and are turned over and flared at their extremities so as to deliver liquid raised by the impellers directly upon the table 7. The shaft 18 passes through the walls of pipes 29, 30, and in one shaft opening in each pipe, as shown at 31, Fig. 2, sufficient clearance is provided to permit the washing liquid in the tank to flow freely into said pipes.

Extending diametrally across the tank at its bottom is a partition 32 which divides the lower portion of the tank into two compartments A and B. In said partition is an opening 33. A rod 34 sliding in the cover has at its end a bifurcated valve 35, which valve when the rod is depressed, as shown in Fig. 2, receives the partition 32 between its arms and closes the opening 33, so preventing mixing of the washing liquids placed in the tank in compartments A and B. By raising the rod 34, the aperture 33 is opened to permit water introduced into compartment B by the perforated inlet pipe 36 to flow to compartment A. The depth of washing liquid in the tank is determined by turning upward the inner end of the overflow pipe 37, the liquid level being thus regulated so as to be lower than the top of partition 32.

Secured to the under side of the cover are two curtains 38, 39, of canvas or rubber cloth, placed at an angle subtending the opening 4 in the tank wall. The inner vertical edges of these curtains meet about over the partition 32: the outer edges meet the tank wall on each side of the opening. With the wire-netting of table 7 are interwoven strips 40 of rubber. The motor and reducing gear may be inclosed in a suitable casing 41, as shown at Fig. 1. In order to remove all of the liquid from the tank, a drainage pipe 42 is provided. The inlet, outlet and drainage pipes are all provided with suitable valves.

The operation is as follows: In compartment A is placed any suitable washing powder or material for acting upon the grease on the dishes. The inlet valve 36 is opened to permit hot water to enter compartment B. The rod 34 being lifted, the water flows through opening 33 in partition 32 into compartment A, to dissolve the powder therein. When both compartments are filled up to the level determined by pipe 37, the opening in partition 32 is closed, so that in compartment B there will be hot water and in compartment A a solution of the washing powder. The operator standing in front of the opening 4 in the tank wall having started the motor places the dishes one by one upon the rotating table 7, preferably with the concave side downward. As each dish in turn passes under the curtain 38 and enters compartment A, it receives on its under side the solution projected upwardly through the wire-netting 12 by impeller 25, and on its upper side the downward discharge of the same solution forced by impeller 26 through pipe 29. In this way, the dish is cleansed from adherent matter. The rotating table then carries the dish into compartment B, where it receives hot rinsing water delivered on its upper side from pipe 30, and on its lower side by impeller 28, which completes the washing and removes the washing powder solution from the dish. Finally the rotation of the table carries the dish under curtain 39 and so in front of the opening 4 in the tank wall, through which it is removed by the operator.

The curtains 38, 39 prevent any splashing of the washing liquid out of the tank or escape of steam from the hot water, while at the same time yield freely to permit the dishes to enter and leave the tank. The rubber strips 40 form an elastic surface for the dishes to rest upon which frictionally engages with them and so prevents displacement and breakage by contact. When the washing liquid becomes too much charged with matter removed from the dishes, the valve in drainage pipe 42 is opened to empty the tank, which may then be washed out clean with fresh water, before the operation is started anew, as already explained.

I claim:

1. A dish-washing machine, comprising a tank, a rotary horizontal perforated table for dishes to be washed disposed in said tank, a pipe extending from the bottom of said tank and having its delivery opening directly above said table, a motor shaft entering said tank, and two impellers on said shaft, one of said impellers being disposed below said table to project liquid upwardly thereon, and the other of said impellers being disposed in said pipe to force liquid through said pipe.

2. A dish-washing machine, comprising a tank, a motor shaft entering the same, a rotary horizontal perforated table for dishes

to be washed disposed in said tank and driven by said shaft, impellers on said shaft, and a pipe inclosing one of said impellers and having its delivery opening directly above said table.

3. A dish-washing machine, comprising a tank, a motor shaft entering the same, a rotary horizontal perforated table for dishes to be washed disposed in said tank, speed reducing gear between said shaft and said table, and means actuated by said shaft for projecting liquid upon opposite sides of said table.

4. A dish-washing machine, comprising a tank, a rotary perforated table therein for dishes to be washed, a partition dividing the lower portion of said tank into two compartments, a valve in said partition, an inlet in one of said compartments and an outlet in the other of said compartments whereby said liquid is caused to pass successively through said compartments, and means in each of said compartments for projecting washing liquid upon opposite sides of said table.

In testimony whereof I have affixed my signature in presence of two witnesses.

THOMAS E. MURRAY.

Witnesses:

GERTRUDE P. PORTER,

MAY T. MCGARRY.