T. E. MURRAY.

DISH WASHING MACHINE.

APPLICATION FILED MAY 28, 1915.

1,173,208.

Patented Feb. 29, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

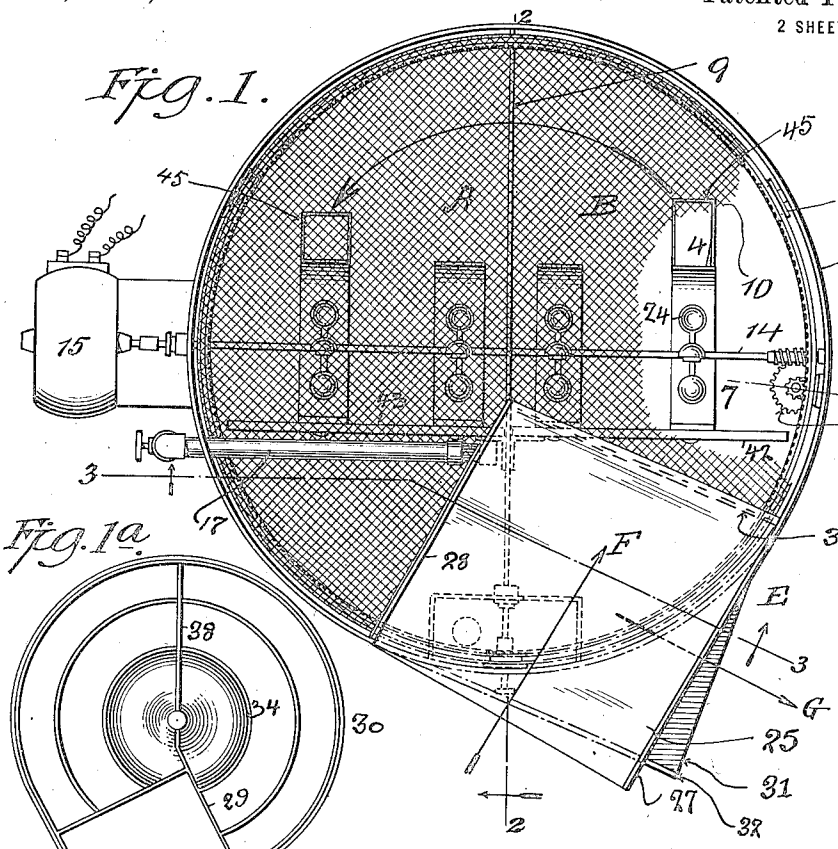
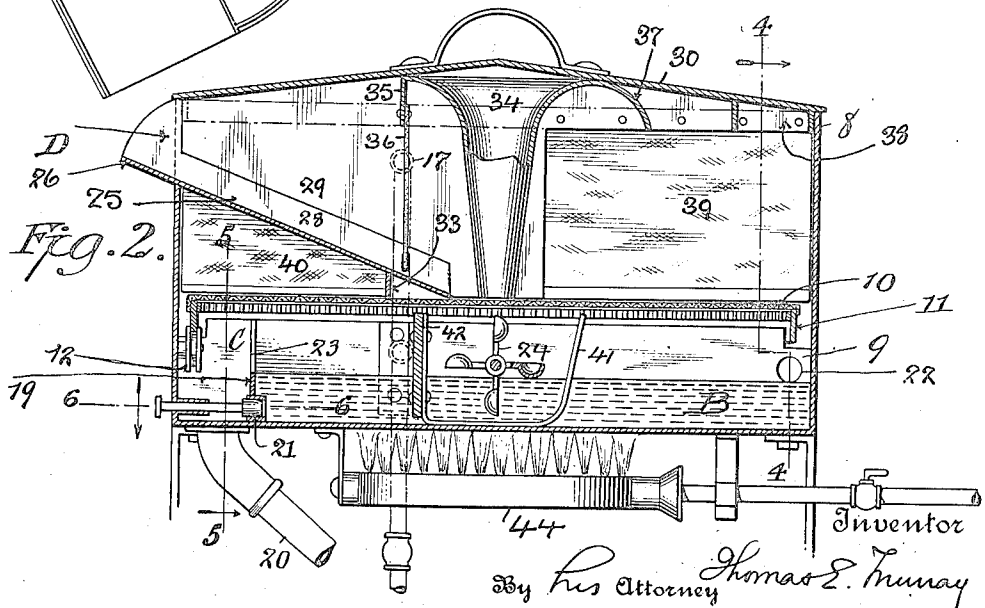


Fig. 1a.

Fig. 2.



Inventor

Thomas E. Murray

By his Attorney

Earl Benjamin

T. E. MURRAY.

DISH WASHING MACHINE.

APPLICATION FILED MAY 28, 1915.

1,173,208.

Patented Feb. 29, 1916.

2 SHEETS—SHEET 2.

Fig. 3.

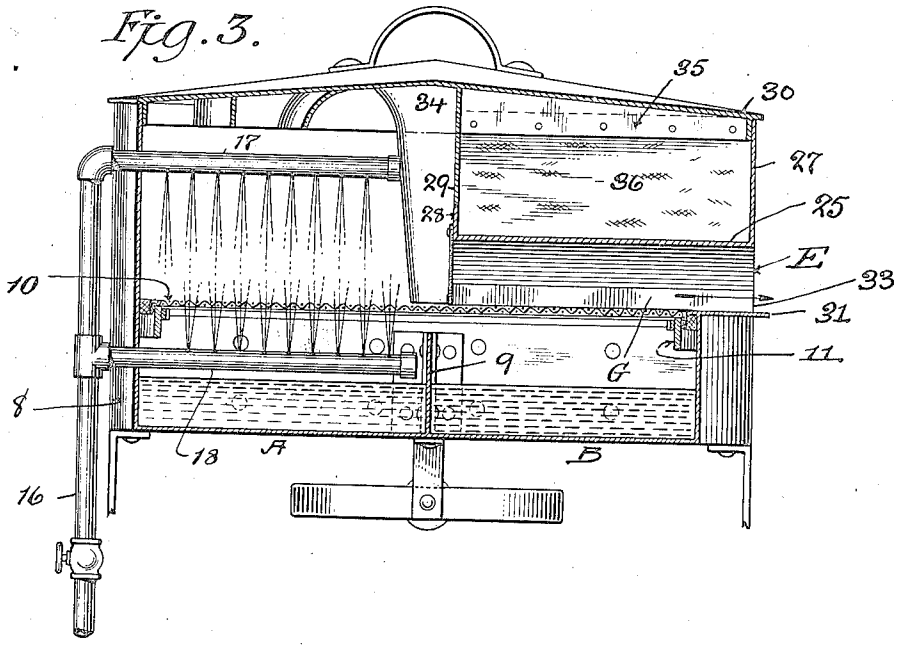


Fig. 4.

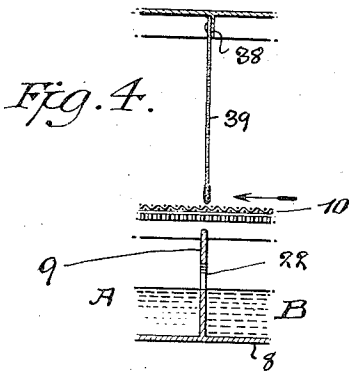


Fig. 5.

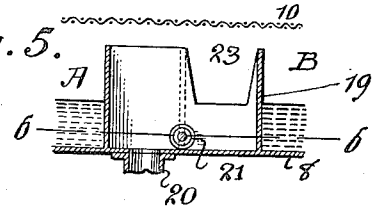


Fig. 6.

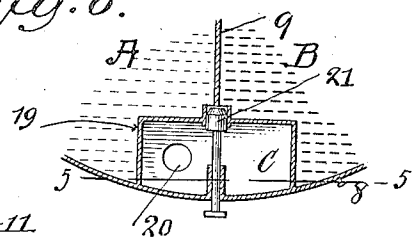
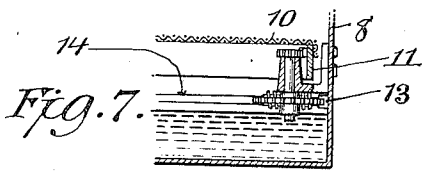


Fig. 7.



Inventor

Thomas E. Murray

By his Attorney

Carl Benjamin

UNITED STATES PATENT OFFICE.

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

DISH-WASHING MACHINE.

1,173,208. Specification of Letters Patent. Patented Feb. 29, 1916.

Application filed May 28, 1915. Serial No. 30,933.

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 Dish-Washing Machines, of which the following is a specification.

The invention relates to dish-washing machines of the type wherein the dishes are subjected to liquid projected against them while supported on a horizontal rotary perforated table within a suitable tank or receptacle. The dishes are introduced through an opening in the wall of the tank, and thence are caused to descend an inclined chute to the table. As they are carried around by the table, they are subjected to the successive action of liquids contained in compartments in the lower part of the tank, and then to streams of liquid led into the tank through suitable pipes from an outside source—after which they pass to a delivery opening below the receiving opening. The space above the table is separated by the chute and a suitable curtain depending from the cover into two compartments, so that the liquids projected against the table from the lower compartments do not mingle in the upper compartments, and other suspended curtains prevent the liquid projected into the respective upper compartments from passing into the chute or to the delivery opening. Deflecting means on the cover throw back the liquid after it has passed upwardly through the perforated table.

In the accompanying drawings, Figure 1 is a plan view of my dish-washing machine, with the cover removed. Fig. 1ª is a plan view on a reduced scale of the under side of the cover. Fig. 2 is a cross section on the line 2, 2 of Fig. 1. Fig. 3 is a section on the line 3, 3 of Fig. 1. Fig. 4 is a detail section on the line 4, 4 of Fig. 2. Fig. 5 is a similar section on the line 5, 5 of Figs. 2 and 6. Fig. 6 is a horizontal section on the line 6, 6 of Fig. 5. Fig. 7 is a section on the line 7, 7 of Fig. 1.

Similar numbers and letters of reference indicate like parts.

8 is the tank or receptacle for the dishes to be washed, divided at its lower portion into two compartments A, B by the diametral partition 9. Above the partition 9 is a horizontal rotary dish-receiving table 10, formed of wire-netting, supported on a ring 11, which in turn is supported on grooved rollers 12 on the inside of the tank. Within the ring 11 are rack-teeth, Fig. 7, with which engage a pinion supported on a shaft journaled in a bracket, on which shaft is a large pinion 13, with which engages a worm carried by the shaft 14 of an electric motor 15. In this way, the table 10 is rotated.

16, Fig. 3, is a supply pipe for water, provided with two branch pipes 17, 18, which enter the tank, as shown in Fig. 3. Said branch pipes are perforated, so that from pipe 17 jets are delivered downwardly, and from pipe 18 upwardly, upon the table and dishes thereon. This water descends into the compartments A, B in the bottom of the tank. In compartment A is a partition 19, Figs. 2, 5 and 6, forming with the wall of the tank a sub-compartment C, which communicates with the waste pipe 20. In partition 19 is a valve 21 operated by a handle extending through the tank wall, by opening which valve water is permitted to escape to pipe 20 from both compartments A, B. In partition 9 is an opening 22, Figs. 2 and 4, which permits the liquid in one tank compartment to flow over into the other. An overflow from compartment B is also provided in partition 19 by making a notch or recess 23 therein, as best shown in Fig. 5.

On the motor shaft 14, which extends through partition 9, are mounted four beater-arms 24, two in each compartment A, B. Said arms have cups on their ends, and when in revolution throw the liquid in said compartments upwardly against the rotating perforated table.

In the tank wall are two openings, namely, an upper opening at D, Fig. 2, and a lower opening at E, Fig. 3. The bottom of the lower opening E registers with the upper surface of the rotary table 10. From the upper opening D an inclined chute 25 descends to the said table. The upper portion 26 of the bottom plate of said chute extends outwardly beyond said opening, as shown in Fig. 2. The outer side wall 27 of the chute 25, Fig. 1, lies tangential to the circumference of the tank and is practically a prolongation of the upper portion of the tank wall. The inner side wall 28 of the chute is parallel to wall 27 but extends upwardly but for a short distance, Fig. 2. This side of the chute is, therefore, completed by a partition 29 which depends from the under side of the cover 30, the lower edge

of said partition registering with the upper edge of wall 28.

Depending from the bottom plate of the chute and near its lower edge is a depending partition 33, shown in full lines and in elevation in Fig. 3, and in dotted lines in Fig. 1. Outside of the opening E is a tray or platform 31, the outer side wall of which (32, Fig. 1) is in prolongation of and substantially tangential to the lower portion of the cylindrical tank wall and also parallel to partition 33. After the dishes have been carried around by the rotating table and come in front of opening E, they meet the partition 33, and thus are prevented from being further carried. The resultant effect of being transported by the table against the inclined partition 33 is that they are caused to move outwardly in the direction of the arrow G, Figs. 1 and 3, and so through opening E and to the delivery tray 31.

Centrally secured to the under side of the cover is a tubular pillar 34. The upper portion of said pillar above the chute 25 has a depending flange 35, to which is secured a curtain 36 which extends across the lower portion of the chute 25 and prevents splashing of liquid thereon. The vertical edge of the partition 29 is secured to said pillar. The upper portion of the wall of said pillar is curved over, as shown at 37, Fig. 2, so that water thrown upward by the beater-arms 24 will be deflected downwardly upon the dishes. On the under side of the cover is a cross-bar 38, Fig. 2, which serves to support a curtain 39, the lower edge of which approximates the table 10. A similar curtain 40, Fig. 2, is suspended from the chute 25 and also at its lower edge approximates the table.

In order to prevent the water thrown up by the beater-arms 24 from being projected elsewhere than on the under side of the table, I provide a U-shaped guard plate for each beater, the outer free arm of which is shown at 41. The guard plates rest on the bottom of the tank and are secured at their inner arms to bars 42, 43, respectively disposed in the compartments A, B.

The upwardly projecting arms 41 of the beater-guards are preferably to be set at different angles, so that the liquid thrown up by the beaters may reach different portions of the table. Thus in Fig. 1 the outward bending of the arms 41 of two of the guard-plates is indicated at 45.

The liquid in the tank may be heated by a gas-burner 44 suitably supported under the bottom of the tank.

The operation is as follows: The dishes introduced through the opening D and upon the chute 25 successively slide down said chute in the direction of the arrow F in Fig. 1. After passing under the curtain, they arrive upon the horizontal rotary table 10, which turns in the direction of the curved arrow, Fig. 1. As the dishes are carried over the tank compartment B, they are acted upon by the liquid in that compartment, which is thrown up through the interstices of table 10 by the beater-arms 24. This liquid may be a detergent solution for the quick removal of grease. As the dishes are carried on by the rotation of the table, they pass beneath the curtain 39, and so over compartment A. Here they are acted upon by the liquid in said last-named compartment which is also thrown up by beaters 24. This liquid may be hot water. Then the dishes pass between the jets of water projected from the pipes 17, 18, and finally after traveling under the curtain 40 meet the partition 33, which, as already explained, causes them to travel upon the tray 31, from which they are finally removed. The curtain 39 serves to prevent liquid thrown into the tank space above one compartment passing into the space above the other. The curtain 40 serves to prevent liquid in compartment A from escaping into the delivery space above tray 31.

I claim:

1. A dish-washing machine, comprising a tank having a cylindrical wall, a rotary horizontal table therein, the said tank having a dish-receiving opening and a dish-delivery opening in said cylindrical wall and above said table, the said receiving opening being above said delivery opening and separate therefrom, means for receiving and guiding the dishes from said receiving opening downwardly and directly to said table, and means for delivering liquid against said table.

2. A dish-washing machine, comprising a tank having a cylindrical wall, there being an upper dish-receiving opening and a lower dish-delivery opening in said wall, the said openings being separate, a rotary horizontal table in said tank below said delivery opening, an inclined chute in said tank extending from said receiving opening downwardly and directly to said table, and means for delivering liquid against said table.

3. A dish-washing machine, comprising a tank having in its wall an upper dish-receiving opening and a lower dish-delivery opening, a rotary horizontal table in said tank below said delivery opening, an inclined chute in said tank extending from said receiving opening to said table, and means for delivering liquid against said table, and the said delivery opening being disposed beneath said chute.

4. A dish-washing machine, comprising a tank having a cylindrical wall, there being an upper dish-receiving opening and a lower dish-delivery opening in said wall, a rotary horizontal table in said tank below said delivery opening, an inclined chute in said

tank extending from said receiving opening downwardly and directly to said table, means for guiding said dishes outwardly through said delivery opening, and means for delivering liquid against said table.

5. A dish-washing machine, comprising a cylindrical tank, a rotary horizontal table therein, the said tank having a dish-receiving opening and a dish-delivery opening disposed above said table, and the said receiving opening being above said delivery opening, means for receiving and guiding the dishes from said receiving opening to said table, means within said tank for intercepting said dishes on reaching said delivery opening and for guiding them outwardly through said opening, and means for delivering liquid against said table.

6. A dish-washing machine, comprising a cylindrical tank, a rotary horizontal table therein, the said tank having a dish-receiving opening and a dish-delivery opening disposed above said table, and the said receiving opening being above said delivery opening, means for receiving and guiding the dishes from said receiving opening to said table, a fixed partition in said tank extending across said table in a substantially radial direction and at its end meeting one edge of said delivery opening for intercepting said dishes and guiding them outwardly through said opening, and means for delivering liquid against said table.

7. A dish-washing machine, comprising a cylindrical tank having in its wall an upper dish-receiving opening and a lower dish-delivery opening, a rotary horizontal table in said tank below said delivery opening, an inclined chute in said tank extending from said receiving opening to said table, the outer side wall of said chute being in prolongation of the circular wall of said tank and disposed in a plane tangential to said circular wall, and the inner side wall of said chute being parallel to said outer side wall, a partition extending substantially radially across said table and depending from said chute, and a receiving tray outside of said delivery opening, the outer side wall of said tray being in prolongation of the circular wall of said tank and parallel to said depending partition and disposed in a plane tangential to said circular wall, and means for delivering liquid against said table.

8. A dish-washing machine, comprising a cylindrical tank adapted to contain liquid in its lower portion, a rotary horizontal perforated table for receiving the dishes, a rotary shaft extending below said table, a plurality of impellers on said shaft entering said liquid for projecting the same against the lower side of said table, a fixed U-shaped guard-plate receiving each impeller, and a cross bar, to which corresponding arms of said guard-plates are secured, the outer free arms of said guard-plates being disposed at different distances from the arms secured to said bar.

9. A dish-washing machine, comprising a tank, a perforated dish-receiving table, means below said table for projecting liquid against the under side thereof, and a concave plate supported within said tank and above said table for receiving in its concavity said liquid projected through the interstices of said table and deflecting the same downwardly.

10. A dish-washing machine, comprising a tank having in its wall an upper dish-receiving opening and a lower dish-delivery opening, a cover for said tank, a rotary horizontal table in said tank below said delivery opening, an inclined chute in said tank extending from said receiving opening to said table, a curtain suspended from said cover and extending across said chute at the lower portion thereof, and means for delivering liquid against said table.

11. A dish-washing machine, comprising a tank having in its wall an upper dish-receiving opening and a lower dish-delivery opening, a cover for said tank, having a depending partition, a rotary horizontal table in said tank below said delivery opening, an inclined chute in said tank extending from said receiving opening to said table, the inner side wall of said chute within said tank having its upper edge registering with the lower edge of said cover partition, and means for delivering liquid against said table.

12. A dish-washing machine, comprising a tank having in its wall an upper dish-receiving opening and a lower dish-delivery opening, a cover for said tank, having a depending partition extending partially across said tank, and a depending curtain extending from said partition to said cover edge, a rotary horizontal table in said tank below said delivery opening, an inclined chute in said tank extending from said receiving opening to said table, the inner side wall of said chute within said tank having its upper edge registering with the lower edge of said cover partition, and the said depending curtain having its lower edge approximating said table, and means for delivering liquid against said table.

13. A dish-washing machine, comprising a tank having in its wall an upper dish-receiving opening and a lower dish-delivery opening, a rotary horizontal table in said tank below said delivery opening, an inclined chute in said tank extending from said receiving opening to said table, means for delivering liquid against said table, and a curtain depending from said chute and extending across said table in a substantially radial direction.

14. A dish-washing machine, comprising a tank, a rotary horizontal perforated table therein, a partition extending across said tank below said table, means for projecting liquid in each of the compartments formed by said partition against said table, and means for delivering liquid into said tank above said table: the aforesaid parts being constructed and arranged so that as the dishes are carried around by said rotary table they shall be subjected to liquid projected from each of said compartments in turn and then to liquid from said delivery means.

15. A dish-washing machine, comprising a tank, a rotary horizontal table therein, means for delivering liquid against said table, means for dividing the space in said tank above and below said table into two compartments, there being a dish-receiving opening and a dish-delivery opening in the wall of said tank above said table communicating respectively with said compartments, and the said receiving opening being disposed above said delivery opening, and means for guiding said dishes from said receiving opening to said table.

16. A dish-washing machine, comprising a cylindrical tank adapted to contain liquid in its lower portion, a rotary horizontal perforated table for receiving the dishes, a rotary shaft extending below said table, a partition below said table dividing said tank into two compartments, impellers on said shaft located respectively on opposite sides of said partition and entering said liquid for projecting the same against the lower side of said table, and a fixed U-shaped guard plate receiving each impeller.

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

THOMAS E. MURRAY.

Witnesses:
GERTRUDE T. PORTER,
MAY T. McGARRY.