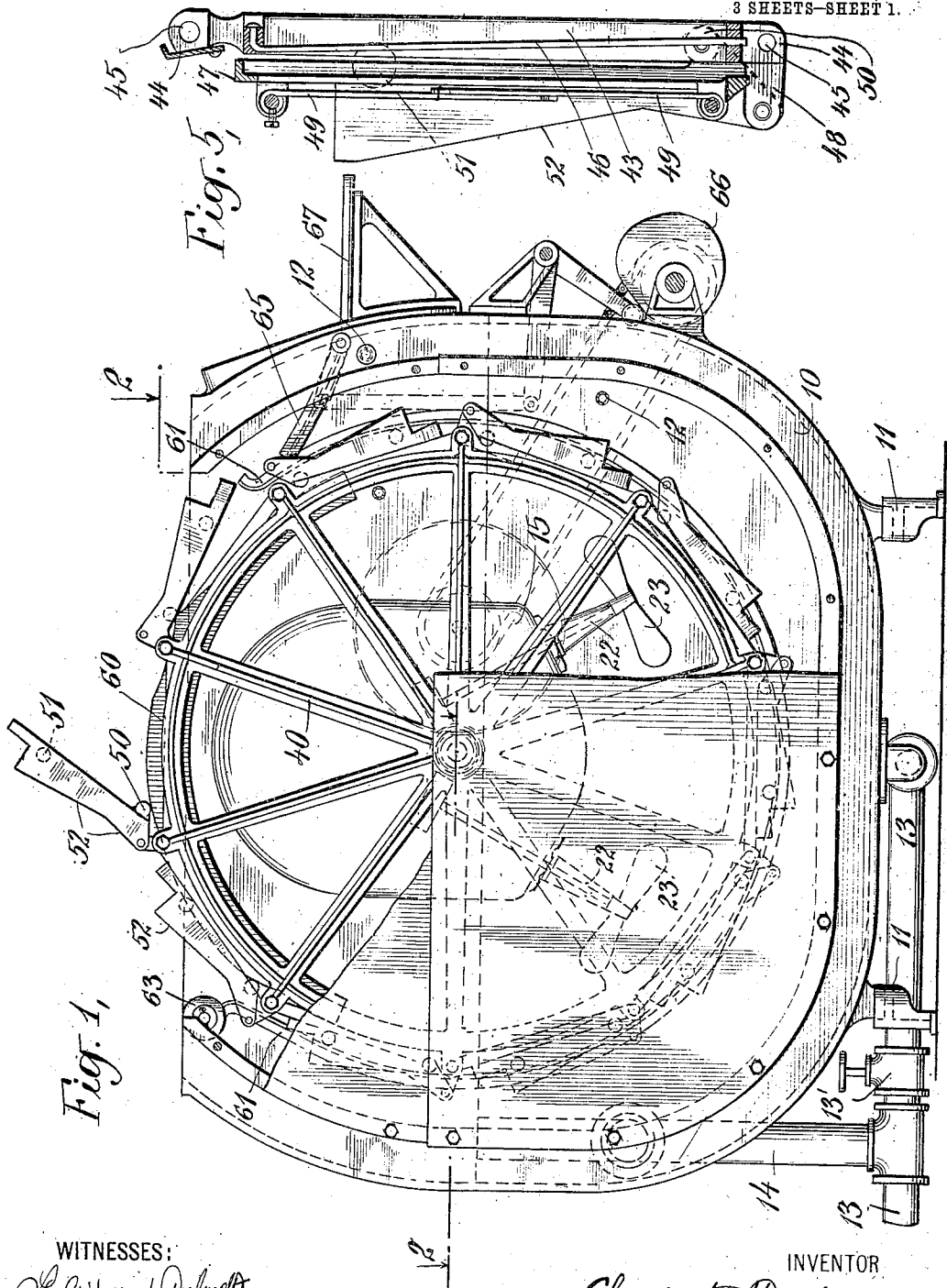


C. F. FROTHINGHAM.
DISH WASHING MACHINE.
APPLICATION FILED FEB. 19, 1912.

1,042,664.

Patented Oct. 29, 1912.

3 SHEETS—SHEET 1.



WITNESSES:

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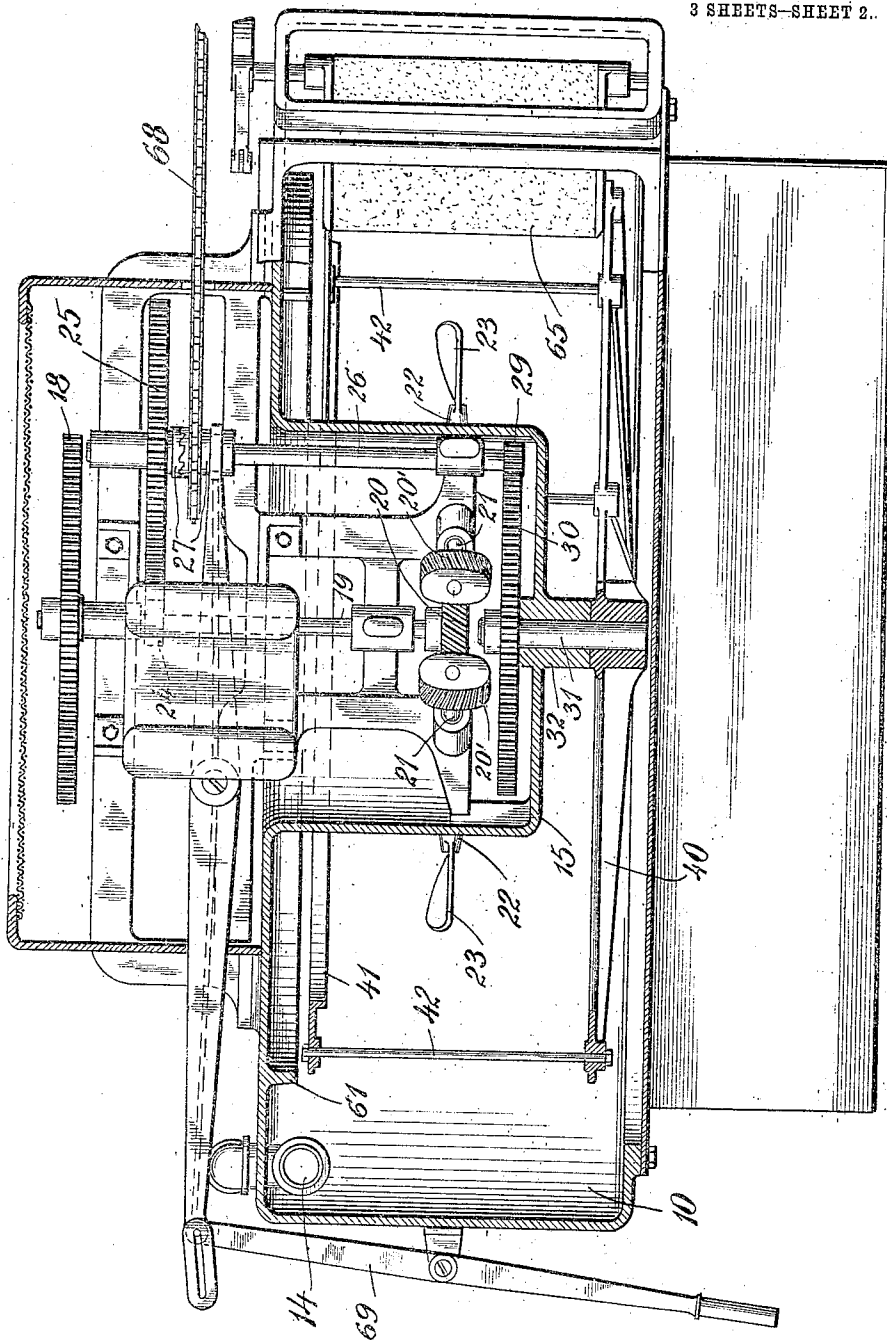
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Fig. 2.



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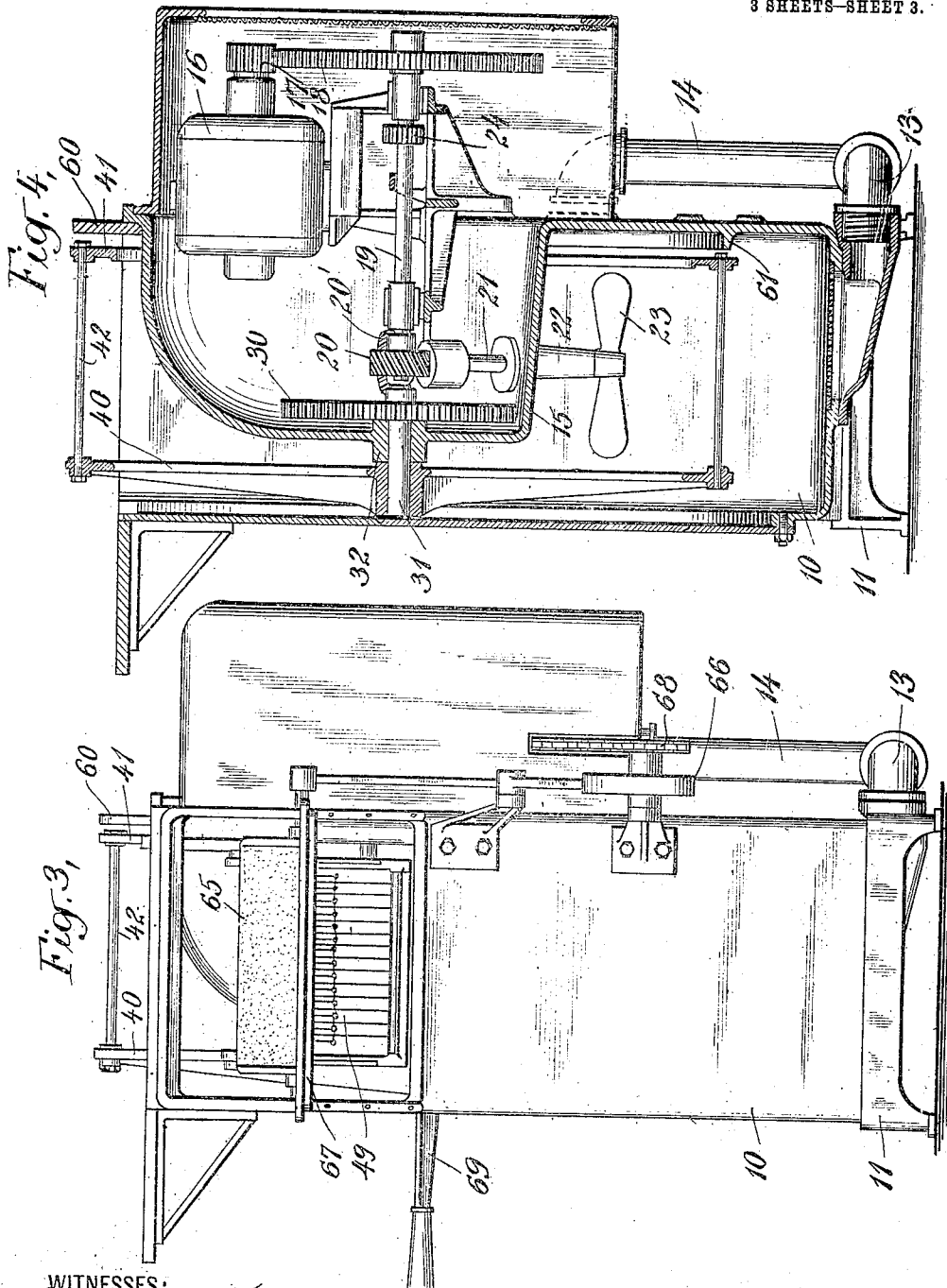
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UNITED STATES PATENT OFFICE.

CHARLES F. FROTHINGHAM, OF NEW YORK, N. Y.

DISH-WASHING MACHINE.

1,042,664.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed February 19, 1912. Serial No. 678,557.

To all whom it may concern:

Be it known that I, CHARLES F. FROTHINGHAM, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Dish-Washing Machines, of which the following is a specification.

The invention relates to a machine for washing dishes and the like; and more particularly to a machine employing a suitable tank containing the washing water and wherein the dishes or the like are washed by immersing the same by means of a suitable rotary carrier. The carrier is designed to bring the dish supporting means out of the water during a part of their rotation, whereby the dishes may be conveniently fed, rinsed and finally delivered from the machine.

One of the objects of the invention is to provide a compact tank and to provide means therein whereby the washing water is forcibly directed toward the face of the dishes to be washed, the mechanism for driving the same being suitably protected from contact with the water; also, to provide means of this character which shall reduce the necessary driving power to a minimum.

A further object of the invention is to so arrange the water directing means that there will be a tendency to also wash the back of the dish as well as the front of the same.

The nature of the invention will best be understood when described in connection with the accompanying drawings; in which—

Figure 1 is a front elevation of the improved dish washing machine, a portion of the front of the tank being broken away. Fig. 2 is a horizontal section on the line 2—2, Fig. 1. Fig. 3 is an end elevation. Fig. 4 is a transverse vertical section. Fig. 5 is an enlarged sectional view of the dish retaining means.

Similar characters of reference designate corresponding parts throughout the several views.

Referring now to the drawings, 10 designates the tank which is mounted on a suitable base 11 and is adapted to contain the washing water fed thereto through suitable inlets 12 and removed therefrom through a drain 13, provided with a valve 13'. A suitable overflow 14, connected with drain 13

beyond valve 13', is provided to maintain the water level as well as to remove the grease and other material floating upon the surface of the water.

The tank or casing 10 is provided with an inwardly projecting portion 15 within which is contained a portion of the driving mechanism, as will hereinafter be set forth. This mechanism consists of a suitable motor 16, preferably an electric motor as shown, which drives through the pinion 17 and spur gear 18, the main shaft 19. This shaft carries at its end and within the inwardly projecting portion 15, a spiral pinion 20 engaging two spiral gears 20', which drive shafts 21 passing through the inwardly projecting casing 15 into the tank 10. Sufficiently elongated bearings 22, extending from the casing 13, are provided for these shafts for the purpose of preventing the water of the tank 10 from leaking into the casing 15; and these shafts 21 carry at their ends, and within the water of the tank, suitable propellers 23. The main shaft 19 carries, also, a pinion 24 engaging a spur gear 25 on a clutch shaft 26 upon which are the two halves of a clutch 27, one half of the clutch being splined upon the said shaft 26. A pinion 29 at one end of shaft 26 engages a spur gear 30 on a driving shaft 31, the said shaft 31 projecting through portion 15 into the tank 10 and through a suitable bearing 32. The driving shaft 31 carries a dish supporting member which rotates therewith, and which consists of the wheel 40 and a sustaining ring 41, the latter being mounted about the projecting casing 15 and connected with the wheel 40 by means of suitable rods 42 which are spaced equidistantly about the periphery. These rods carry, also, the dish retaining members or baskets, one of which is shown in detail in Fig. 5. These baskets consist of a longitudinal frame or dish saddle 43 having end lugs 44 provided with suitable perforations 45 to receive the rods 42, the said frames being strung with wires 46, or other suitable material, to provide a support for the dish. A top or cover frame 47 is hinged to lugs 48 projecting upwardly from frame 43, and this cover is likewise strung with wires 49 to provide a yieldable cover for a dish, which is adapted to be held between frame 43 and the cover 47. One side of the frame or cover 47 is provided with a cam roller 50 and a supplementary cam roller 51, as well as with an

upper cam surface 52. The frame 43 is thus permanently fixed to the wheel 40 and the sustaining ring 41, and forms, therefore, a polygonal supporting surface for the dishes. The frames 47, adapted to cooperate therewith, are arranged to be raised during certain periods of the rotation of wheel 40—41 to permit of the insertion of a dish; whereupon, on further rotation of said wheel, the cover closes and firmly holds the dish within the respective basket and during its progress through the water of the washing tank.

The opening and closing of the frame 47 is effected respectively by an opening cam 60 secured to the tank 10 and adapted to engage the cam roller 50, and by means of a closing cam 61 forming part of the tank 10 and likewise adapted to engage the said roller 50. An additional closing means is provided in the roller 63 carried by the tank, said roller being adapted to engage the top or cam surface 52. This insures the closing of the basket, to hold the dish, before the actual closing cam 61 comes into effect, whereby sudden closing and consequent shock is obviated, the roller 63 effecting the gradual closing of the basket as it rides upon the inclined cam surface 52. The supplementary roller 51 then follows under cam 61 and holds the top or cover in closed position at its extreme outer end, thus reducing friction on rollers 50 and accommodating, also, any wear. As the dishes thus held by the baskets with their upper surfaces toward the axis of rotation, pass through the water in the tank 10, their upper surfaces meet the streams of water directed toward the same by the propellers 23. These propellers are arranged, furthermore, such that the streams thus directed thereby toward the dishes shall not strike the same perfectly normal but at a slight inclination thereto, whereby greater pressure exists at one side and a swirl is produced which causes the water to pass about the ends of the dishes and through the baskets to wash also the back of the dishes. The propellers being located below the water line and directing the streams of wash water toward the bottom of the tank, do not stir up the entire volume of water to such a degree as to cause the development of considerable vapor, which is the case in certain types of washing machines such, for example, as those employing paddles. The propellers, moreover, require much less power to drive, than other forms of washing means, for example, the paddles mentioned. As the baskets leave the water and are opened by the cam 60, the dishes slide from the said baskets and are preferably received by a take-off frame 65 which is operated from a cam 66, through suitable intermediate mechanism, and caused to follow the motion of the baskets, whereby

the dishes are removed without shock. The cam then raises the take-off frame to such an extent that the succeeding basket with its dish may pass, whereupon the take-off frame drops to receive the next dish. From said frame the dishes are delivered to a table 67 or any suitable receiving means. The cam 65 is driven from the clutch shaft 26 through a sprocket 68. To start the machine clutch 27 is thrown in by means of a lever 69 attached to the tank 10 and connected through intermediate mechanism with said clutch.

I claim:—

1. In a dish washing machine: a suitable tank to contain water; a carrier, and means to move the same through said tank; suitable dish retaining means supported by said carrier to bring a dish into a predetermined washing position with its flat side presented for washing; means to periodically open said dish retaining means, and means to close the same for a predetermined period of the movement of said carrier; and a screw propeller within said tank and between which and the tank the said carrier is adapted to pass to present the dish to the stream of water directed thereto by the said propeller.

2. In a dish washing machine: a suitable tank to contain water; a rotatable carrier mounted to rotate in said tank, and means to rotate the same; suitable dish retaining means supported by said carrier; means to periodically open the said dish retaining means, and means to close the same for a predetermined period of the rotation of said carrier; two propellers with diverging axes of rotation, said propellers being directed toward the portion of said carrier within the tank to direct the water within said tank toward the dishes brought into position by the rotating carrier; and means to drive said propellers.

3. In a dish washing machine: a suitable tank to contain water; a casing projecting into said tank, and suitable driving mechanism therein; a carrier, and means to move the same through said tank; suitable dish retaining means supported by said carrier to bring a dish into a predetermined washing position with its flat side presented for washing; means to periodically open said dish retaining means, and means to close the same for a predetermined period of the movement of said carrier; a driving shaft extending through said inwardly projecting casing into said tank; and a screw propeller mounted upon said driving shaft and between which and the tank the said carrier is adapted to pass to present the dish to the stream of water directed thereto by the said propeller.

4. In a dish washing machine: a suitable tank to contain water; a casing projecting

into said tank, and suitable driving mechanism therein; a rotatable carrier mounted to rotate in said tank, and about the said inwardly projecting casing, and means to rotate the same; suitable dish retaining means supported by said carrier; means to periodically open said dish retaining means, and means to close the same for a predetermined period of the rotation of said carrier; driving shafts extending through said inwardly projecting casing; and propellers mounted upon said driving shafts and within said tank to direct the water within said tank toward the dishes brought into position by the rotating carrier.

5. In a dish washing machine: a suitable tank to retain water; a casing projecting into said tank and suitable driving mechanism therein; a rotatable carrier mounted to rotate in said tank and about said inwardly

projecting casing, and means to rotate the same; suitable dish retaining means supported by said carrier; means to periodically open said dish retaining means, and means to close the same for a predetermined period of the rotation of said carrier; two diverging driving shafts extending through said inwardly projecting casing; and propellers mounted upon said driving shafts and within said tank to direct the water within said tank toward the dishes brought into position by the rotating carrier.

Signed at New York, in the county of New York, and State of New York, this 16th day of February A. D. 1912.

CHARLES F. FROTHINGHAM.

Witnesses:

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