

Nov. 10, 1931.

W. L. LINDGREN

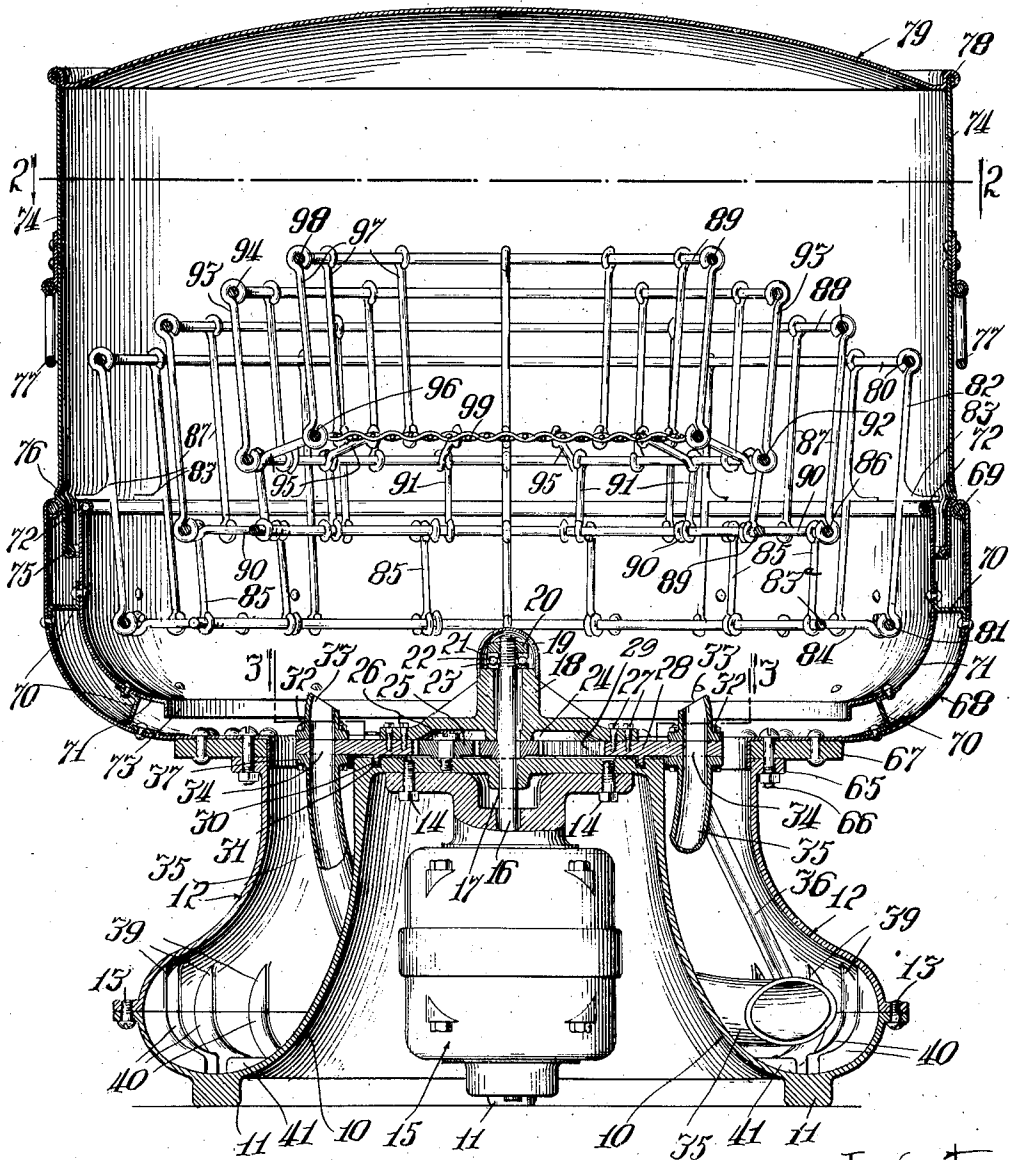
1,831,775

DISH WASHING MACHINE

Filed July 10, 1929

3 Sheets-Sheet 1

Fig. 1.



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Nov. 10, 1931.

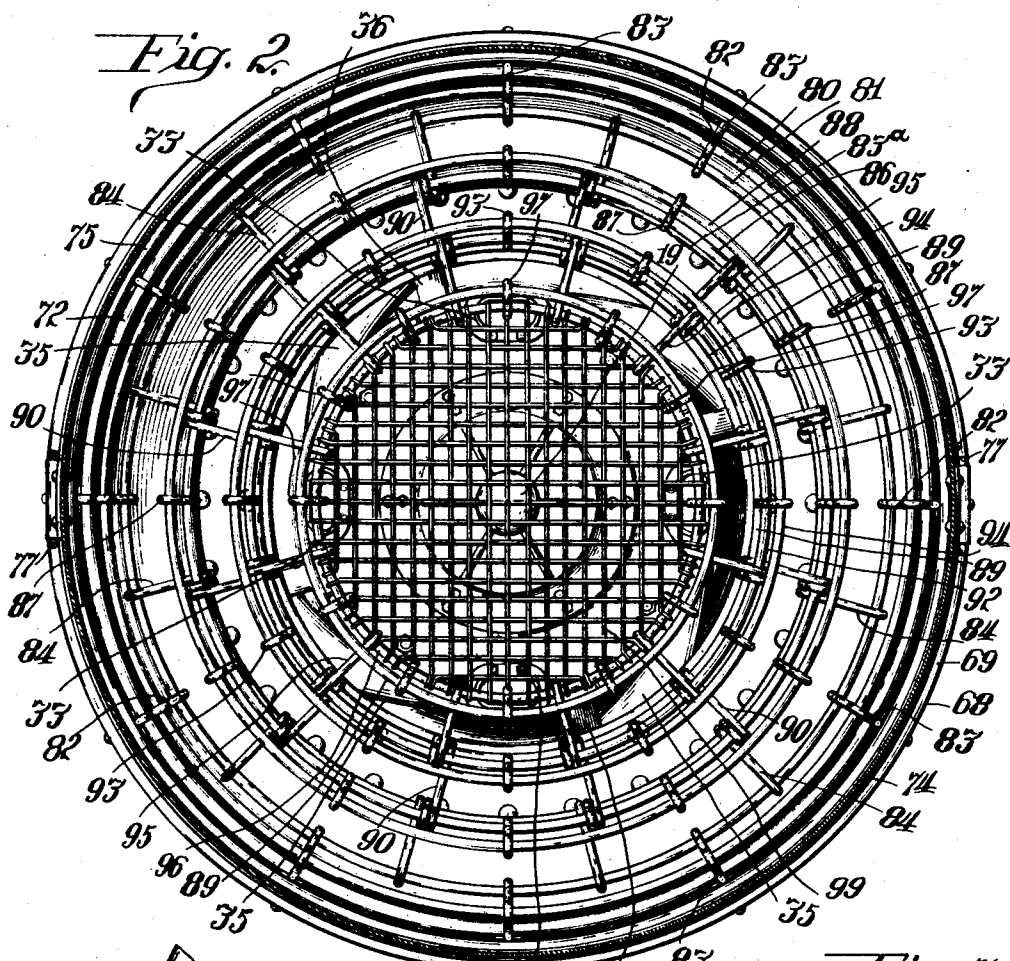
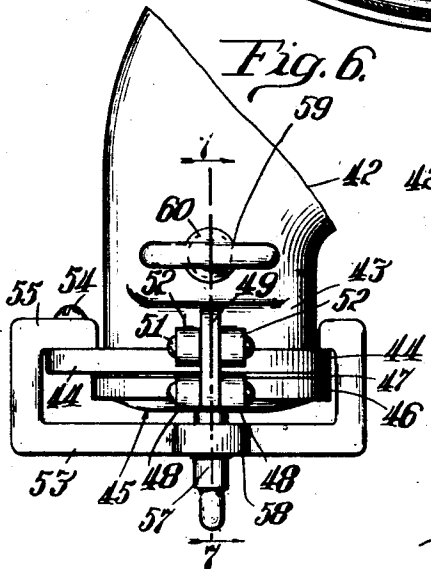
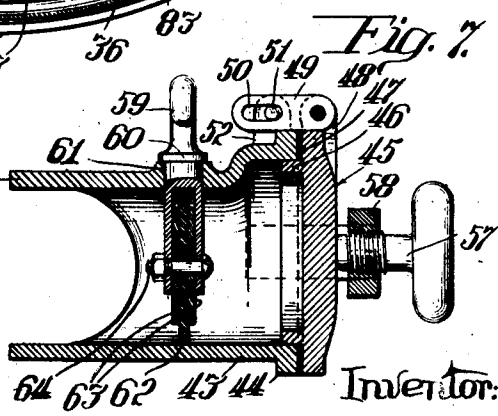
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3 Sheets-Sheet 2



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Nov. 10, 1931.

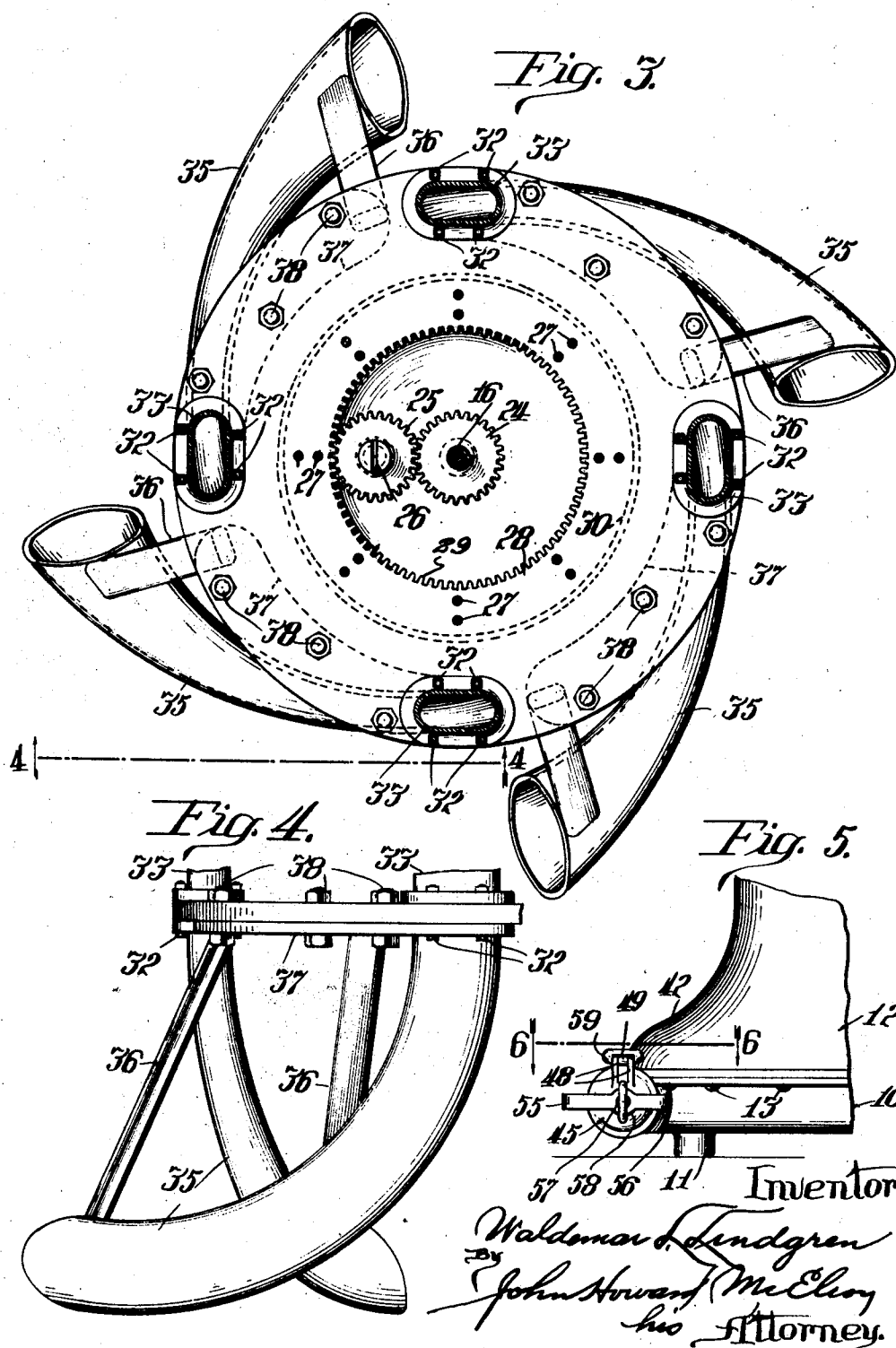
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UNITED STATES PATENT OFFICE

WALDEMAR L. LINDGREN, OF WAUKEGAN, ILLINOIS

DISH WASHING MACHINE

Application filed July 10, 1929. Serial No. 377,252.

My invention is concerned with dish washing machines, and is designed to produce a simple structure in which a motor serves to throw a powerful whirling spray or plurality of sprays through the dishes to be washed, which will be held in a suitable skeleton basket or container enclosed in a casing which will cause the water to rebound from its top and sides back on to the dishes to assist in their cleansing.

To illustrate my invention, I annex hereto three sheets of drawings, in which the same reference characters are used to designate identical parts in all the figures, of which,—

Fig. 1 is a central vertical section through a machine embodying my invention;

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1;

Fig. 3 is a view, partly in section, on the line 3—3 of Fig. 1, but on an enlarged scale and with the trough omitted;

Fig. 4 is a detail of one of the scooping pipes as seen from the line 4—4 of Fig. 3;

Fig. 5 is a view of a portion of the bottom of the trough, showing the outlet through which the water is discharged after using;

Fig. 6 is a top plan view of the same, on an enlarged scale, as seen from the line 6—6 of Fig. 5; and

Fig. 7 is a vertical section as seen on the line 7—7 of Fig. 6.

In carrying out my invention in its preferred form, I employ the generally circular base casting 10, which forms the major portion of the trough, and which may have three or more lugs 11 on its bottom, on which it rests. The outer portion of the trough is formed by another casting 12, bolted or screwed to the casting 10 by the screws 13 passing through the associated annular flanges formed on said castings. Supported on the under side of the center of the casting 10 by the screw bolts 14 is the casing of the electric motor 15 suspended therefrom, the armature 16 of which extends upward through a centrally located aperture 17 in the top of the casting and into the rotating housing casting 18, the upper end of which has the cap 19 secured thereon and covering the nut 20 secured on the upper end of

the armature shaft 16 and having the race 21 for the ball bearings 22 on the under side thereof, the top of the casting 18 having secured thereon the ball-bearing race 23.

With the construction shown, it will be obvious that the armature shaft 16 is free to rotate in the casting 18, which is rotated by the armature shaft 16 through the medium of the spur-gear pinion 24 secured on the armature shaft between the casting 10 and the casting 18, and which meshes with the idle spur-gear pinion 25 journaled upon the bearing stud 26 secured in the top of the casting 10. The rotating casting 18 has secured to the under side of its periphery, by the plurality of screw bolts 27, an annulus 28 which has internal spur-gear teeth 29 meshing with the spur-gear pinion 25 so that the annulus 28 is rotated. The smooth under surface of this annulus 28 is in substantial engagement with the smooth top surface of the central portion of the casting 10, and to prevent the possibility of any water passing from the outer portion of the annulus 28 inwardly to reach the armature shaft of the motor, I provide on the under side of the central portion of the annulus 28 a downwardly-projecting annular flange 30 fitting in an annular channel 31 formed in the upper surface of the top of the casting 10 to receive the same. Grease or some other lubricant which resists the passage of water may be placed in the channel 31.

Secured to the top of the annulus 28, near its periphery, by the bolts 32, is one or more (preferably four) nozzles 33, which are of the shape best seen in Figs. 1 and 3, and which discharge streams of water upward and inwardly. These nozzles fit over the apertures 34 in the annulus 28, and extending downwardly therefrom, so that they form continuations of the nozzles 33, are the scooping pipes 35, which are secured on the under side of the annulus 28 by the same bolts 32 which hold the nozzles 33 in place, said bolts co-operating with flanges formed on the bottoms of the nozzles 33 and on the tops of the scooping pipes 35. These scooping pipes 35 are of a shape which will be understood from Figs. 3 and 4, where it will be

seen that the lower ends are substantially circular in their outline and of a much greater area than the discharge ends, due to the fact that the width is contracted toward the upper end, and also to the fact that the pipe is there flattened. The lower ends of the pipes 35 rotate in the bottom of the annular trough formed by the castings 10 and 12, and each pipe is supported at its lower end by the brace bar 36 secured to the upper side thereof and extending diagonally upwardly and secured to the under side of the periphery of the annulus 28, as will be clearly seen in Fig. 3. This brace rod 36 is not secured directly to the under side of the annulus 28, but is secured to the flange 37, which, as seen in Fig. 3, extends in the arc of a circle to a little less than ninety degrees, and is secured to the annulus 28 by the bolts 38, as clearly seen in Figs. 3 and 4. To prevent the water in the bottom of the annular trough from whirling, and thus avoid being scooped up by the pipes 35, I locate in the bottom of the trough numerous baffle plates 39, 40 and 41, which are in the same vertical plane, the baffle plates 39 being carried by the casting 12, while the baffle plates 40 and 41 are on the upper surface of the casting 10, the plates 40 and 41 being separated so as to allow the water to drain out of the bottom of the trough. To permit the water to drain out, I provide the outlet shown in Figs. 5, 6 and 7, where it will be seen that the outer portion of the bottom of the casting 10 is provided with a flattened pipe 42 extending therefrom and having its bottom flush with the bottom of the trough formed by the castings 10 and 12. The pipe 42, as it leaves the trough, becomes circular at its outer end 43, which is provided with the flange 44, so that its end may be closed by the disk 45 having the inwardly-projecting flange 46 fitting into the end of the pipe 43, and an annular packing ring 47 interposed between the end of the pipe and the periphery of the disk 45. The disk 45 has the ears 48, between which is pivoted the link 49 which has in its other end the elongated slot 50, through which passes the pin 51 connecting the ears 52 extending upward from the pipe 43.

With the structure thus far described, it will be obvious that the disk 45 can be withdrawn and swung outwardly and upwardly when it is desired to open the apparatus and discharge the water. To hold the disk or cap 45 securely in place when the apparatus is in use, I provide the clamp 53, best seen in Fig. 6, which has the general shape of a yoke and is pivoted by the screw 54 passing through the ear 55 thereof into the flange 44 of the pipe 43. The other end of the clamp 53 has the lug 56 adapted to co-operate with the flange 44 on the opposite side of the pipe, and the clamp is secured in place with any de-

sired degree of pressure by the set screw 57 threaded through the central portion 58 of the clamp and engaging the center of the cap or disk 45.

To hold back the water while the clamp is being removed, I preferably provide the valve shown in Figs. 6 and 7, which consists of the handle 59 secured on the upper end of the cylindrical valve stem 60, which passes down through the aperture 61 formed in the top of the pipe 43, and has its central portion cut away to receive the circular leather or rubber disk 62 secured between the smaller metal disks 63 by the screw bolt 64 passed through the valve stem and the three disks, as will be readily apparent. The diameter of the disk 62 is the same as the internal diameter of the pipe 43, so that when the disk 62 is turned transversely, it stops the flow of the water, which can be permitted by turning the handle 59 away from the position shown in the drawings.

Secured to the annular flange 65 forming the top of the casting 12, by the bolts 66, is a flat metal ring 67, which has riveted on the top thereof the sheet-metal bottom portion 68 of the casing. This is curved from the horizontal position of the bottom portion to the vertical position of the top portion, which is reinforced by the circular rod 69, around which the upper end of the portion 68 of the casing is curled. Riveted on the inside of this portion 68 are a number of Z-shaped spacers 70 which have their inner flanges riveted to the sheet-metal lining piece 71, which has its upper end strengthened by being curled around the circular rod 72, while its lower end has the downwardly-turned flange 73. The cover portion of the casing is made up of the cylindrical vertical part 74 made of sheet-metal, and preferably having its lower end reinforced by being curled around the circular rod 75. An annular bead 76 is formed toward the bottom of the cover so that it will rest on the top of the portion of the casing that is curled around the rod 69. A pair of handles 77 may be mounted on the sides of the cylindrical portion 74, which has its upper edge turned over and secured within the rolled-over edge 78 of the top portion 79, which is preferably concaved on its under side, as clearly shown in Fig. 1. It will be understood that the cover is removed when the dishes are to be put in place, and replaced before the washing begins. It will also be understood that the water thrown upward from the nozzles 33 will, to some extent, pass through the dishes in the holder to be described and strike the sides and top of the cover and be deflected back on to the dishes, thus washing the upper portion thereof.

To support the dishes to be washed, I provide the basket shown in Figs. 1 and 2, where it will be seen that I provide the top and bot-

tom metallic rings 80 and 81, which are connected at frequent intervals by the substantially vertical rods 82, which have the lugs 83 projecting outwardly therefrom and adapted to rest on the top of the lining portion curved around the rod 72. Inside of the ring 81, I provide another ring 83^a, which is connected at frequent intervals by the horizontal links 84 with the ring 81, and this ring 83^a is connected at frequent intervals by the vertical links 85 with the ring 86 located above it, and this ring 86 is in turn connected at frequent intervals by the substantially vertical links 87 with the ring 88, inside of and somewhat above the ring 80. Inside of the ring 86 and at the same level is a ring 89 connected thereto at frequent intervals by the horizontal links 90. This ring 89 is connected at frequent intervals by the substantially vertical links 91 with the ring 92, and this ring 92 is in turn connected at frequent intervals by the substantially vertical links 93 with the ring 94 located inside of and somewhat above the ring 88. The ring 92 is connected at frequent intervals by the links 95 with the ring 96, which in turn is connected at frequent intervals by the substantially vertical links 97 with the ring 98 located inside of and somewhat above the ring 94. The bottom of the inner portion of this wire-basket structure is formed by the wires 99, seen in Fig. 2, which are connected at their ends to the ring 96, and form a square mesh screen upon which are placed the knives, forks, spoons, e.c., which would not be held in the other portions of the basket, and it will be understood that the plates, etc., are placed vertically in the annular channels formed by the skeleton framework thus described.

The operation of the apparatus will be readily apparent. When the cover is removed, the dirty dishes, and knives and forks, etc., are stacked in the wire basket, which is put in place, and the trough is partially filled with hot soapy water. The cover is then put in place and the motor started, and the water in the trough will be scooped up by the large opening in the bottom of the pipes 35 and forced upwardly and inwardly through the nozzles 33, giving a whirling spray through the dishes held in the skeleton basket. Such water as passes between the dishes will strike the sides and top of the cover and be deflected back on the dishes. The lining piece or baffle plate 71 catches the water thrown upwardly, and prevents its reaching the joint between the ring 69 and the bead 76, and possibly escaping therethrough, and as the water returns, it can flow down between the baffle plate 71 and the ring 75, and reach the trough.

When the apparatus has been operated for the necessary time, a very few minutes, the motor is stopped, the drain valve opened, and the dirty, soapy water removed, after which fresh, clean, hot water will be placed in the

trough, and the cover replaced and the motor started, so as to rinse the dishes thoroughly by the same method as was employed in washing them, after which they can be removed and dried. The dirty water might be removed while the motor is still running, if it can be reversed, in which case the water will be forced out, instead of thrown upward by the scooping pipes.

While I have shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the prior art.

What I claim as new, and desire to secure by Letters Patent of the United States, is:

1. In a dish-washing machine, the combination with a casing, of a skeleton container therein, an annular trough in the bottom of the casing of small cross section as compared with that of the complete casing, a plurality of scooping pipes located in a single circle and having their lower ends extending into the trough and their discharge upper ends beneath the container, and means for rotating said scooping pipes about a vertical axis.

2. In a dish-washing machine, the combination with a casing, of a skeleton container therein, an annular trough in the bottom of the casing, a plurality of scooping pipes having their lower ends extending into the trough and their discharge upper ends beneath the container, an annulus carrying said scooping pipes having gear teeth on its interior, a motor having a vertical armature shaft suspended from the casing, a driving pinion on the armature shaft, and an intermediate idle gear between the driving gear and the annulus.

3. In a dish-washing machine, the combination with a base consisting of an annular trough with a central web at the top of the trough, of a motor suspended from said base and having its vertical armature shaft extending up through said central web, a circular casting rotatable on the top of the armature shaft, an annulus depending from the periphery of the casing, a plurality of scooping pipes depending from the periphery of the annulus and having discharge nozzles above it, an internal gear on the annulus, a gear pinion on the armature shaft beneath the circular casting, an idle gear connecting the pinion and the internal gear, a casing above the base, a skeleton container supported in the casing, and a cover for the casing.

4. In a dish-washing machine, the combination with a base, of a casing above the base consisting of a sheet-metal outer side and bottom portion connected to a sheet-metal inner side and bottom portion by spacing members, a sheet-metal cover for the casing

having an annular rib therein to rest on the top of the outer side portion and having its bottom extending down between the two side portions, a skeleton container supported on the inner side and bottom portion, and means for throwing sprays of water from the base up through the skeleton container.

5. In a dish-washing machine, the combination with a casing, of a skeleton container therein, an annular trough in the bottom of the casing, a scooping pipe having its lower end extending into the trough and its discharge upper end beneath the container, and an electric motor located within the central outside portion of the trough and having a vertical armature shaft and suitable gearing between its armature shaft and the scooping pipe to rotate the latter located above the effective top of the trough.

In witness whereof, I have hereunto set my hand this 1st day of July, 1929.

WALDEMAR L. LINDGREN.

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