G. W. CONOVER.

DISH WASHING MACHINE.

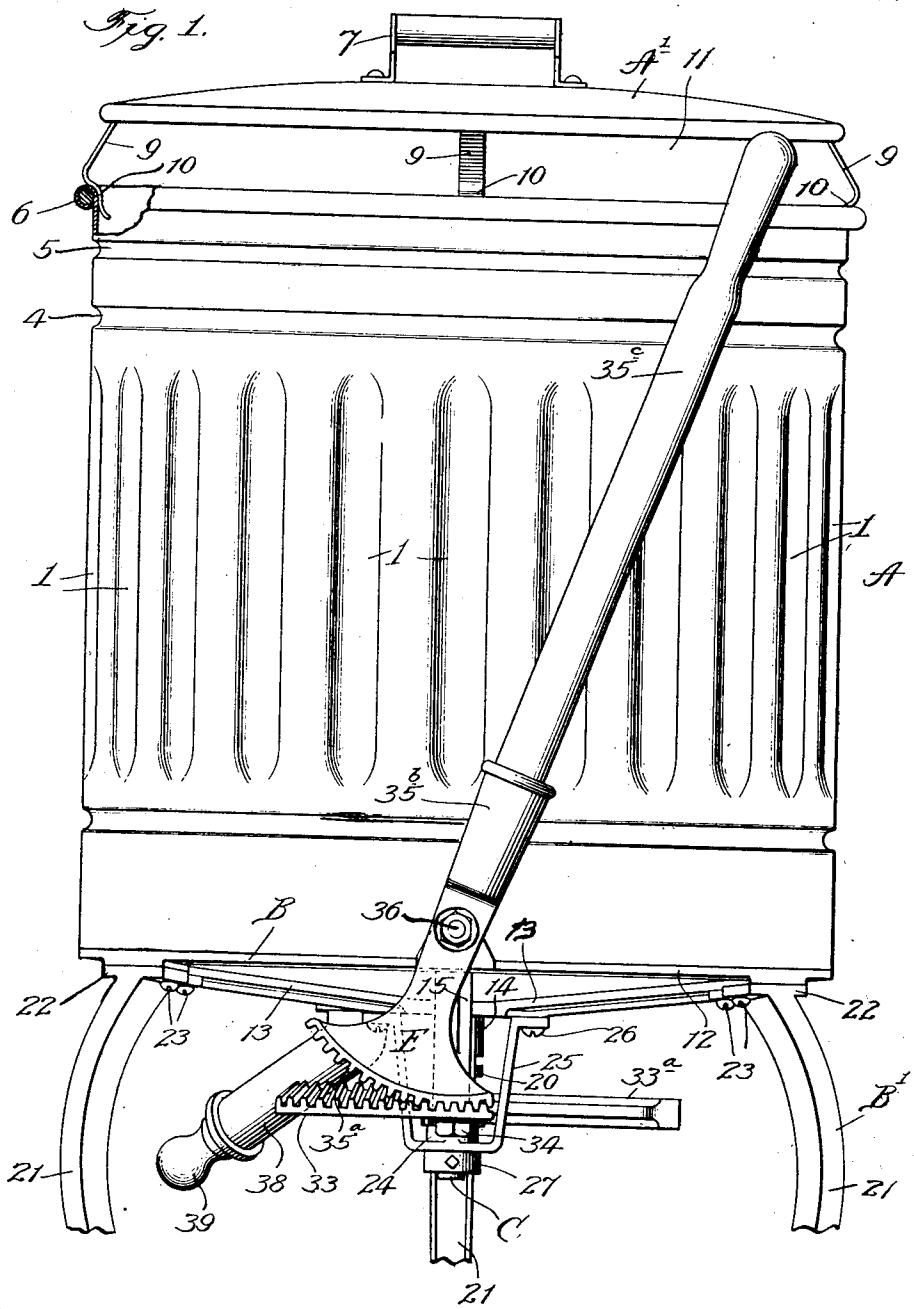
APPLICATION FILED NOV. 20, 1915.

1,354,022.

Patented Sept. 28, 1920.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
E. Taylord.
Chas. H. Buell.

Inventor:
George W. Conover,
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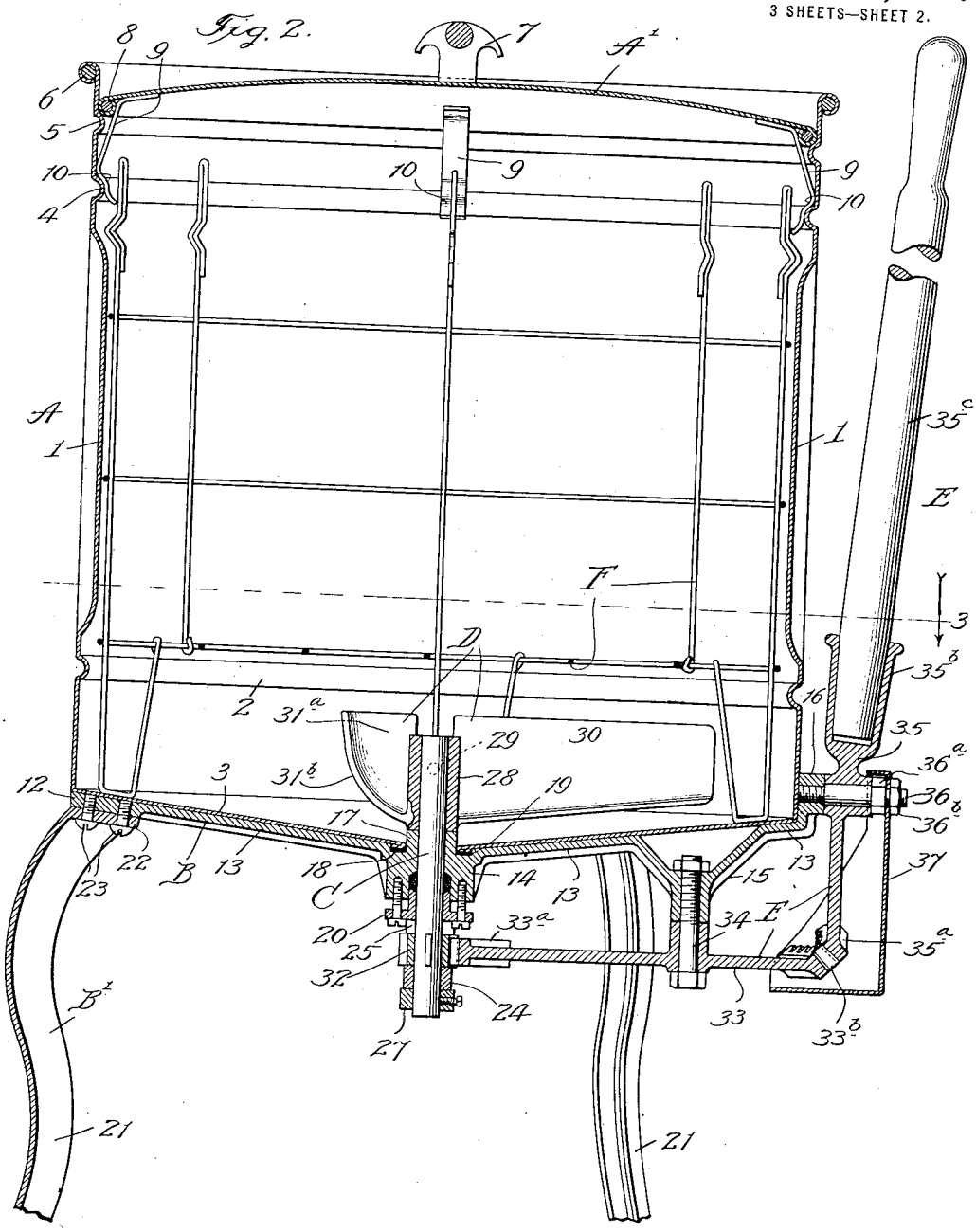
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

[illegible] Dayford.

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3 SHEETS—SHEET 3.

Fig. 3.

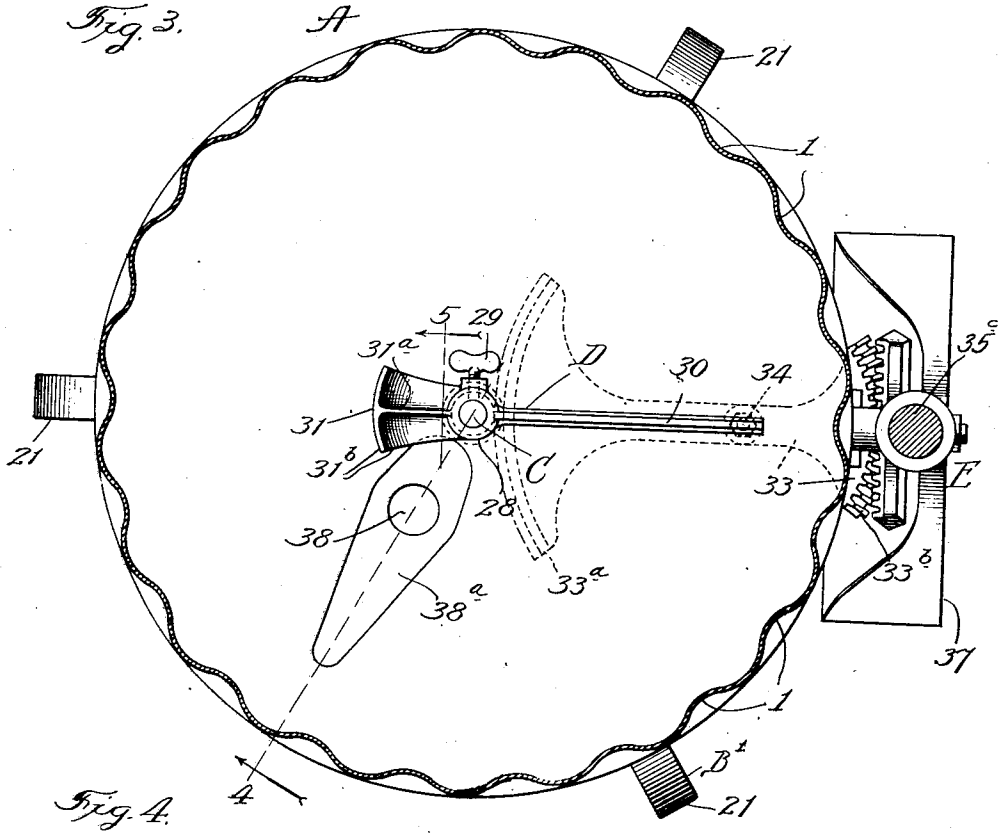


Fig. 4.

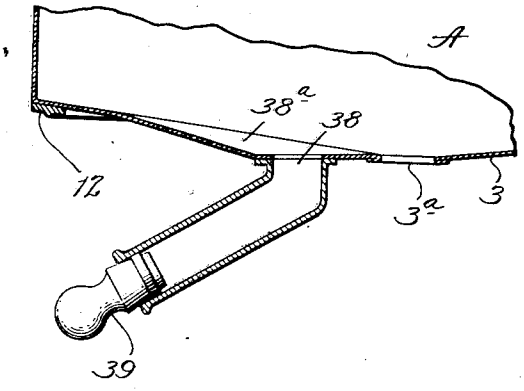
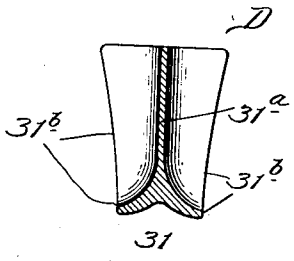


Fig. 5.



Witnesses:

[illegible] Stafford,

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UNITED STATES PATENT OFFICE.

GEORGE W. CONOVER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE C-K CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

DISH-WASHING MACHINE.

1,354,022. Specification of Letters Patent. Patented Sept. 28, 1920.

Application filed November 20, 1915. Serial No. 62,479.

To all whom it may concern:

Be it known that I, GEORGE W. CONOVER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Dish-Washing Machines, of which the following is a specification.

This invention relates particularly to machines adapted to the purpose of washing dishes; and the primary object of the invention is to provide a machine of simple construction and moderate cost, which is thoroughly adapted to the purpose indicated.

The invention is illustrated in its preferred embodiment in the accompanying drawings, in which—

Figure 1 represents a broken elevational view of a dish-washing machine constructed in accordance with the invention, the view showing the cover of the machine raised, for ventilating purposes; Fig. 2, a broken vertical sectional view, showing the cover of the machine in the position which it occupies during the dish-washing operation; Fig. 3, a horizontal sectional view taken as indicated at line 3 of Fig. 2; Fig. 4, a broken vertical sectional view showing the discharge spout with which the machine is provided; and Fig. 5, a vertical sectional view through the short arm of the water-propelling paddle employed.

In the preferred embodiment, which is illustrated, A represents a can, or vessel, which affords a washing chamber, said chamber being provided with a removable top A′; B, a base-ring, or spider, upon which the vessel A is mounted, and which affords a reinforcement for the bottom of the vessel, and affords also bearings for various operating parts; B′, a frame, or standard, upon which the spider B is rigidly mounted; C, a shaft journaled in the hub-portion of the spider B and having its upper portion projecting into the lower portion of the vessel A; D, a water-propelling device demountably secured to the upper end of the shaft C; and E, actuating mechanism for the propeller shaft C.

The vessel A may be conveniently formed of sheet-metal, and preferably has its cylindrical vertical wall provided with vertical corrugations 1, which coact with the propeller D to cause the water to be thrown in sheets, or sprays, over and through the dishes, which may be supported in the vessel A by any suitable means, as, for instance, by the open-work tray, or basket, F. The vertical wall of the vessel is preferably provided also with a lower inwardly-struck circumferential bead 2, which is located some distance above the dished bottom 3 of the vessel. Also, the vertical wall of the vessel is preferably provided with inwardly-struck circumferential beads 4 and 5, which are spaced some distance apart and located some distance beneath the reinforced upper edge 6 of the vertical wall.

The top, or cover, A′ preferably comprises an upwardly-dished sheet-metal member provided centrally with a handle 7, and equipped at its circumference with a reinforcement 8 and a series of spring-arms, or supports, 9. The spring-arms 9 are provided with concavities 10, which are adapted to engage either of the internal beads 4 and 5, or the reinforced upper edge 6 of the can, or body, A. In the position shown in Fig. 2, the reinforced circumferential edge of the cover A′ rests on the internal bead 5, while the spring-arms 10 engage the internal bead 4, thus holding the cover securely in the closed position. In Fig. 1, the cover is elevated and held in the elevated position by the spring-arms 9, which engage the beaded upper edge 6 of the body A, thus providing a ventilating space 11 between the upper edge of the body A and the cover.

The spider B comprises a flat ring 12 and radial arms 13 uniting the ring 12 to a central hub 14. One of the ribs 13 has a depressed bearing, or support, 15, which carries a vertical pivot for one of the members of the actuating mechanism E; and at one point the ring 12 has formed integrally therewith an upwardly-projecting lug, or support 16, which serves to carry the pivot of the actuating lever of the mechanism E. The hub 14 of the spider B is provided with a reduced upper extension 17, which extends through a central perforation in the bottom 3; and the hub is provided with an annular depression 18, which encircles the reduced extension 17. The metal forming the bottom 3 is bent downwardly and back

upon itself at the margin of the central opening, so as to extend into the depression 18; and solder 19 is applied to make a water-tight joint.

The hub 14 is provided with a vertical bore, through which the shaft C extends; and the hub is equipped with a stuffing-box 20, as shown.

The frame B′ comprises legs 21 equipped at their upper ends with flanges 22 which are secured by screws 23, to the ring 12 of the spider B.

The lower end of the shaft C is journaled in a bearing 24 carried by a stirrup 25, which is secured, by screws 26, to the radial arms 13 of the spider B. Beneath the bearing 24, a collar 27 is secured to the lower end of the shaft C.

The propeller D preferably comprises a hub 28 detachably secured, by a set-screw 29, to the upper end of the shaft C; and long and short arms 30 and 31, respectively, projecting from the hub 28. The long arm 30 presents substantially flat vertical sides, and is adapted to impart a centrifugal action to the water, causing it to mount the sides of the vessel and be thrown in sheets, or sprays, over and through the dishes, this action being facilitated and intensified by the vertical corrugations 1 of the vessel A. The short arm 31 is designed to cause the water to spout upwardly and outwardly from the central portion of the lower part of the vessel. It thus comprises a vertical web 31^a flanked by curved flanges 31^b which extend along the bottom and outer edge of the vertical web 31^a. That is, there is a curved flange 31^b on each side of the vertical web 31^a, which extends outwardly and upwardly from the lower portion of the hub 28, so that as the paddle D rotates, water will be caused to shoot upwardly and outwardly from the central portion of the bottom of the vessel. The long arm, or web, 30, may also cause some of the water to be thrown upwardly throughout the length of said arm, as well as to cause the centrifugal motion of the water noted above; but the short arm 31 is particularly designed to throw the water upwardly and outwardly at the central portion of the vessel, so that the dishes which are near the center will be struck by the water from below.

The actuating mechanism E comprises a pinion 32 fixedly secured on the shaft C just above the bearing 24; a lever 33 comprising gear-segments 33^a and 33^b and mounted on a vertical pivot 34, carried by the support 15 depending from the spider B, the member 33 thus operating in a horizontal plane; a lever 35 mounted on a horizontal pivot 36 carried by the lug 16 of the spider and equipped at its lower end with a gear-segment 35^a; and at its upper end with a socket 35^b; and a handle 35^c mounted in the socket 35^b and occupying a standing position at one side of the vessel A.

The member 33 has a gear-sector 33^a at its inner end, which engages the pinion 32, and has a gear-sector 33^b at its outer end, which engages the gear-sector 35^a. The pivot 34 is nearer the gear-sector 33^b than the gear-sector 33^a, so that the outer end of the member 33 is, in effect, a short arm, while the inner end of the member 33 is, in effect, a long arm.

The pivot 36 preferably comprises a headless bolt having a reduced threaded inner end screwed into a threaded bore with which the lug 16 is provided, the outer end of the bolt being reduced and threaded, and equipped with nuts 36^a and 36^b.

In Fig. 2 is shown a guard 37 carried by the outer end of the bolt forming the pivot 36, and clamped between the nuts 36^a and 36^b, the guard 37 being of suitable form to house the gear-sectors 35^a and 33^b.

The bottom of the vessel A is preferably dished, or slightly conical, and is provided with a discharge pipe 38 equipped with a stopper 39. The bottom 3 of the vessel A is depressed at one side of the central opening 3^a, as indicated at 38^a, so that the water will be conducted to the discharge pipe 38.

The operation of the machine will be readily understood. The dishes are placed within a suitable open-work rack, or tray, such as the tray F, which is conventionally shown, and introduced into the vessel A; a quantity of hot water is then introduced, sufficient to fill the lower portion of the vessel to a desired height, preferably almost immersing the paddle D. The hand-lever 35^c is then oscillated, imparting a rapid rotary motion to the paddle D, the rotary motion being automatically reversed periodically, as the hand-lever oscillates. The long arm 30 of the paddle, in addition to throwing some of the water directly upwardly through the dishes, operates mainly to impart centrifugal motion to the water and cause it to mount the sides of the vessel, from which it is thrown over the dishes by striking the vertical corrugations 1. The water is thus broken up and thrown in sheets, or sprayed over and through the dishes. The short arm of the paddle causes the water to shoot violently upwardly and outwardly from the lower central portion of the vessel, and this water, encountering the dishes from the various angles as rotation continues, is sprayed in every direction. By this simple mechanism, provision is made for throwing the water violently against the dishes from every direction; and experience has demonstrated that the dishes may be thoroughly cleansed within a very sort time.

After the first washing operation, the

water may be discharged through the discharge-spout 38; and rinsing water may be introduced.

When the machine is not in use, the cover A′ may be left in the elevated position shown in Fig. 1, so that the vessel A will be thoroughly ventilated. It may be added that when the machine is in use, the lower internal circumferential bead, or corrugation, 2, will aid in causing some of the water to break inwardly and strike the lower sides of the dishes.

The machine described is simple and cheap in construction, easily operated, readily kept in sanitary condition, and highly effective in operation. These are important features, contributing, as they do, to the production of a machine which can be sold at a popular price, and used in the household, as well as in restaurants, or the like, where dishes must be washed in large numbers.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitation should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a dish-washing machine, the combination of a vessel provided with substantially vertical corrugations, a rotary paddle in the lower portion of said vessel comprising a long arm and a short arm, the latter having surfaces adapted to direct the water upwardly and outwardly from the lower central portion of the vessel, and means for rotating said paddle.

2. In a dish-washing machine, the combination of a spider, comprising a ring, a hub, and arms connecting said ring and hub, one of said arms having a depressed support, a vertical pivot carried by said support, a sheet-metal vessel mounted on said spider and having the central portion of its bottom connected by a water-tight joint with said hub, a vertical shaft extending through said hub and equipped at its upper end with a paddle and equipped at its lower portion with a pinion, a lever mounted on said vertical pivot and equipped at its inner end with a gear-sector meshing with said pinion, and equipped at its outer end with a gear-sector, a horizontal pivot carried by said spider and disposed at one side of the lower portion of said vessel, and a lever mounted on said horizontal pivot, and equipped at its lower end with a gear-sector engaging the outer gear-sector mentioned.

3. In a dish-washing machine, the combination of a vessel having near its bottom an internal bead, and above said bead internal vertical projections, a rotary paddle journaled in the bottom of said vessel, and means for actuating said paddle.

GEORGE W. CONOVER.

In presence of—
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