(No Model.) 2 Sheets—Sheet 1.

H. F. LOW & L. A. THOMPSON.

DISH CLEANER.

No. 516,605. Patented Mar. 13, 1894.

Fig. 1.

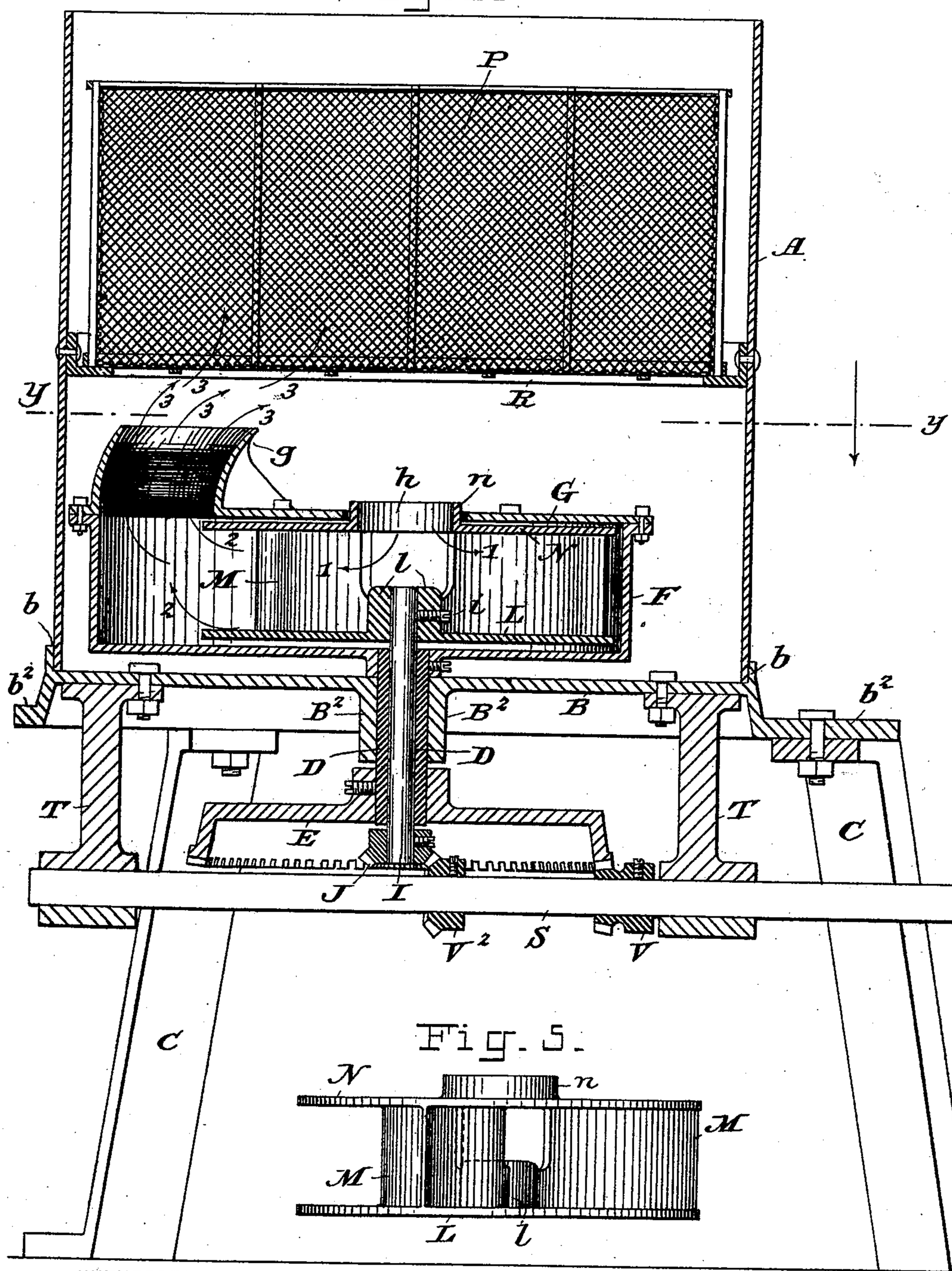
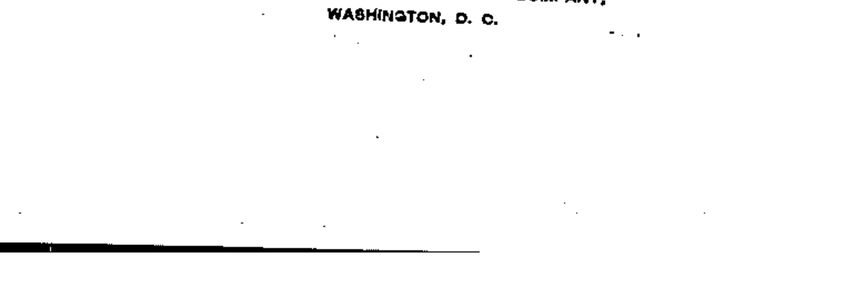


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

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DISH CLEANER.

No. 516,605. Patented Mar. 13, 1894.

Fig. 2.

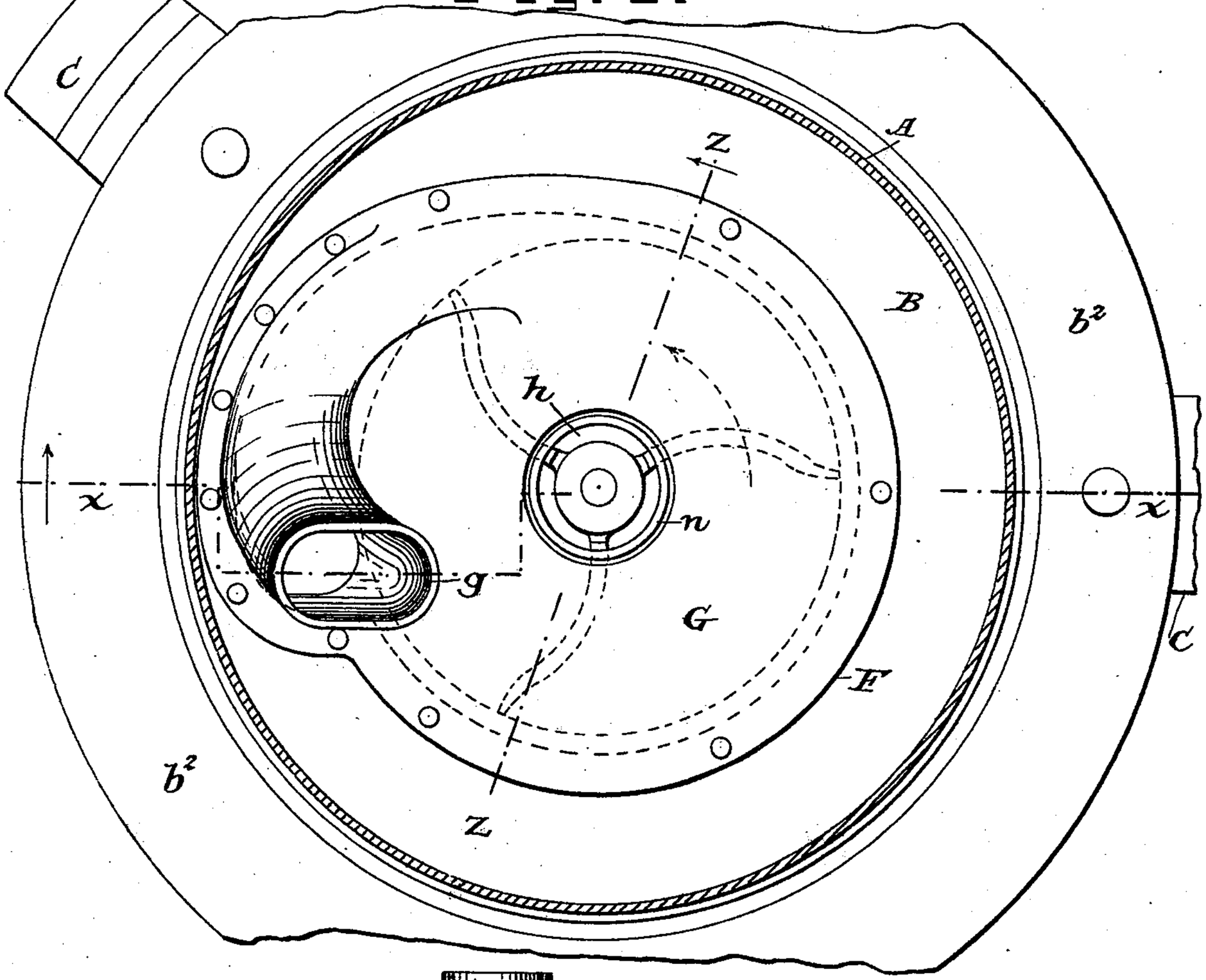


Fig. 3.

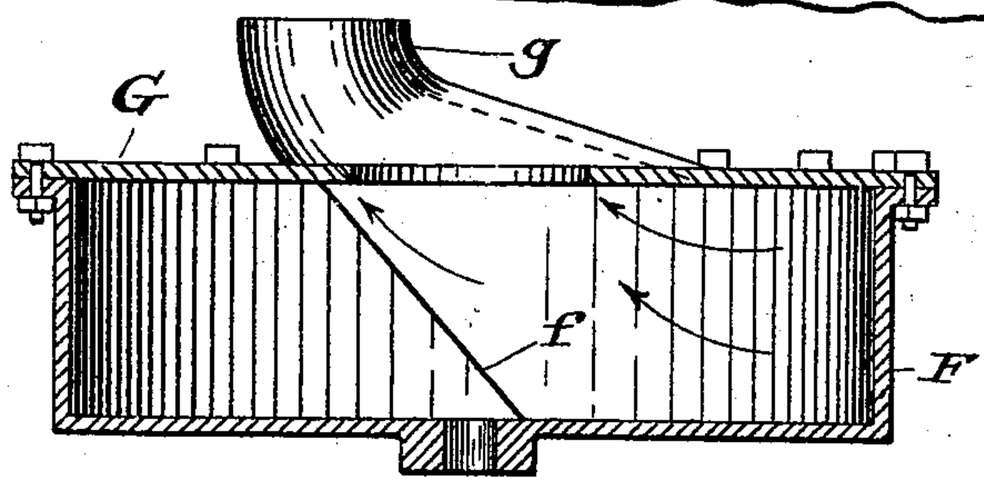
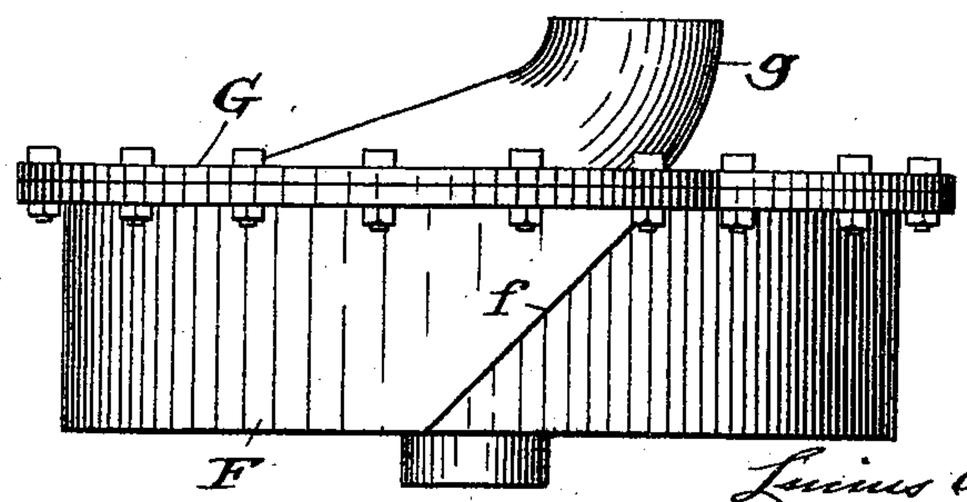


Fig. 4.



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WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HAMILTON F. LOW AND LUCIUS A. THOMPSON, OF NEW YORK, N. Y., ASSIGNORS OF ONE-THIRD TO MARTIN W. SANDERS, OF CLEVELAND, OHIO, AND SAID LOW ASSIGNOR OF HIS REMAINING RIGHT TO CASSANDRIA LOW, OF CLEVELAND, OHIO.

DISH-CLEANER.

SPECIFICATION forming part of Letters Patent No. 516,605, dated March 13, 1894.

Application filed April 10, 1893. Serial No. 469,753. (No model.)

To all whom it may concern:

Be it known that we, HAMILTON F. LOW and LUCIUS A. THOMPSON, of New York city, New York, have invented an Improvement in Dish-Cleaners, of which the following is a specification.

Our invention relates to a dish-washing machine which may be operated by hand, steam, or other power, and which may be of any suitable dimensions, in order to adapt it to ordinary family purposes, or for use in hotels, restaurants, and other large establishments.

The invention consists in certain novel details of construction, arrangement, and operation, of various devices composing the machine, whereby a simplicity and economy of construction and efficiency of operation are secured, and other advantages are obtained, as hereinafter more particularly described.

Referring to the accompanying drawings—Figure 1 represents a central vertical sectional view of a machine embodying our improvements, the section being taken in the line *x*—*x* of Fig. 2. Fig. 2 is a horizontal section, taken in the line *y*—*y* of Fig. 1. Fig. 3 is a central vertical section, taken in the line *z*—*z* of Fig. 2, of the casing hereinafter particularly described. Fig. 4 is a side view of said casing, looking from the direction opposite to that shown in Fig. 3. Fig. 5 is a view of the agitator hereinafter particularly described.

A, represents a cylindrical vessel or tank, resting on a circular cast-iron plate B, provided with a vertical rim, *b*, inside of which the lower edge of the vessel A, fits closely, and a perfectly water-tight tank is thus formed. The bottom plate B, is provided with a horizontal flange, b^2, by means of which it is secured to a supporting frame or table C.

In the center of the bottom plate B, is a downwardly-extending hub B^2, which forms the bearing for a vertical hollow shaft D. To the lower end of this hollow shaft is secured a gear wheel E, the teeth of which may be either crown teeth or bevel teeth. To the upper end of the hollow shaft is secured a casing F, which is cylindrical in form for somewhat more than half of its circumference, and the remaining portion is enlarged in such a manner that the portion of the casing on one side of its center is strictly semi-circular, and the portion of the casing on the other side of its center is approximately semi-elliptical. This description will be better understood by referring to Fig. 2 of the drawings. At about the largest and near the terminal portion of the enlargement is a fixed plate *f*, inclined upward from the bottom to the top of the casing at an angle of about forty-five degrees, as shown in Figs. 3 and 4.

The casing F, is provided with a cover, consisting of a plate G, corresponding in form with the casing, and secured thereto by bolts passing through it and through a flange extending horizontally from the upper edge of the casing. The enlarged or so-called semi-elliptical portion of the plate or cover G, is hollowed upward and merges into tangentially-curved spout or nozzle *g*, extending upward for a suitable height above the surface of the remainder of the plate and terminating immediately over the inclined partition plate *f*, in the casing, as shown in Figs. 3 and 4. In the center of the covering plate is a circular opening *h*. The interior of the hollow shaft D forms the bearing for a vertical shaft, I, to the lower end of which is secured a bevel pinion J. The relative dimensions of this pinion J and the gear wheel E, before described are as one to eight, for the purpose hereinafter described.

To the upper end of the vertical shaft I, is secured the agitator, which works inside the casing F. The agitator consists of a suitable number of wings or paddles radiating from a central hub and inclosed between two circular plates of a diameter somewhat less than the diameter of the circular portion of the casing F. As shown in the drawings there are three of these wings or paddles, and they are curved in a concavo-convex form from the central hub to the circumference of the circular plates. The bottom plate L, the central hub *l*, and the wings M, are cast in one piece, and the attachment to the shaft I, is made by a screw *i*, passing through the hub *l*.

The top plate N, is secured in place by screws passing into the upper edges of the wings M.

In the center of the top plate N, is a circular opening surrounded by an upwardly-extending rim *n*, which works in the opening *h*, in the casing F. The hub *l*, is of a thickness about equal to half the width of the wings M, and of a diameter about equal to that of the opening in the top plate N; so that when the parts are in place, there is a central circular space above the hub for the admission of water to the agitator, as shown in Figs. 1 and 5.

The dotted lines in Fig. 2 represent the relative diameters of the casing F and the agitator working therein.

At a suitable point inside of the tank A—say about midway of its height—is bolted or otherwise suitably secured a flanged ring R, which serves to support the basket P, for holding the dishes to be washed. This basket consists of a circular framework of bars and rods and a cylindrical lining of wire network of any suitable size of mesh.

Depending from the bottom plate B, or at any suitable portion of the supporting frame or table, are hangers T, in which are formed bearings for the horizontal driving shaft S, which may be driven by hand, steam, or any other suitable power.

Secured to the shaft S, are two bevel pinions V, and V^2. The pinion V, gears with the wheel E, and the pinion V^2, gears with the pinion J.

The operation is as follows: The dishes to be washed are placed in the basket P, and the tank is supplied with water up to a suitable height—say nearly to the top of the basket. When motion is applied to the shaft S, the pinions V, and V^2, gearing with the wheel E, and pinion J, impart a rotary motion to the casing F, and the agitator L, M, N, in the direction indicated by the dotted arrow in Fig. 2,—that is to say, in the direction of the convex sides of the wings. The motion of the casing and the motion of the agitator are both in the same direction, but at different rates of speed; for, inasmuch as the pinions V, and V^2, are of the same dimensions, and the relative dimensions of the gear wheel E, and the pinion J, are as eight to one, the agitator performs eight revolutions while the casing is performing one revolution. As a result of this peculiar operation of the parts, the water in the tank A, is drawn or sucked in through the opening *h*, as indicated by the arrows marked 1, and is then forced to the spout or nozzle *g*, as indicated by the arrows marked 2, and then out through said nozzle and into the basket P, as indicated by the arrows marked 3. The casing revolves with sufficient speed to carry the water around the entire circumference of the tank; and the velocity of the agitator is so much greater than that of the casing that the water is forced through the spout in a stream of such strength and velocity as to cause it to penetrate every portion of the basket containing the dishes. In this way the water is used over and over again until the dishes are thoroughly cleansed.

The tank is provided with a suitable faucet for drawing off the water when desired, and the water may be supplied in any suitable manner.

What we claim as new, and desire to secure by Letters Patent, is—

1. A dish washing machine comprising the outer casing with means for holding the dishes, the inner rotary casing having the spout and the inlet opening, the means for rotating said inner casing and the means for forcing the water from the said rotary casing, substantially as described.

2. In a dish-washing machine, an agitator consisting of wings or paddles revolving in a revolving casing at a greater velocity than said casing, so as to cause the water drawn in at the center to be discharged with increased force through a spout or nozzle, substantially as herein described.

3. In a dish-washing machine, the combination of a revolving casing having a central opening and a circumferential tangentially-curved and upwardly-extending spout or nozzle, and an agitator revolving therein at a greater velocity, substantially as and for the purpose herein described.

4. The combination with the casing F, having the central opening *h*, the inclined partition plate *f*, and the curved spout or nozzle *g*, of the agitator consisting of the plate L, with its hub *l*, the wings or paddles M, and the top plate N, with central opening and rim *n*, arranged and operating substantially as herein described.

5. In a dish-washing machine the casing F, and the agitator working therein, said casing and agitator revolving in the same direction but at different velocities in combination with the tank A and the basket P, for holding the dishes to be washed, substantially as herein described.

6. The combination with the hollow shaft D, carrying the casing and provided with the gear wheel E, and the shaft I, working in said hollow shaft and carrying the agitator and provided with the pinion J, of the driving shaft S, and pinions V, V^2, arranged and operating substantially as and for the purpose herein described.

In witness whereof we have hereunto set our hands in presence of two witnesses.

HAMILTON F. LOW.
LUCIUS A. THOMPSON.

Witnesses:
WM. WALLACE WHITE,
FRANK M. CARRYL.