C. W. JAYCOX.

DISH WASHING MACHINE.

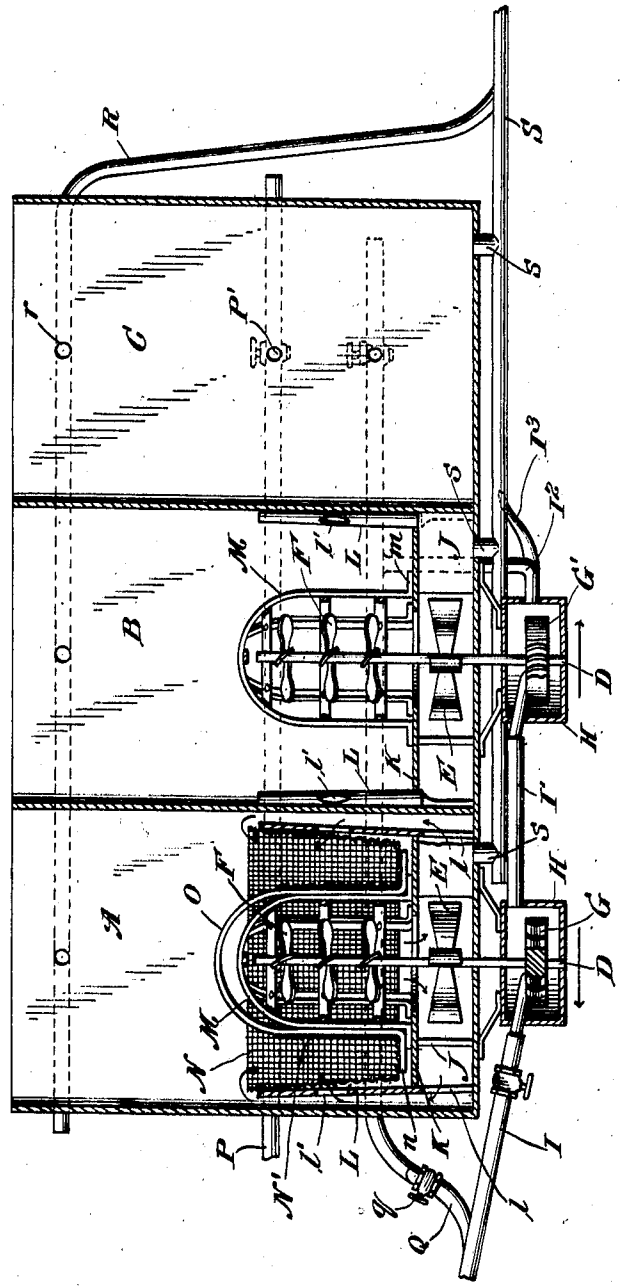
APPLICATION FILED AUG. 13, 1908.

909,604.

Patented Jan. 12, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

M. C. Lyddane

J. A. L. Mulhall.

Inventor

Charles W. Jaycox

By Joshua R. H. Potts

Attorney

C. W. JAYCOX.

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2 SHEETS—SHEET 2.

Fig. 2.

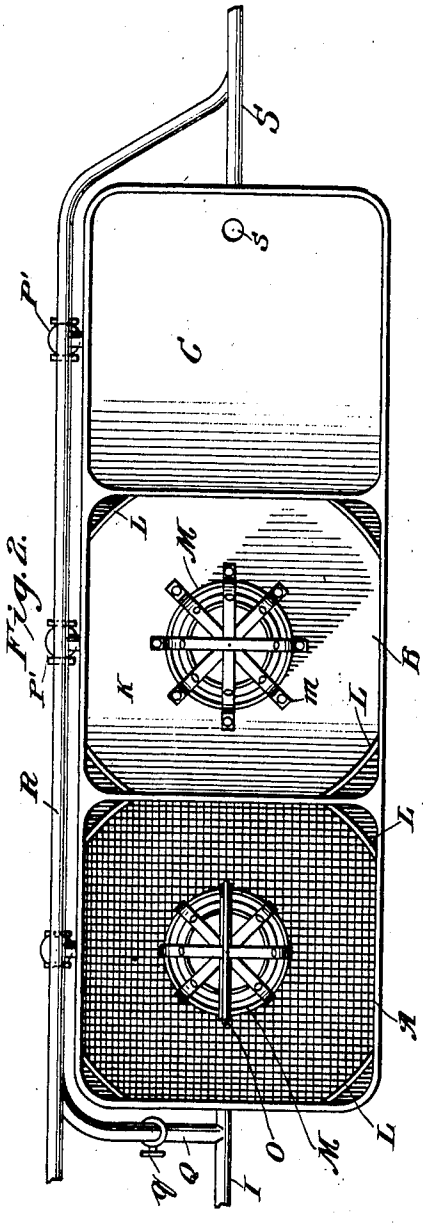


Fig. 5.

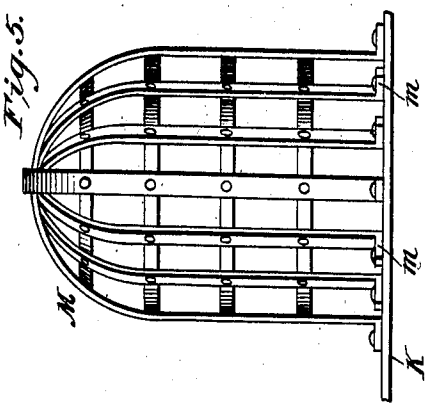


Fig. 4.

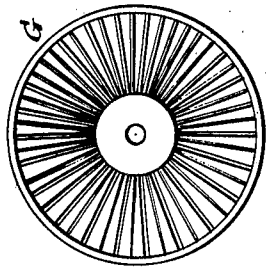
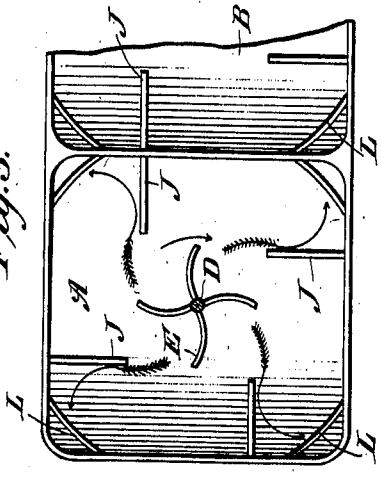


Fig. 3.



Witnesses

W. C. Lyddane

J. D. L. Mulhall.

Inventor

Charles W. Jaycox

By Joshua R. H. Potts

Attorney

UNITED STATES PATENT OFFICE.

CHARLES W. JAYCOX, OF PHILADELPHIA, PENNSYLVANIA.

DISH-WASHING MACHINE.

No. 909,604. Specification of Letters Patent. Patented Jan. 12, 1909.

Application filed August 13, 1908. Serial No. 448,276.

To all whom it may concern:

Be it known that I, CHARLES W. JAYCOX, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Dish-Washing Machines, of which the following is a specification.

My invention relates to machines for washing dishes, and particularly to machines provided with a plurality of tanks into which the basket containing the dishes is set, there being provided means for forcing currents of water through the basket and around the dishes contained therein.

One of the main objects of my invention is to provide a dish-washing machine driven by an extremely simple steam motor connected with the shaft or shafts thereof.

A further object is to provide means for causing a proper circulation of water within the washing tanks.

A third object is to provide means for carrying off the greasy water, for heating the water within the tanks and for cleaning out the discharge pipe leading from the tanks.

In the drawings, Figure 1, is a longitudinal section of an embodiment of my invention. Fig. 2, is a plan view. Fig. 3, is a detail plan view of one tank. Fig. 4, is a detail plan view of one of the driving wheels, and Fig. 5, is a side elevation of the cage surrounding the rotating blades.

The tanks A, B, C are arranged in series, the tanks A and B being provided with means whereby water may be violently circulated or agitated about the dishes held therein, while tank C is a rinsing tank and is not provided with any means for agitating the water. Through the bottom of each tank A or B projects a shaft D driven by a motor at its lower end and carrying blades E and F. The motor which I have shown and which I prefer to use is a simple steam turbine wheel G fast on the lower end of the shaft D and contained within a casing H. This turbine wheel may be of any suitable construction and is provided with a steam pipe I leading from any suitable source of steam and adapted at its end to project a jet of steam upon the curved blades of the turbine, so as to rotate the same. From the casing H a pipe I′ leads the exhaust steam to the turbine wheel G′, whose blades are oppositely directed to the blades of the turbine G. From thence the steam may be led out by any suitable exhaust or led by a pipe I^2 into the tanks. While I have shown a pipe I′ as leading from the casing of the turbine G, I of course may take the steam direct from the pipe I or use separate pipes to supply steam to the turbine. The fan blades E are located just above the bottom of the tanks A, B, and the like blades E in the tank B are reversely curved to the blades E in tank A. Located above the blades E and resting upon upwardly projecting lugs J formed on the bottom of each tank is a table or plate K having an opening through its center through which the shaft D passes. Above the plate K the shaft D is provided with the screw-blades F, these are inclined in such manner that they act as screws to draw water downward into the space surrounding the shaft D, and force it towards the blades E so that they may throw it outward as shown in Fig. 3.

As shown in Fig. 3, the deflecting lugs J project upwardly from the bottom of the tank in such position that the currents of water when thrown outward by the blades E will strike against the faces of the lugs and be deflected towards the corners of the tank. At the corners of the tanks are provided the vertical partition plates L, which are raised above the tank bottom at their lower ends as at *l*, and are also provided with an opening *l′* at about their middle.

It will be seen from the arrows in Fig. 1 that the water forced outward by the blades E passes through the openings *l* upward to the openings *l′* where it is drawn inward in contact with the dishes in the middle of the basket. Water is also carried over the top of the partition L as shown by the arrows in Fig. 1, and in contact with the dishes in the upper part of the basket.

Surrounding the fan blades F and the shafts D is a cage M shown in detail in Fig. 5, this cage being formed of strips of metal riveted to each other, the lower ends of the strips being outwardly bent as at *m* and bolted to the plate K. While I have shown a preferable form of cage I do not wish to be limited thereto as it might be made in many other ways and yet not depart from my invention.

N designates the perforated dish receiving basket which is preferably formed of wire netting approximately square in plan and has a central opening which surrounds and

fits over the cage M. Preferably this opening is surrounded by the vertical wall of wire netting N' as shown in Fig. 1.

The handle O is attached to the basket whereby it may be easily lifted out or placed in position. This handle consists of a strip of metal crossing the opening of the basket and having its ends extended down inside the inner cylindrical wall N', and then bent outward beneath the bottom of the basket as shown at *n*, and there attached in any suitable manner. It should be heavy and rigid enough to prevent the basket from sagging or getting out of shape when lifted.

In order to clearly show the rotating blades and other connected parts, these blades, the cage M and the handle O have been shown larger in proportion to the tank and basket than they would be in practice.

In order to supply hot or cold water to the tanks, I provide the pipe P which connects the several tanks to any suitable source of water supply, the pipe P of course having connections P' provided with suitable valves leading into each tank. In some cases also it is desirable to introduce live steam into the tanks and to this end I provide the pipe Q which extends from the steam pipe I and is provided with connections to each of the tanks and with valves whereby the steam may be directed into any one of the tanks separately from the others, or be cut off entirely as by the valve *q*.

The tanks are intended to be filled with water upon which grease will accumulate and hence I provide the grease pipe R which has openings *r* into each tank at about the water level and extends downward and connects with a general waste pipe S. This pipe has connections *s* leading into the bottom of each of the tanks. This waste pipe is liable at times to become clogged, and in order to blow out the clogging matter, I provide the steam pipe I^3 which either connects directly with the pipe I or connects to the exhaust pipe I^2, a suitable valve being provided for cutting off the pipe I^3 or for allowing steam to enter therein, or be forced into the pipe S. In order to create a pressure of steam within the pipe S sufficient to clear out the clogged material, I form a nozzle on the pipe I^3 where it enters the pipe S.

The operation of my device is as follows: Dishes are placed in the basket and the basket first placed in the tank A. The water therein will be carried downward by the screw-blades F, forced outward towards the sides of the tank, then upward and then over the top of the partitions L, or through the openings *l'* into contact with the dishes. After the dishes have been sufficiently washed in the tank A, the basket is lifted and placed in tank B where the water moves in a reverse direction to that in tank A. After thorough washing in the two tanks, the basket of dishes is placed in the rinsing tank C which is simply filled with clean hot water.

The particular advantages of my invention reside in the fact that the motor is attached to and forms part of the tanks themselves, and that the exhaust steam from one tank motor is used either for driving the agitating shafts of the next tank, or injected into the tanks or into the waste pipe to clear the same.

Another advantage I have found to lie in the manner in which the water is circulated around the dishes and through the basket. This is due to the arrangement of deflecting and partition plates, as well as to the peculiar construction of the basket which permits the free influx and efflux of water around the dishes.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a dish-washing machine, a tank, a shaft projecting up through the bottom of said tank, a steam motor carried on the end of said shaft for rotating the same, blades carried by said shaft just above the bottom of the tank and adapted to force the water outward to the sides of the tank, blades on the upper portion of the shaft adapted to force the water downward towards the first named blades, a cage surrounding said uppermost blades and a perforated basket adapted to be set over said cage and to contain dishes.

2. In a dish-washing machine, a tank, a shaft projecting up through the bottom of said tank, a steam motor carried on the end of said shaft for rotating the same, a supporting plate above the bottom of the tank, and having an opening through the center, blades carried by said shaft between the bottom of the tank and said supporting plate and adapted to force the water towards the sides of the tank and upward, a cage supported upon said plate above the opening thereof, screw blades on said shaft located within said cage and adapted to draw the water downward and a basket of perforated material having a central opening adapted to receive said cage.

3. In a dish-washing machine, a tank, a shaft projecting up through the bottom of the tank, means for rotating said shaft, a supporting plate above the bottom of the tank having a central opening surrounding the shaft, blades carried by said shaft just above the bottom of the tank and adapted to force the water out towards the sides thereof, vertical deflecting lugs upwardly projecting from the bottom of the tank acting to direct the water thrown off from said blades, partition plates spaced from the sides of the tank having openings at the bottom through which the water may be directed and openings at

the sides above the supporting plate, agitating screw blades attached to said shaft above the said supporting plate, a cage inclosing said screw blades and a perforated basket having a central opening surrounding said cage, said basket being adapted to rest upon said supporting plate.

4. In a dish-washing machine, a tank, a centrally apertured plate above the bottom of the tank, a shaft projecting through the bottom of the tank and through the aperture of the plate, screw blades located on the upper end of said shaft and adapted to force the water downward through said aperture, curved plates on said shaft below said supporting plate adapted to force the water outwardly against the sides of the tank, spaced partition plates forming passages at the sides of the tank through which the water may be forced into the upper portion of the tank, a cage supported on said supporting plate inclosing said screw blades, and a perforated basket having a central opening surrounding said cage, the central opening being provided with an upwardly projecting perforated wall.

5. In a dish-washing machine, a tank, a bladed shaft projecting up through said tank and adapted to be rotated, a perforated basket having a central aperture adapted to surround said blades when the basket is in place, and a handle extending down through said aperture and having angularly turned ends extending beneath the basket.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES W. JAYCOX.

Witnesses:
FREDERIC BRIGHT,
J. A. L. MULHALL.