

No. 731,341.

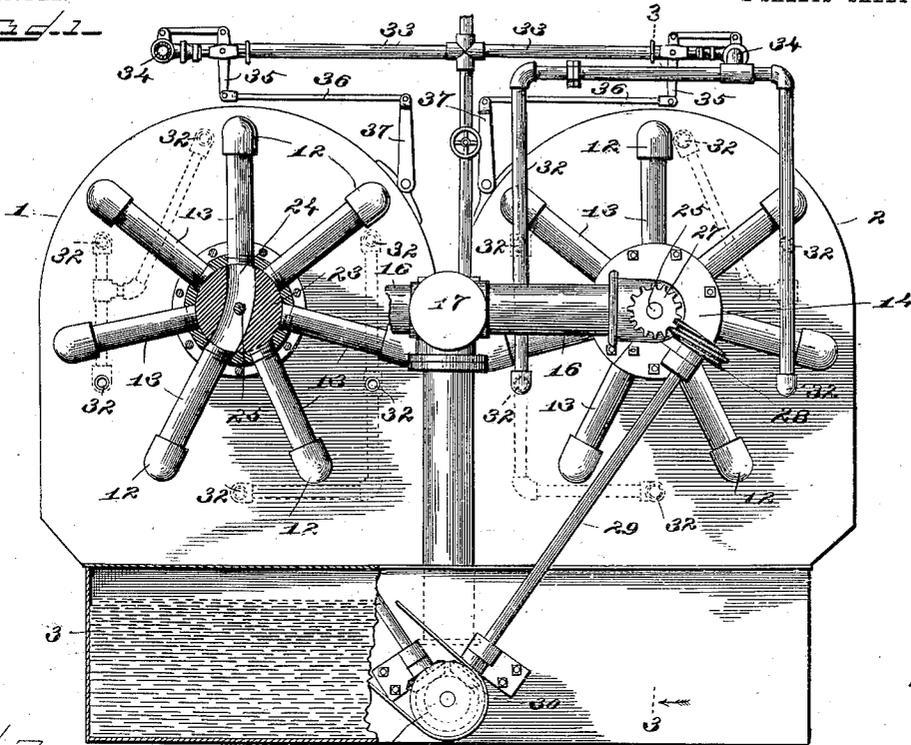
PATENTED JUNE 16, 1903.

J. G. COCHRANE.  
DISH WASHING MACHINE.  
APPLICATION FILED SEPT. 28, 1899.

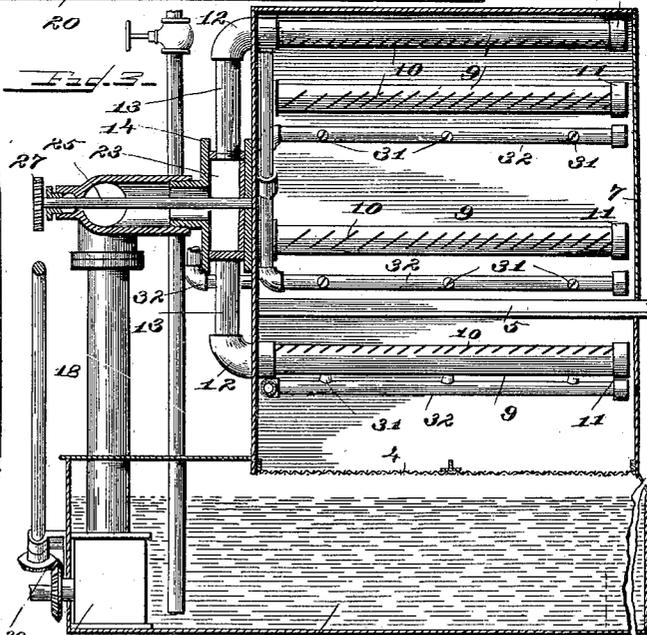
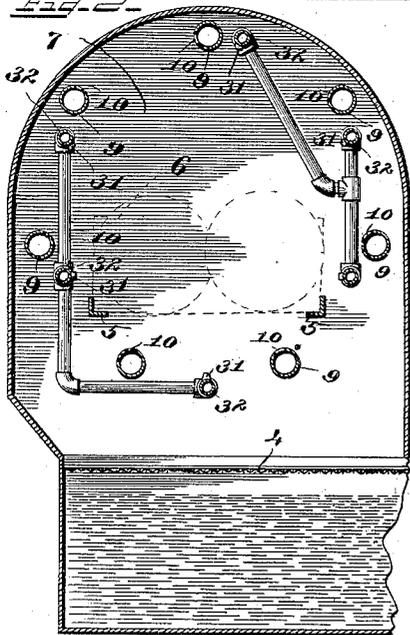
NO MODEL.

2 SHEETS—SHEET 1.

*Fig. 1*



*Fig. 2*



WITNESSES—

*Ira D. Perry*  
*J. B. Stein*

INVENTOR—

*J. G. Cochrane*  
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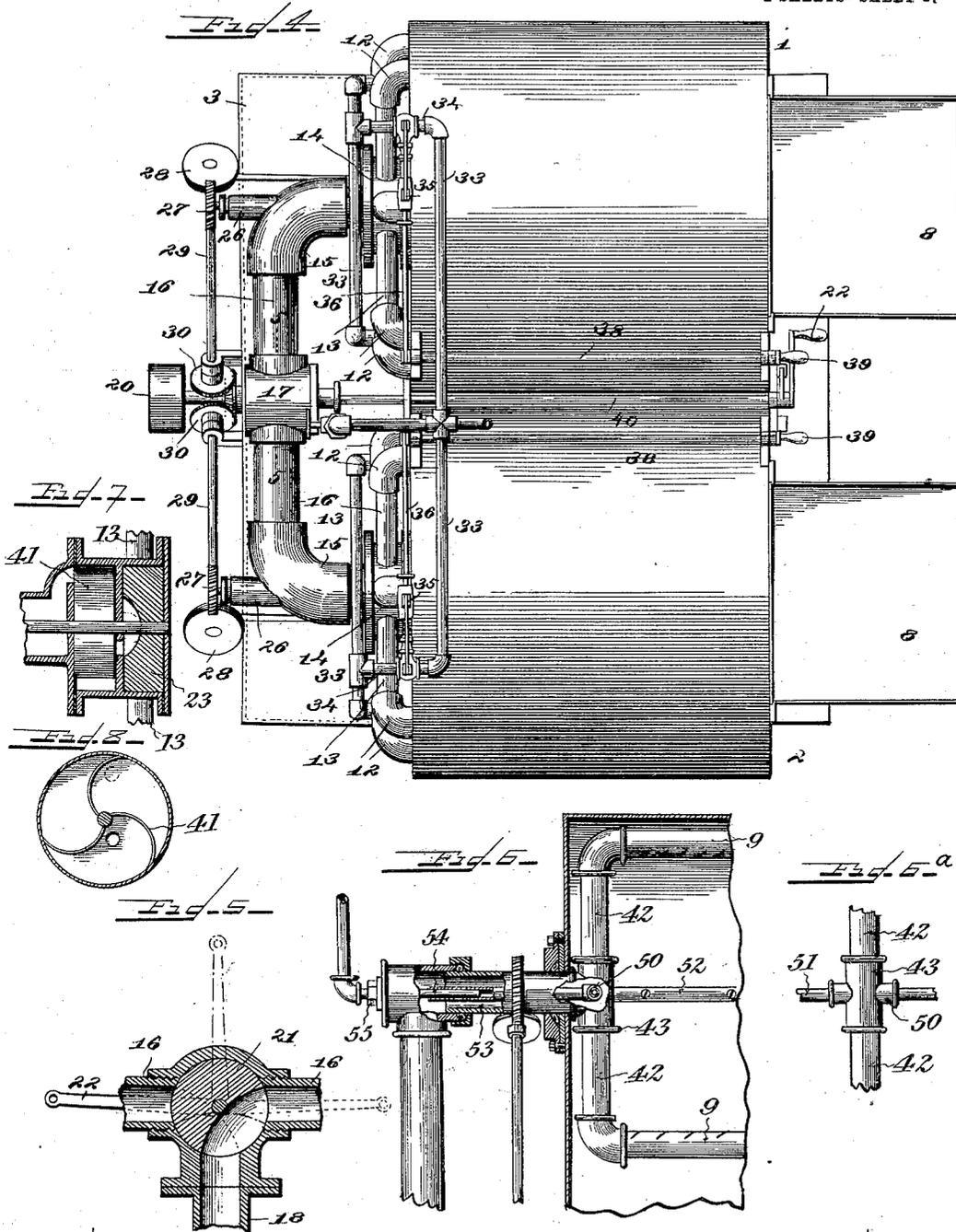
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NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JOSEPHINE G. COCHRANE, OF CHICAGO, ILLINOIS.

## DISH-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 731,341, dated June 16, 1903.

Application filed September 28, 1899. Serial No. 731,889. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPHINE G. COCHRANE, a citizen of the United States, residing at Mont Clare, Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dish-Washing Machines, of which the following is a full, clear, and exact specification.

My invention relates to machines for washing dishes, and it has for its primary object to subject the dishes on all sides to continuous sheets of water extending from end to end of the dish-crate.

Another object of my invention is to accomplish the foregoing object with a minimum amount of water and a minimum expenditure of power, whereby the dishes may be subjected on all sides to a strong voluminous stream of suds without having to employ a very large volume of suds to draw from or a comparatively large motor for forcing the water.

Another object of my invention is to subject the dishes on all sides to continuous sheets of water extending from end to end of the dish-crate by the employment of a minimum number of spray-pipes and a minimum expenditure of water and power.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a rear end elevation, partly in vertical section, of my improved machine. Fig. 2 is a vertical transverse sectional view of one-half thereof, taken on the line 2 2, Fig. 3. Fig. 3 is a vertical longitudinal section taken on the line 3 3, Fig. 1. Fig. 4 is a plan view. Fig. 5 is an enlarged detail sectional view of a three-way valve hereinafter described, the section being taken on the line 5 5, Fig. 4. Fig. 6 is a face view of a water-wheel for revolving the distributing-head hereinafter described. Fig. 6<sup>a</sup> is a detail view of the four-way coupling or cross connection which couples the pipes 42 and supports the rinsing-pipes here-

inafter described. Fig. 7 is a section thereof, and Fig. 8 is a detail plan section showing a modification in which the spray-pipes revolve around the dish-crate.

In illustrating my invention I have shown it in the form of a double machine—that is to say, a machine having two chambers for receiving the dishes to be washed which are so constructed and arranged with relation to the operating mechanism and controlling-valves, supply-pipes, &c., that one side may be in operation while the other is open for removing the dishes. 1 2 represent these two chambers, which are arranged side by side and supported over a common chamber or reservoir 3, in which the soapsuds are contained for washing the dishes, each of the chambers 1 2 being provided at its bottom with a wire screen 4 for preventing the scraps from flowing back into the suds, and each chamber is also provided with suitable ways or supports 5, upon which may be slid the crate (shown at 6 in dotted lines in Fig. 2) for carrying the dishes, which crate may be inserted through an end door 7, 8 being the platforms outside the door for the support of the crate while the dishes are being removed or put in place for washing. These supports or ways 5 are arranged horizontally at or about the center of each of the chambers 1 2, so that when the crate is in place it will occupy a central position, and disposed at suitable intervals around the crate and the ways 5 are a number of horizontal pipes 9, provided throughout their lengths with slits 10 for the discharge of the suds on all sides of the dishes contained within the crate, the dishes being placed on edge and in a position transversely of the pipes 9, so that the spray or sheets of water coming from the pipes will impinge the dishes on all sides. The forward ends of these pipes 9, adjacent to the door 7, are closed by caps 11 or any other suitable device, while their opposite ends are connected by elbows 12 to short pipes 13, which radiate from a manifold head 14, which is connected by an elbow 15 and short section 16 to a three-way coupling 17, having communication through pipe 18 with a force-pump 19, located in the suds-chamber 3 and being driven by a pulley 20 for forcing the

suds up the pipe 18 and into either of the heads 14, accordingly as a two-way valve-plug 21, housed in the coupling 17, (see Fig. 5,) is turned in one direction or the other by the manipulation of its operating-handle 22.

To supply all of the spray-pipes 9 with water under sufficient head to cleanse the dishes at one time, however, would require a motor too large for this class of machinery, and in order that this objection may be overcome I have provided each of the chambers 14 with a revolving head 23, having a port 24 formed therethrough, so as to distribute the water to the radial pipes 13 successively. This revolving head 23 may be rotated, so as to cause its port 24 to coincide with each of the pipes 13 a sufficient length of time to supply the latter with water for forming the cleansing-spray by any suitable means. In Figs. 1 to 4 of the drawings I have shown the head 23, provided with a shaft or stem 25, which passes through a stuffing-box 26 on the elbow of the pipe 15 and carries at its outer end a worm-wheel 27, which meshes with a worm 28 on an oblique shaft 29, having bevel-gear connection 30 with the shaft of pulley 20, which drives the pump 19, this driving mechanism being employed for each of the heads 23 in the chambers 14.

The slits 10 in the pipes 9 are arranged diagonally with reference to the length of the pipe, and they overlap each other, as clearly shown in Fig. 3, so that there will be no space in a vertical plane between the contiguous sheets of water issuing from said slits; but the sheets will overlap each other and form practically a continuous sheet from end to end of each pipe, thereby subjecting all of the dishes from end to end of the crate to the action of the cleansing-suds, the stream or sheet of water thus formed being not only lengthy but voluminous transversely or thick by reason of the oblique arrangement of the slits 10.

After the dishes have been subjected to the action of the streams or sheets of water coming from the slits 10 the valve-plug 21 may be thrown into an intermediate position by means of its handle 22, or it may be thrown over a sufficient distance to direct the suds into the other one of the chambers 1 2. The dishes may then be rinsed by a spray of clear hot water coming from jets 31, arranged at suitable intervals in horizontal pipes 32, located within the chambers 1 2, alternately, between the pipes 9 and connected to hot-water-supply pipes 33, having valves or gates 34, controlled by levers 35, connected by links 36 with crank-arms 37 on rocker-shafts 38, which are provided with operating-handles 39, located at the front side of the machine, the lever 22, if desired, being also located at the front side of the machine and secured to a suitable shaft 40.

In Figs. 7 and 8 of the drawings I have shown the head 23 provided with a water-wheel 41, which causes the rotation of the head by the pressure of the water which passes

through it, thus doing away with the worm-wheel 27 and driving connection before described.

In the form of my invention shown in Figs. 6 and 6<sup>a</sup> instead of employing a large number of the pipes 9 I employ two, and these are mounted on hollow arms 42, connected by a T 43 to a hollow shaft or pipe 44, which latter is connected by stuffing-box 45 and elbow 46 with the pump-pipe 18. The pipe or shaft 44 has secured to it a worm-wheel 47, which meshes with a worm 48 on a shaft 49, having gear connection with the shaft of the pulley 20 which drives the pump, so that as the pump operates the shaft or pipe 44, and consequently the T 43, will be revolved and the two spray-pipes 9 will be carried rapidly around the dishes supported in the crate, as before described, thus enabling me to employ a motor of minimum power for driving a stream of the maximum force against all sides of the dishes.

In order that the dishes may be subjected to rinse-water, the T 43 contains a smaller cross T 50, which revolves with it and whose outer ends are connected to hollow arms or radial pipes 51, which carry the spray-pipes 52 for the rinsing-water, while the stem of the T 50 is connected to a sleeve 53, located concentrically within the pipe 44 and receiving the end 54 of a hot-water-supply pipe which passes through the outer end of the elbow 46, a suitable packing-box 55 being provided at that point, so as to receive a continuous supply of water from any suitable source, the hot water for rinsing being turned on after the suds-water through the pipes 9 has been turned off.

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

1. The combination of a chamber for containing the dishes to be washed, a number of spray-pipes therein each having slits tending lengthwise of the pipe and whose combined lengths more than equals the length of the slitted extent of said pipe and a force-pump for forcing water through said slitted pipes, substantially as set forth.

2. The combination of a chamber for containing the dishes to be washed, a number of spray-pipes arranged therein and each having slits tending lengthwise of the pipe, the ends of said slits being overlapped so as to form a continuous sheet of water from end to end of the pipe, and means for forcing the water through said pipes, substantially as set forth.

3. The combination of a chamber for containing the dishes to be washed, a number of spray-pipes therein each having slits formed in a diagonal direction with reference to the length of the pipe, and means for forcing the water through said pipes, substantially as set forth.

4. The combination of a chamber for containing the dishes to be washed having a door

at one end, a way or support for the dish-  
 crate in said chamber, a plurality of spray-  
 pipes arranged horizontally lengthwise of and  
 around said crate-support, the space between  
 5 the ends of said pipes being unobstructed  
 whereby the crate may be inserted between  
 them through the door and means for sup-  
 plying said spray-pipes with water, substan-  
 tially as set forth.

10 5. The combination of a chamber for con-  
 taining the dishes to be washed, a way or sup-  
 port for the dish-crate therein, the chamber  
 14, the radial pipes 13 extending therefrom,  
 a horizontal spray-pipe connected with the  
 15 outer end of each of said radial pipes 13 and  
 extending into said first chamber, said spray-  
 pipes being disposed around said crate-sup-  
 port and means for supplying said chamber  
 14 with water under pressure, substantially  
 20 as set forth.

6. The combination of a chamber for con-

taining the dishes to be washed, a plurality  
 of spray-pipes therein, a chamber 14 to which  
 said spray-pipes are connected, a revolving  
 head located in said chamber 14 and having a  
 25 port adapted to communicate with said spray-  
 pipes alternately and means for supplying  
 the port in said head with water under pres-  
 sure, substantially as set forth.

7. The combination of a chamber for con- 30  
 taining the dishes to be washed, a number of  
 spray-pipes therein, a chamber 14 connected  
 with said spray-pipes, a revolving head in the  
 chamber 14 having a port adapted to commu-  
 nicate alternately with said spray-pipes, 35  
 means for supplying the port in said head  
 with water under pressure and means for ro-  
 tating said head, substantially as set forth.

JOSEPHINE G. COCHRANE.

Witnesses:

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 F. A. HOPKINS.