No. 703,623. Patented July 1, 1902.

T. F. TAYLOR.

ELECTROPLATING APPARATUS.

(Application filed June 26, 1901.)

(No Model.)

Fig. 1.

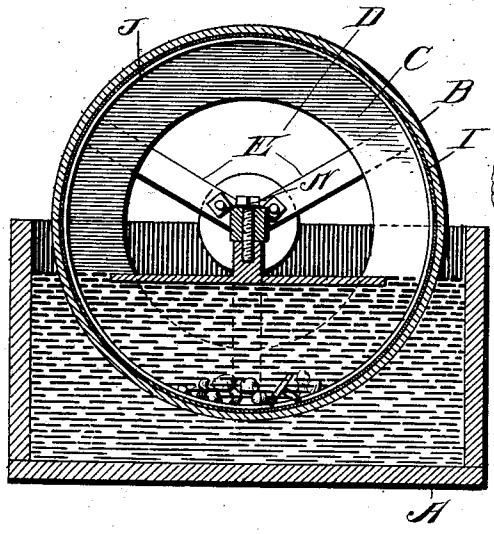


Fig. 2.

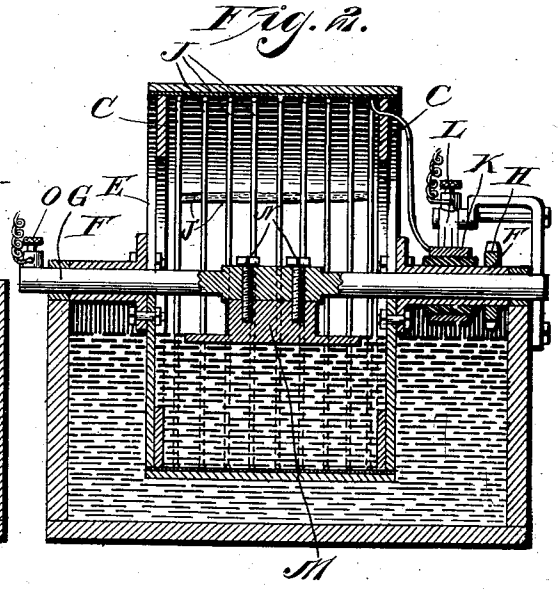


Fig. 3.

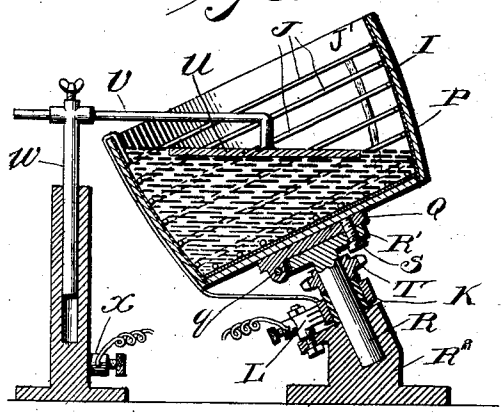
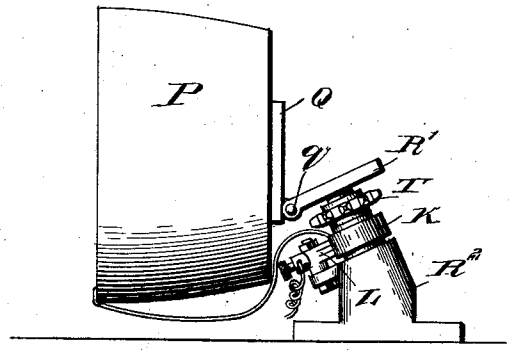


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ELECTROPLATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 703,623, dated July 1, 1902.

Application filed June 26, 1901. Serial No. 66,085. (No model.)

To all whom it may concern:

Be it known that I, THEODORE F. TAYLOR, a citizen of the United States, residing at Camden, county of Camden, and State of New Jersey, have invented a certain new and useful Improvement in Electroplating Apparatus, of which the following is a specification.

My invention relates to a new and useful improvement in electric plating apparatus, and has for its object to provide an apparatus whereby small articles will be plated, and these articles need not be suspended from the cathode, as is usually done in electric plating apparatus.

A further object of my invention is to polish the articles at the same time they are being plated. I accomplish both of these objects by placing the articles to be plated within a drum or barrel the interior of which is lined with felt, over which is placed a series of wires which are electrically connected with one brush of the generator, and this series of wires form the cathode with which the articles to be plated are always in contact. The cylindrical receptacle is adapted to be revolved upon a stationary axle, and the anode is suspended within the cylinder from this axle.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth, and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a cross-sectional view of my apparatus; Fig. 2, a longitudinal section of the same; Fig. 3, a sectional view of a modification wherein the revolving inclined tub is utilized instead of the cylinder; and Fig. 4, a side elevation of Fig. 3, showing the tub tilted to deposit the contents.

A represents the vat or tank adapted to contain the electrolyte. This vat or tank may be constructed in the usual manner now employed.

B is a cylinder, which may be made of any desired length or diameter, and this cylinder has formed at each end the walls C, which do not extend to the center of the cylinder, but leave an opening D, by which access can be gained to the interior. Arms E are secured to the cylinder and extend to the center, where they are secured to sleeves F, which sleeves are mounted upon the stationary axle G. This axle G is secured in any suitable manner to the sides of the tank A, and the cylinder is adapted to be revolved upon this axle by means of a pulley or sprocket wheel H, secured to one of the sleeves F, a belt or chain passing around this pulley or sprocket wheel and extending to some source of power.

The interior of the cylinder B is lined with felt or like material I, and over this felt are secured a series of wire rings J, which rings are all connected electrically by the plates J′ with a metallic ring K, mounted upon one of the sleeves F and insulated therefrom. This sleeve K is adapted to revolve with the cylinder, and a brush L, supported in any suitable manner, is adapted to be always in contact with the ring K. This brush L is in electrical connection with the negative pole of the generator.

M is the anode, which is composed of the metal desired to be deposited upon the articles to be plated. This anode is adapted to be removably secured in any suitable manner to the stationary axle G, here shown by means of the bolts N. Upon one end of the axle G is formed a binding-post O, from which a wire runs to the positive pole of the generator. The anode M is adapted to extend downward a sufficient distance to be submerged within the electrolyte solution. Thus it will be seen that the wire rings J, being in electrical connection with the negative pole of the generator, will form the cathode, and the anode through the axle G will be in electrical connection with the positive pole of the generator, and a current will be established through the solution from the anode to that part of the rings J which is nearest said anode, and any article which may be in contact with the rings J will be plated.

The articles to be plated are inserted through the opening D into the interior of the cylinder, the walls C serving to form this

cylinder into a receptacle to prevent the articles from falling out at the sides. The cylinder then being revolved will cause the articles to be tumbled about, because of the fact that they will always seek the lowest point of the cylinder; but such articles will always be in electrical connection with the cathodes, which are the rings J, either by being in direct contact with them or by being in contact with other articles which are in contact with the rings. Thus said articles will receive the deposit, and the revolving of the cylinder and the continual movement of the articles thereby will accomplish two objects: First, by reason of the articles always being in motion the deposit will be evenly distributed over the surface of said articles, and, secondly, said articles by always being in frictional contact with the interior of the cylinder and with one another will cause the same to be polished at the same time they are being plated.

In Figs. 3 and 4 I have illustrated a modification wherein an inclined tub is utilized for the receptacle instead of the cylinder. P represents the tub, which is secured to a plate Q, which plate Q is pivoted at the point q to the upper end of an inclined shaft R. The plate Q and the head R′ of the shaft R are held together normally by means of the bolt S. By reason of the inclination of the shaft R the tub P will also be inclined and is adapted to be revolved in this inclined position by means of a belt or chain passing from suitable source of power around the pulley or sprocket wheel T, secured to the shaft R. The interior of the tub P is lined with felt I, and over this felt are arranged a series of metallic rings J, which are in electrical connection with the metallic ring K, which is secured to but insulated from the shaft R. A brush L is in contact with the ring K and is in electrical connection with the negative pole of the generator. The shaft R is supported by the upright bearing R^2. U is the anode, which is adapted to be secured to the horizontal rod V, which extends outside of the tub and is secured in the adjustable upright W. This upright carries the binding-post X, which is in electrical connection with the positive pole of the generator. In this form of apparatus the action is the same as described and shown in relation to Figs. 1 and 2. The advantage of this construction is that the interior of the receptacle is more accessible and the contents may be more easily removed, which is accomplished by removing the bolt S. After the anode has been removed then the tub can be tilted upon the pivot q, which will enable both the solution and the articles to be deposited in some suitable receptacle.

The advantage of my invention is that by means of a very simple apparatus I am enabled to plate and polish small articles much better and more quickly than can be accomplished in any other manner.

I am aware that other electroplating apparatus has been patented wherein a revolving drum is adapted to contain the articles to be plated, but in such instance the anodes are arranged upon the exterior of the drum and independent thereof, the deposit in such instance having to travel through perforations in the drum to reach the cathodes.

The principal feature of my invention consists in placing both the anodes and cathodes upon the interior of the revolving receptacle, and it is a well-known fact that the best results are obtained when the anodes and cathodes are brought within a certain distance of one another. This I can accomplish in my construction, because the anode can be brought almost in contact with the cathode, if desired; but I have found by experience that the relative distance between the anodes and cathodes, such as shown in the drawings, will give the best results.

Of course I do not wish to be limited to the exact construction here shown, as slight modifications could be made without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is—

1. In an electroplating apparatus, a tank, an axle suitably supported over the tank, a receptacle on the axle; said receptacle having openings in its ends, wire rings on the interior surface of the receptacle, said rings being electrically connected with the negative pole of a generator; an anode secured within the receptacle, a binding-post secured to the axle, electrically connected with the anode through said axle.

2. In an electroplating apparatus, a tank for containing an electrolyte, a stationary axle supported by the tank, a receptacle mounted upon the axle, means for rotating the receptacle on the axle, said receptacle having openings in its ends to admit the electrolyte, a fibrous lining on the inner surface of the receptacle, metallic rings on the lining, a contact-ring carried by and insulated from the receptacle, all of the rings in the receptacle being electrically connected to the contact-ring, a brush in contact with the contact-ring, said brush being in electrical connection with the negative poles of a generator, an anode on the axle depending into the electrolyte, and a binding-post on the axle, electrically connected with the anode through said axle, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

THEODORE F. TAYLOR.

Witnesses:
H. B. HALLOCK,
L. W. MORRISON.