No. 809,309. PATENTED JAN. 9, 1906.

A. W. L'HOMMEDIEU.

ELECTROPLATING APPARATUS.

APPLICATION FILED APR. 22, 1905.

2 SHEETS—SHEET 1.

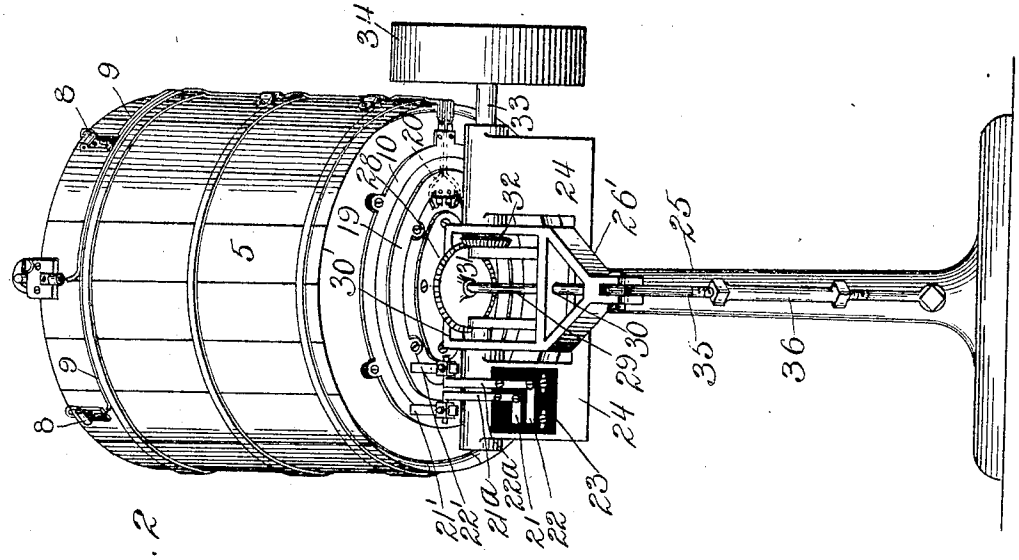

Fig. 2

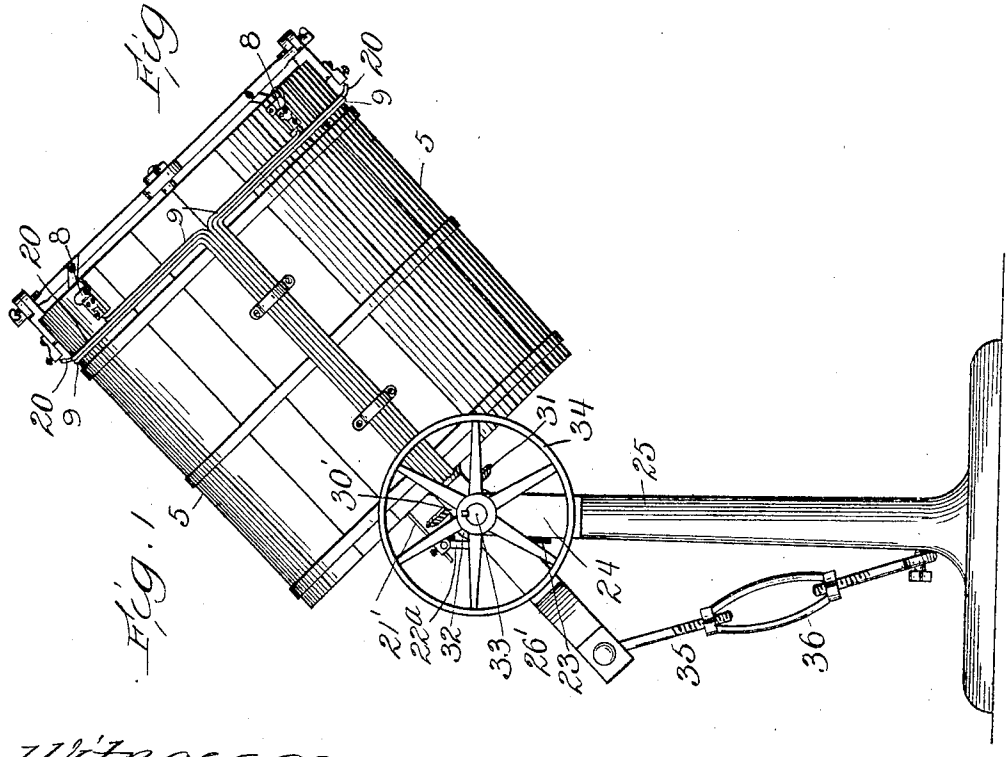

Fig. 1

Witnesses:
Ray White.
Harry R. L. White.

Inventor:
Arthur W. L'Hommedieu.
By Jones Bain Atty.

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2 SHEETS—SHEET 2.

Fig. 3.

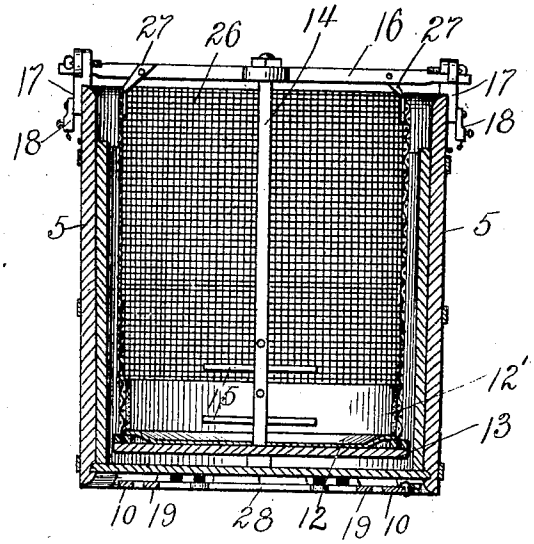


Fig. 4.

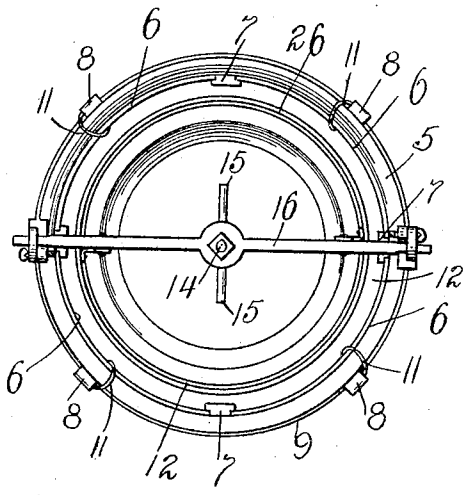
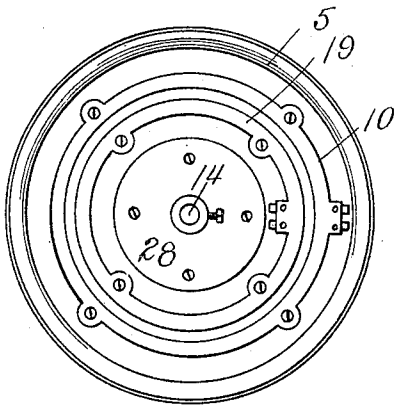


Fig. 5.



Witnesses.
Ray White.
Harry R. Lwhite

Inventor:
Arthur W. L'Hommedieu
By Foree Bain Atty.

UNITED STATES PATENT OFFICE.

ARTHUR W. L'HOMMEDIEU, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES F. L'HOMMEDIEU, OF CHICAGO, ILLINOIS.

ELECTROPLATING APPARATUS.

No. 809,309. Specification of Letters Patent. Patented Jan. 9, 1906.

Application filed April 22, 1905. Serial No. 256,829.

To all whom it may concern:

Be it known that I, ARTHUR W. L'HOMMEDIEU, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electroplating Apparatus; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in electroplating apparatus.

One of the objects of my invention is to provide a plating device for economically plating small articles or pieces which may be loosely placed within a perforate receptacle of non-conducting material containing a suitable resident cathode and the said articles and then rotating or oscillating the tank or tub containing the plating solution, so as to produce frequent displacement or tumbling of the small articles to be plated, whereby sufficient electric contact with the cathode is preserved and all of the surfaces of said articles may be ultimately subjected to the plating action. This means of contacting the articles with a resident cathode is a much more economical arrangement than plating-baths wherein the articles themselves constitute the entire cathode and each small article must be wired and individually connected thereby to the negative electrode.

Other objects of my invention will hereinafer be apparent to those persons who are skilled in the art to which my invention appertains.

In the drawings, Figure 1 is a side elevation of the device wherein the plating-tub is inclined laterally and toward the right. Fig. 2 is an elevation of the apparatus with the tub inclined from the point of view. Fig. 3 is a vertical section taken through the center of the tub. Fig. 4 is a plan view of the tub from above, and Fig. 5 is a similar view of the tub looking from the bottom.

In all the views like numerals of reference refer to like parts.

5 indicates the tub adapted to contain the electroplating solution.

The four anodes are indicated by 6 and arranged around the inner surface of the tub and held in place as by the four cleats 7. The anodes may be of any desired number and held in place by other means than that shown and may be of nickel, silver, copper, or such other metal desired, with which to plate the articles to be treated by means of the apparatus.

The four lugs are indicated by 8 and are arranged around the tub opposite to the center of the respective anode, to which the conducting-wires 9 are attached. These wires are then led down the side of the tub and properly secured thereto and are connected to the outside ring 10, shown properly insulated therefrom and secured to the bottom of the said tub. Each of the lugs 8 is connected to the respective anode by means of a short connecting-wire 11. The resident cathode consists of a metallic pan 12, which is removably located in the bottom of the tub and which normally rests upon a wooden or other non-conducting support or disk 13. To the center of the pan 12 a vertical rod 14 is attached, having laterally-extending arms or pieces 15 to provide additional surface to contact with the articles to be plated. This rod 14 is connected to a cross-bar 16, and the latter is removably secured to and in electrical contact with the latches 17, one at each end, which are adapted to hold the said bar firmly in electrical contact with the conducting-lugs 18 18 and in position. Each of these latches, which are connected to the resident cathode of the device, is provided with conducting-lugs 18 18, and these in turn are electrically connected with the inner ring 19 by means of conducting-wires 20, which wires pass partially around the tub near the top and then downwardly and make electrical connection with the inner ring 19.

21 and 22 are the positive and negative terminals of the device, respectively, which are connected to the brushes 21′ and 22′, respectively, by means of conductors 21^a and 22^a, respectively. The conductors and terminals are mounted upon an insulating-block 23, which is fixed upon a support 24 of the pedestal 25. The brushes 21′ and 22′ have flexible contact with conducting-rings 10 and 19, respectively, which latter are insulated from and secured to the bottom of the tub and make continuous connection with these rings at all times.

A perforate cylinder 26 of wicker-work or of other non-conducting material surrounds the resident cathode 12 and material to be plated and is secured to the cross-bar 16 by

means of pieces 27 27. This non-conducting perforate cylinder is placed between the electrodes of the tub and is adapted to hold the material to be plated and to prevent it coming in contact with the anode of the tub, and being of a character to permit the liquid to flow freely through it does not retard the electrolytic action at the time when the current is passing. The basket or perforated cylinder 26 thus provided may be lifted from the tub, together with its contents, and, if desirable, the anode, without removing any appreciable quantity of the solution from the tub, thereby facilitating the operation of removing the material to be plated from the tub. For plating small articles I also provide a band 12′ of small meshed or practically imperforate material, such as cloth or felt, following the outline of the cylinder and secured thereto. Such a band prevents the small articles from falling through or catching in the meshes of the basket and also has a polishing effect on the articles being plated.

The electric circuit of the device is as follows: The current will enter at the positive terminal 21, pass over the conductor 21ª to the brush 21′ and thence to the ring 10, through the four lugs 8 on the sides of the tub, over the two inner and the two outer vertical wires 9 to the anode 6, over the wires 11, thence through the solution in the tub to the material to be plated and the resident cathode 12 and out to the negative terminal 22 through the vertical rod 14, the cross-bar 16, and laterally in each direction to the latches 17 17, the lugs 18 18, over the wires 20 20 to the ring 19 and thence to the brush 22′, the conductor 22ª, to the negative terminal 22, thus completing the electric circuit.

It is very desirable to rotate the tub, so that all of the small articles placed within the basket 26 may have a tumbling action, so that all the surfaces of the articles may be thus exposed to the electrolytic action. To this end I provide an upwardly-extending axial support for the tub consisting of a frame 26′, journaled in the brackets 24 of the standard 25. A disk 28 is fixed to the bottom of the tub, to which is secured a shaft 29, which is journaled in the cross-pieces 30 and 30ª of the frame 26. A beveled gear-wheel 31 is positively fixed to the shaft 29 and is in constant mesh with the beveled pinion 32, which latter is secured to the driving-shaft 33, the said shaft being adapted to be rotated by means of the pulley 34, which is secured thereto.

It will be noted that the frame 26, which affords support through the shaft 29 for the tub 5, is adapted to be turned upon the same axis with the shaft 33. This arrangement is provided for the purpose of varying the inclination of the tub, and a turnbuckle 35 is placed in a link 36 intermediate of the bottom of the pedestal and the lower end of the frame 26, whereby the inclination of the tub may be varied and by this means secured in the adjusted position.

The operation of the device will be apparent to those skilled in the art. It may be said, however, that the tumbling effect of the articles to be plated may be amplified by increasing the inclination of the tub, and this tumbling effect may be varied to suit the user by means of that portion of the apparatus intended for that purpose heretofore described. It is desirable that the tub should have a constantly-rotating motion, which is effected by means of power applied to the driving-pulley 34.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a device of the character described, the combination of a tub adapted to contain a plating solution, and arranged to be rotated upon an axis laterally inclined from a vertical plane, one or more anodes secured near the inner surface of the tub, one or more resident cathodes near the axis of the tub and a perforate receptacle of non-conducting material, adapted to contain the material to be plated intervening between the said electrodes.

2. In a device of the character described, the combination of a plating-tub adapted to contain a plating solution and arranged to be rotated upon an upwardly-extending axis, anodes arranged around the inside surface of said tub, a resident cathode arranged near the axis of said tub, a non-conducting support for the material to be plated, electric connections for said anode and resident cathode and a means for rotating the tub.

3. In a device of the character described, the combination of a plating-tub adapted to contain a plating solution and arranged to be rotated upon an upwardly-extending axis, anodes arranged around the inside surface of said tub, a resident cathode arranged near the axis of said tub, a non-conducting, perforate cylinder, for supporting the material to be plated, arranged intermediate the said anodes and resident cathode, electric connections for said anodes and resident cathode and a means for rotating the tub.

4. In a device of the character described, the combination of an imperforate cylinder closed at its base end, arranged to be rotated upon an upwardly-extending axis, a removable perforate cylinder of non-conducting material closed at its base end, arranged within said first cylinder, an anode arranged between said cylinders, a resident cathode within the interior cylinder, electric connections and a means for rotating said cylinders.

5. In a device of the character described, the combination with a plating-tub provided with an anode, a metallic pan constituting a

part of the cathode arranged near the bottom of the tub to support the material to be plated, a perforate non-conducting screen between said anode and resident cathode, a means for adjusting the inclination of the tub, electric connections, and a means for rotating said tub.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ARTHUR W. L'HOMMEDIEU.

In presence of—

GEO. T. MAY, Jr.,

MARY F. ALLEN.