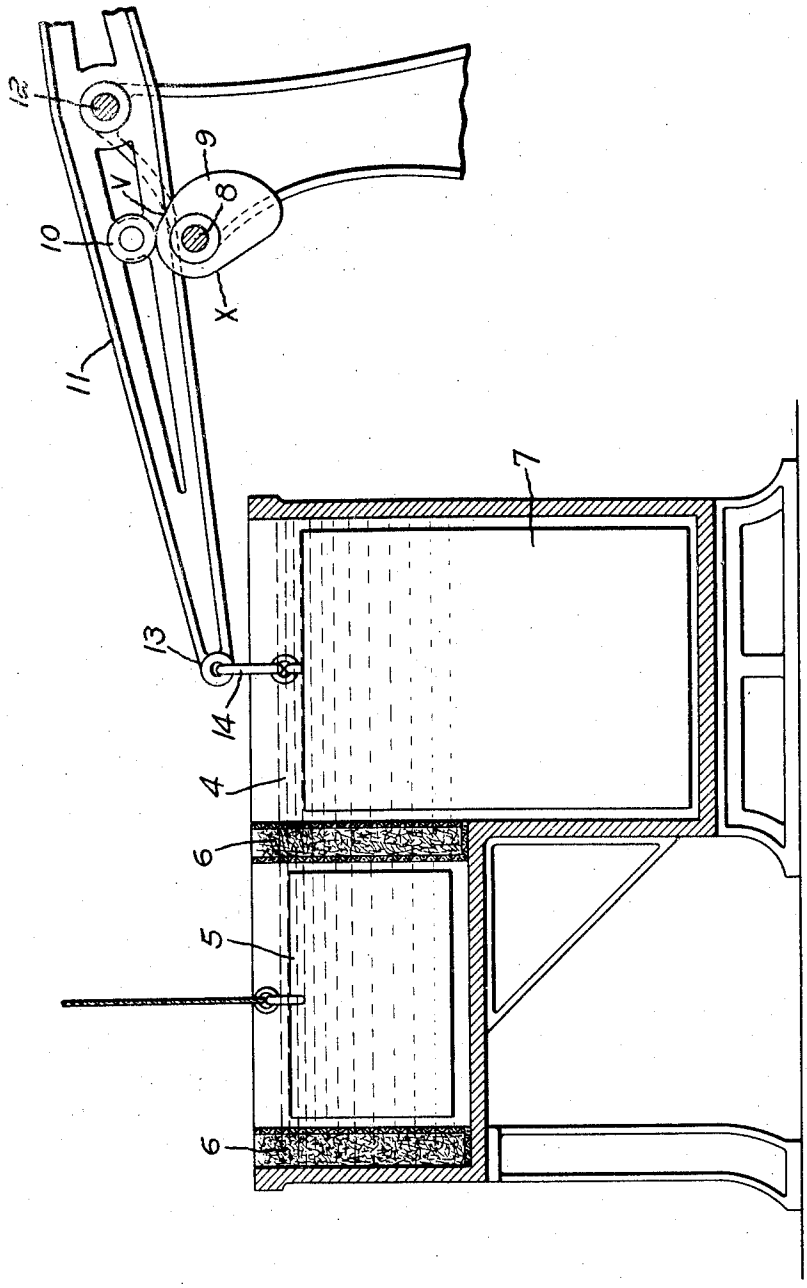
M. M. MERRITT.

ELECTROLYTIC APPARATUS AND METHOD.

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1,335,174. Patented Mar. 30, 1920.



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ELECTROLYTIC APPARATUS AND METHOD.

1,335,174. Specification of Letters Patent. Patented Mar. 30, 1920.

Application filed August 2, 1918. Serial No. 247,964.

To all whom it may concern:

Be it known that I, MATTHEW M. MERRITT, a citizen of the United States, and a resident of South Middleton, county of Essex, Commonwealth of Massachusetts, have invented an Improvement in Electrolytic Apparatus and Methods, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention pertains to improvements in electrolytic apparatus and methods, and is more particularly adapted for use in connection with the electrolytic deposits on cathodes which, because of their size, weight, fragility or lack of structural strength, cannot be readily withdrawn from and immersed in the bath to provide alternate periods of immersion and emersion.

In the drawing, which shows diagrammatically one embodiment of my invention, I have shown a bath 4 containing a cathode 5 and an anode 6. To periodically immerse the cathode 5 for limited periods I have provided means for periodically raising and lowering the level of the electrolyte in the bath, which means is herein typified by the displacing element 7 which is preferably of greater specific gravity than the electrolyte, and which in the position shown is of sufficient volume to raise the level of the electrolyte above the top of the cathode 5, but which, when removed or partially removed from the electrolyte, permits the level of the liquid to fall below the bottom of the cathode 5.

Therefore, by alternate up and down movement of the displacing element 7, the cathode 5 will be periodically immersed in the bath. If it is desired to have the amount of electro-deposition on different parts of the cathode 5 substantially equal, it is necessary that the current be cut off except during those periods when the cathode is entirely immersed.

I may conveniently combine the turning on and cutting off of the electric current and coördinate it with the movement of the displacing element 7 by actuating the current-controlling switch and the displacing device from the same source, herein typified by the shaft 8 carrying the cam 9 acting against a roller 10 carried by a lever 11 fulcrumed at 12 and connected at its outer end 13 by a connecting rod 14 to the displacing element 7. The cam 9 is preferably so shaped that the period during which the cathode is totally immersed will be substantially the same as the period during which the cathode is out of the electrolyte. The period during which the current is applied may continue during each entire period when the cathode is totally immersed, for instance from the point x to the point y on the cam 9. It is obvious that any usual form of switch mechanism may be utilized, and for this reason I have not illustrated the same on the drawing.

A considerable saving in power may be effected by counterweighting the opposite end of the lever 11, thus making it a "walking beam", or by connecting to the other end thereof a second displacing plunger for use in a second bath.

While I have shown and described a preferred form of apparatus constituting one embodiment of my invention, and while I have described a preferred way of practising my improved method, it will be understood that major changes may be made within the scope of the appended claims.

Claims.

1. The method of depositing metal by electrolysis which comprises providing a stationary cathode and periodically varying the level of the electrolyte to provide alternate immersion and emersion of the cathode without substantial change in the position thereof.

2. That method of electrolytically depositing metal which comprises providing a stationary cathode in an electrolytic bath and periodically introducing a displacing medium into the bath to vary the level of the electrolyte thereby periodically to immerse and emerse the cathode.

3. That method of electrolytically depositing metal which comprises periodically immersing a cathode in the bath by relative change in the level of the cathode and the surface of the bath and coördinately controlling the application of the current to the anode, thereby to supply electro-deposited current only when the anode is fully covered by the electrolyte.

4. An electrolytic apparatus comprising, in combination, an electrolytic bath, a cathode therein and means for periodically varying the level of the surface of the elec-

trolyte in the bath, thereby periodically to immerse and emerse the cathode.

5. An electrolytic apparatus comprising, in combination, an electrolytic bath, a cathode therein and a displacing element for periodically varying the level of the surface of the electrolyte in the bath, thereby periodically to immerse and emerse the cathode.

6. An electrolytic apparatus comprising, in combination, an electrolytic bath, a cathode therein, means for periodically varying the level of the surface of the electrolyte in the bath, and means for coördinately controlling the application of current to the cathode whereby current will be applied to the cathode only when it is substantially immersed in the electrolyte.

7. An electrolytic apparatus comprising, in combination, an electrolytic bath, a cathode therein, a displacing element for periodically varying the level of the surface of the electrolyte in the bath, and means for coördinately controlling the application of current to the cathode whereby current will be applied to the cathode only when it is substantially immersed in the electrolyte.

In testimony whereof, I have signed my name to this specification.

MATTHEW M. MERRITT.