No. 881,810. PATENTED MAR. 10, 1908.

G. A. LUTZ.

ELECTROPLATING APPARATUS.

APPLICATION FILED APR. 8, 1907.

2 SHEETS—SHEET 1.

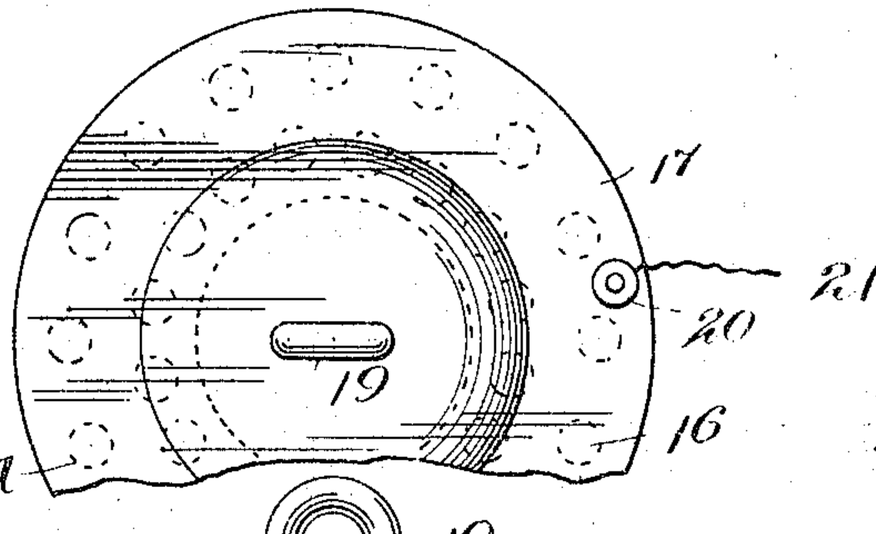


Fig. 2.

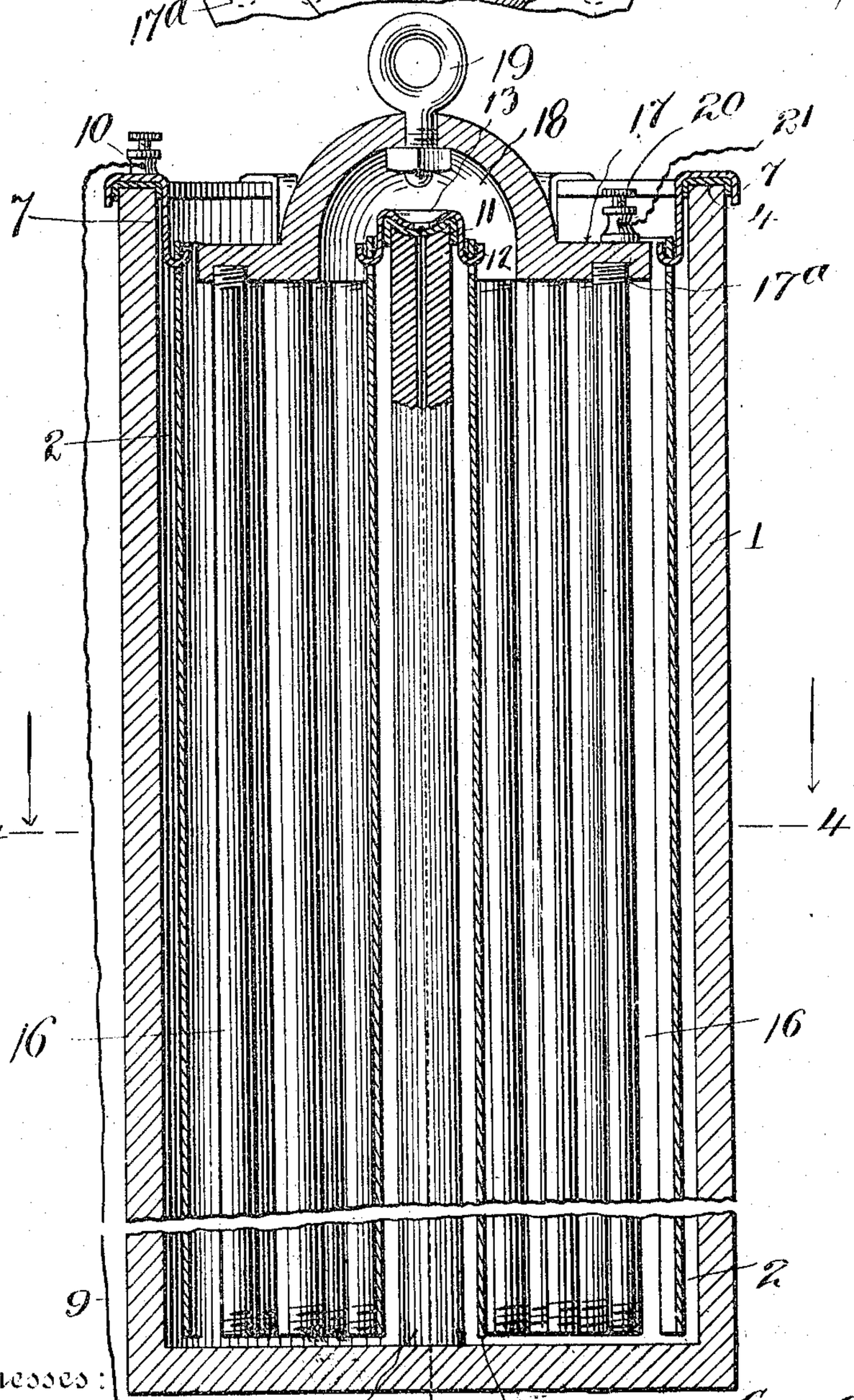


Fig. 1.

Witnesses:
C. F. Benjamin
Marie J. Wainright

Inventor
Geo A. Lutz
By his Attorney
T. F. Bourne

No. 881,810. PATENTED MAR. 10, 1908.

G. A. LUTZ.

ELECTROPLATING APPARATUS.

APPLICATION FILED APR. 8, 1907.

2 SHEETS—SHEET 2.

Fig. 3.

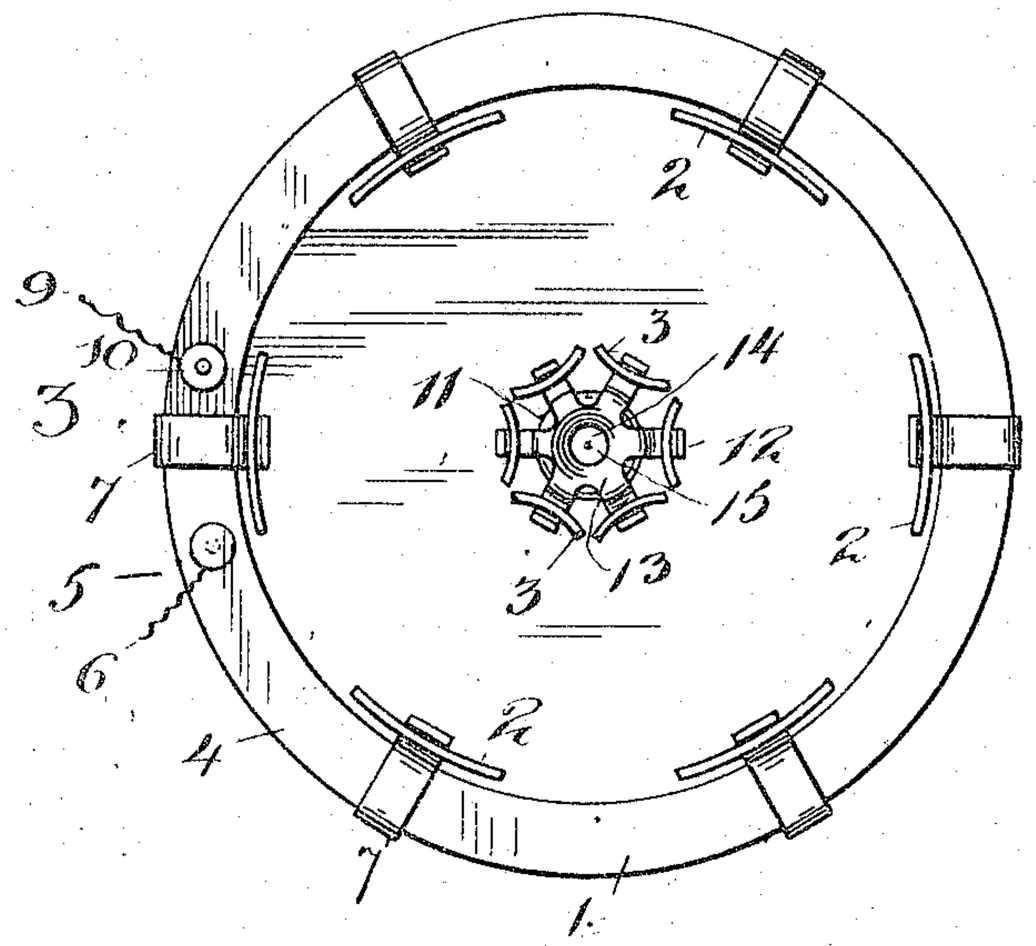
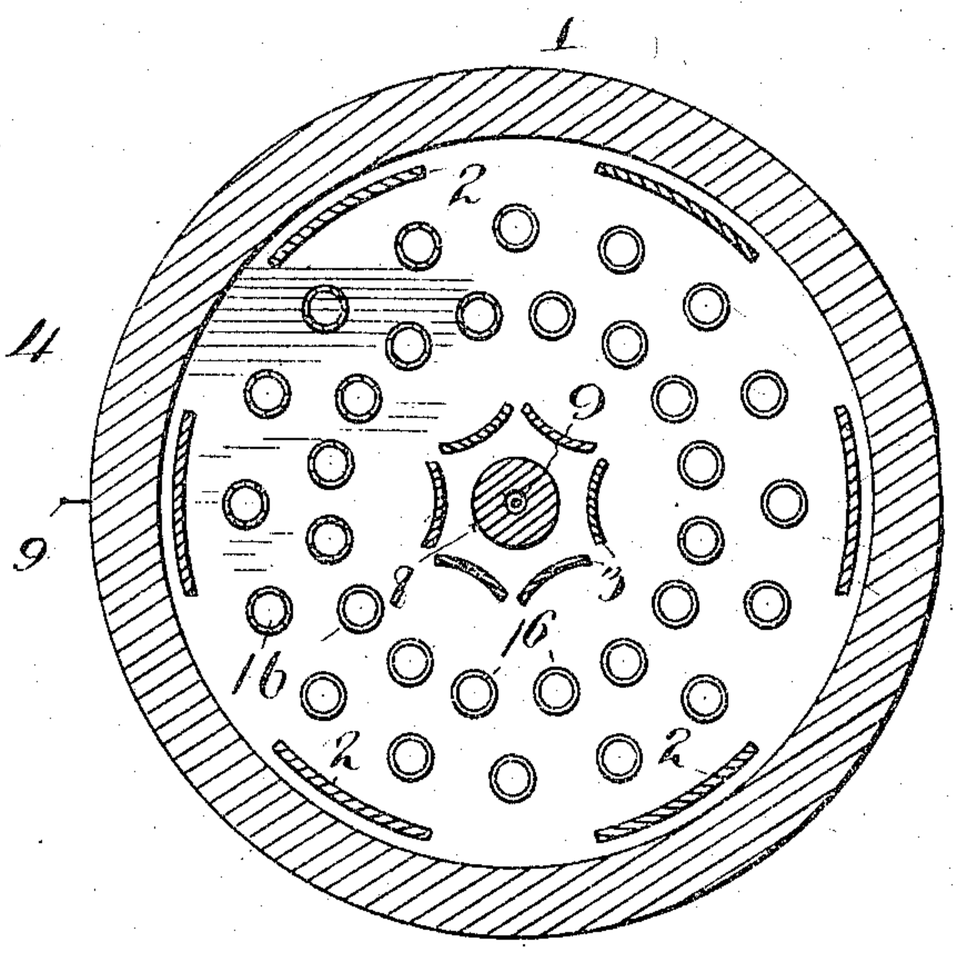


Fig. 4



Witnesses.
C. F. Benjamin
Marie L. Wainright

Inventor
Geo. A. Lutz.
By his Attorney
T. F. Bourne

UNITED STATES PATENT OFFICE.

GEORGE A. LUTZ, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN CIRCULAR LOOM COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

ELECTROPLATING APPARATUS.

No. 881,810. Specification of Letters Patent. Patented March 10, 1908.

Application filed April 8, 1907. Serial No. 366,903.

To all whom it may concern:

Be it known that I, GEORGE A. LUTZ, a citizen of the United States, and resident of New York city, borough of Brooklyn, New York, have invented new and useful Improvements in Electroplating Apparatus, of which the following is a specification.

The object of my invention is to provide means to permit the ready electro-plating of a number of articles simultaneously, whereby said articles may be quickly immersed in and removed from the electrolyte or bath, and my invention has particular reference to galvanizing, by electro-deposit of zinc, a plurality of pipes simultaneously, such as pipes used as conduits for electric conductors.

In carrying out my invention I provide a suitable tank for the electrolyte or bath with means for suspending a plurality of anodes therein arranged in a plurality of series, one series of anodes being surrounded by another series of anodes, means for connecting all of said anodes in a circuit, and means for simultaneously inserting a plurality of articles to be electro-plated into the electrolyte in the space between said plurality of series of anodes and for quickly removing said articles from the electrolyte, with means for connecting said articles in series in the circuit.

My invention also comprises the novel details of improvement and combinations of parts that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein Figure 1 is a vertical section of an electroplating apparatus embodying my invention. Fig. 2 is a plan view, partly broken, of the cathode plate from which the articles to be plated are suspended, Fig. 3 is a plan view of the tank with the cathode plate removed, Fig. 4 is a cross section on the line 4, 4, of Fig. 1.

Similar numerals of reference indicate corresponding parts in the several views.

The numeral 1 in the accompanying drawings indicates a suitable tank within which the several series of anodes 2, 3 are suspended. I have shown tank 1 as provided on its upper edge with a metallic rim 4 shown provided with a binding post 5 for connection with a line wire 6, and the hooks 7 which support the anodes 2 within the tank rest, and make electrical contact with said rim 4. Within the space bounded by the anodes 2 is a suitable post 8 secured to the bottom of the tank and extending near the top thereof, through which post a conductor 9 leads and is shown extending through the bottom of the tank and connected with post 10 on metal rim 4, and upon the upper end of said post is a metal contact 11 in circuit with conductor 9. The anodes 3 are maintained in circuit with conductor 9 by means of the contact 11, for which purpose I have shown metal hooks 12 in circuit with contact 11, which hooks support the anodes 3. I have shown the hooks 12 as formed on a disk 13 that rests upon contact 11, which disk may have a central opening 15 to permit access to conductor 9 at its point of connection with contact 11. The hooks 12 can be hung separately upon contact 11 in the manner that the hooks 7 hang upon rim 4, if desired. I have shown contact 11 and disk 13 as concavo-convex fitting each other whereby the hooks 12 are maintained in proper position upon post 8. The height of post 8 within tank 1 is such that the hooks 12 will be above the level of the electrolyte or bath in said tank, and may be substantially at the height of hooks 7, which also are to be above the electrolyte. In the space between the outer series of anodes 2 and the inner series of anodes 3 the articles 16 to be electro-plated are suspended, so that the electro-deposit may be quickly and evenly made upon said articles.

At 17 is a cathode plate of suitable metal from which the articles 16 are to be suspended in the electrolyte in the tank, which cathode plate is of such diameter as to permit it to pass between the outer series of anodes 2 and their hooks 7. The cathode plate 17 is shown provided with a series of threaded apertures 17^a, on its under surface, to which pipes 16 to be plated may be screwed so as to depend from plate 17 into the electrolyte in tank 1 between the several series of anodes 2, 3.

I have shown pipes 16 as arranged in circles, one within another, around anodes 3, with suitable spaces between said pipes so that the metal to be deposited on the pipes from the anodes may readily reach the pipes suspended more distant therefrom. In order that the pipes or articles 16 may be put into the electrolyte or bath in tank 1, as deep as possible and beneath the upper ends

of the anodes, I have shown the cathode plate 17 as provided with a centrally disposed opening or recess 18, alined with post 8 and anodes 3 which are adapted to project into said opening or space above the level of the bottom of cathode plate 17. At 19 is a suitable eye-bolt connected with cathode plate 17 whereby the latter may be raised and lowered. Plate 17 is shown provided with a binding post 20 for connection with a line wire 21 of the circuit.

In electro-plating by means of my improvements, the anodes will be hung in series, (one series within the other) upon their respective hooks 7 and 12, and the pipes or articles 16 to be plated will be attached to cathode plate 17 which will then be lowered to immerse said pipes in the electrolyte in tank 1, and the current from line wire 5 will flow through the anodes and thence through the electrolyte, the articles 16 and cathode plate 17 to the line 21, and when the articles have been plated the cathode plate with the attached articles will be removed, and a new set of articles attached to said plate and lowered into the electrolyte for electro-plating in the same manner.

A relatively large number of articles 16 may be attached to cathode plate 17 for simultaneous plating and simultaneous removal from the electrolyte or bath, and thereby I am enabled to readily and quickly electro-plate a large number of articles and particularly those of considerable length, such as iron pipe for electric conduits. Such pipe may be readily galvanized in my apparatus by means of zinc anodes, and by the arrangement of the exterior series of circularly disposed anodes 2 and the interior series of anodes 3 the exterior annular surfaces of the pipes may be readily and uniformly galvanized.

The particular arrangement of parts may be varied within the scope of the appended claims without departing from the spirit of my invention, and the articles 16 may be suspended from plate 17 in any other suitable manner.

Having now described my invention what I claim is:

1. An electro plating apparatus comprising a tank for an electrolyte, a series of anodes suspended within said tank, a post within said tank located within said series of anodes, anodes suspended from said post, means for connecting all of said anodes in a circuit, and a cathode plate provided with means to support articles to be plated and arranged to suspend said articles in the space between said series of anodes.

2. An electro plating apparatus comprising a tank for an electrolyte, means to suspend anodes within said tank, a post within said tank and within the space bounded by said anodes, said post having a metal contact near its upper part, anodes suspended from said metal contact, a conductor connecting said contact with the first named anodes, and a cathode plate provided with means for suspending articles to be plated in the space between the first named and the second named anodes.

3. An electro plating apparatus comprising a tank for an electrolyte, means to suspend anodes within said tank, a post within said tank and within the space bounded by said anodes, said post having a metal contact near its upper part, anodes suspended from said metal contact, a conductor connecting said contact with the first named anodes, and a cathode plate provided with means for suspending articles to be plated in the space between the first named and the second named anodes, said cathode plate being provided with an opening or space to receive the upper end of said post, whereby its suspended articles may hang below the upper ends of the anodes connected with said post.

4. An electro plating apparatus comprising a tank provided with a metal rim, hooks on said rim depending into the tank, anodes suspended within the tank on said hooks, a post within the tank, anodes suspended from said post, a conductor connecting said anodes with said rim, and a cathode plate provided with means to suspend articles to be plated within the space bounded by the first named anodes and without the space surrounding the second named anodes.

5. An electro plating apparatus comprising a tank provided with a metal rim upon its edge, hooks carried by said rim and depending into the tank, anodes carried by said hooks, a post within the tank and provided with a contact near its upper end, a conductor connecting said contact with said rim, hooks carried by said contact, anodes suspended around said post by said hooks, and a cathode plate provided with means to suspend the articles to be plated in the space between the first named and the second named anodes.

6. An electro plating apparatus comprising a tank provided with a metal rim upon its edge, hooks carried by said rim and depending into the tank, anodes carried by said hooks, a post within the tank and provided with a contact near its upper end, a conductor connecting said contact with said rim, hooks carried by said contact, anodes suspended around said post by said hooks, a cathode plate provided with means to suspend the articles to be plated in the space between the first named and the second named anodes, said cathode plate having a space or opening adapted to receive the upper end of said post and the upper ends of its anodes to permit the articles suspended from the cathode plate to extend below the upper ends of the anodes.

7. An electro-plating apparatus comprising a tank for an electrolyte, an anode suspended within said tank, a post within said tank, an anode suspended from said post, means for connecting said anodes electrically in a circuit, and a cathode plate provided with means to detachably support articles to be plated and arranged to suspend said articles in the space between said anodes.

GEO. A. LUTZ.

Witnesses:
T. F. BOURNE,
MARIE F. WAINWRIGHT.