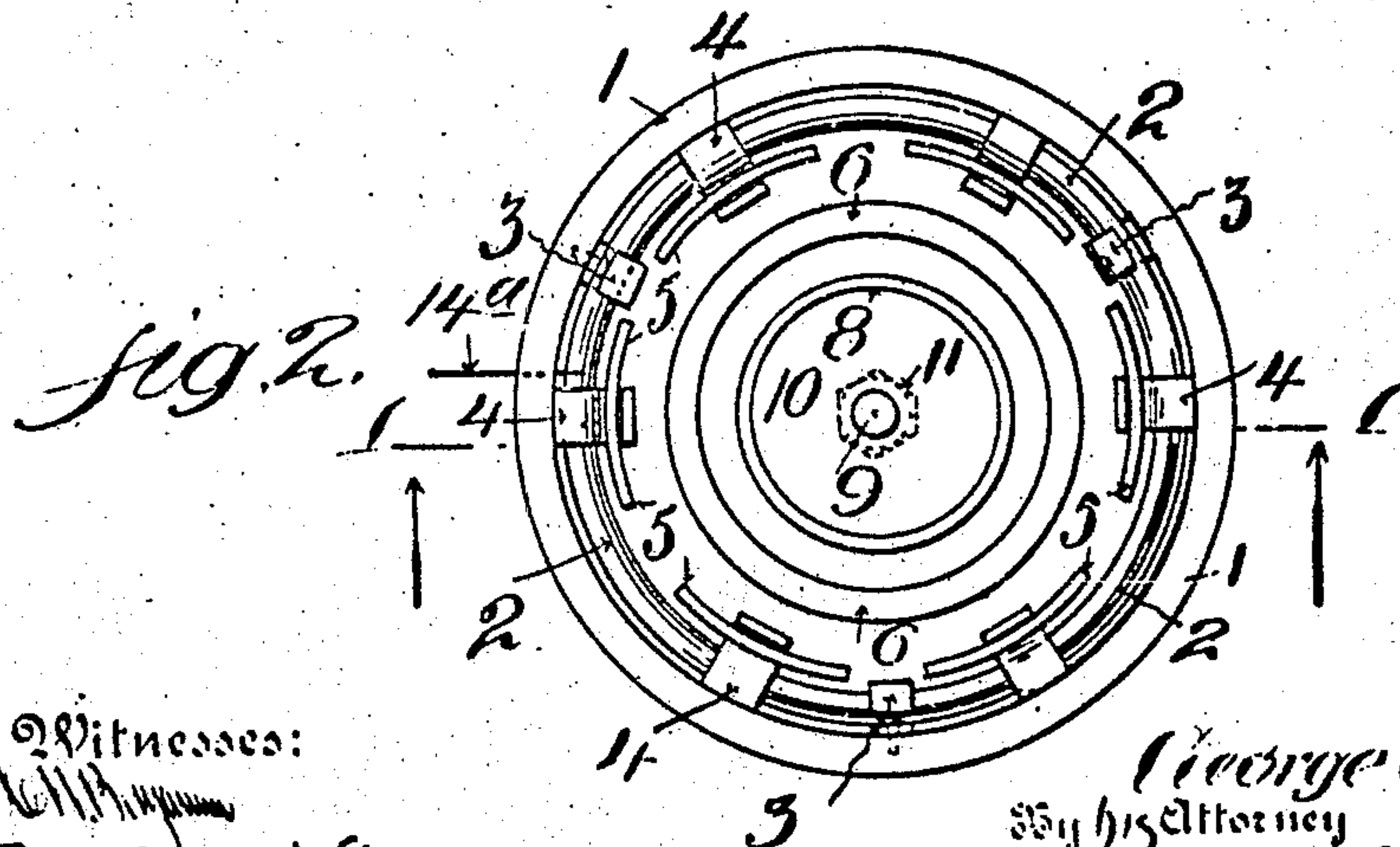
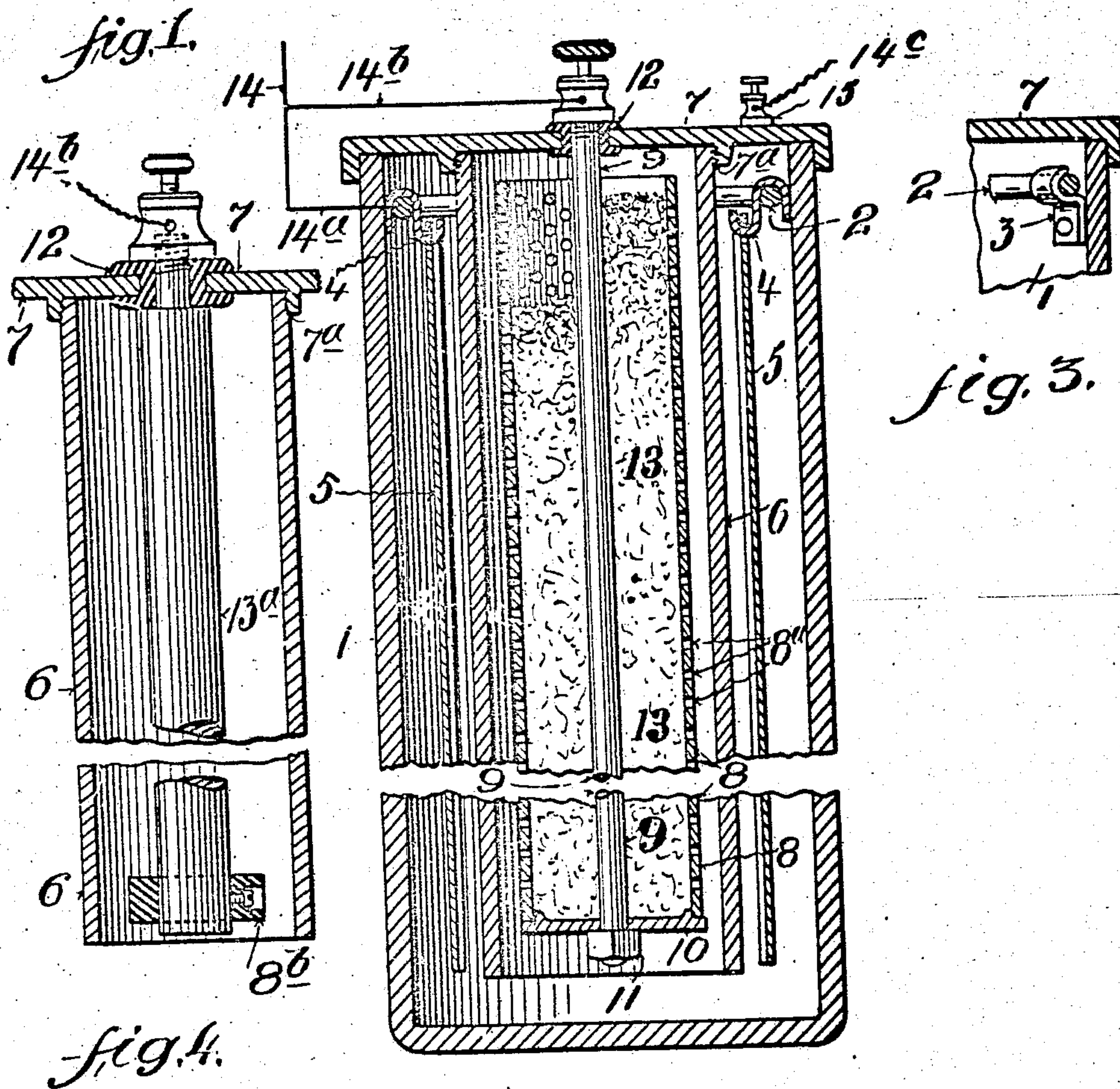


G. A. LUTZ.
ELECTROPLATING APPARATUS.
APPLICATION FILED JUNE 6, 1908.

Patented Sept. 22, 1908.

899,226.



Witnesses:
W. H. H. H.
Marie P. H. H.

Inventor
George A. Lutz
By his Attorney
J. P. Bourne

UNITED STATES PATENT OFFICE.

GEORGE A. LUTZ, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO AMERICAN CIRCULAR LOOM COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

ELECTROPLATING APPARATUS.

No. 899,226.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE A. LUTZ, a citizen of the United States, and resident of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Electroplating Apparatus, of which the following is a specification.

The object of my invention is to effectively electroplate the interior as well as the exterior of metal pipes, tubes, and hollow articles.

In carrying out my invention I provide an anode to enter the pipe or tube, with insulation in connection with such anode to assure that the latter will not contact with the pipe or tube, and such pipe or tube, with its contained anode is immersed in an electrolytic bath with one or more anodes in the bath exterior of the pipe, and such inner and outer anodes are connected with one side of the electric circuit while the pipe or tube is connected to the other side of the circuit, as by being hung from a cathode plate supported upon or over the tank.

In one embodiment of my invention I provide a perforated insulating tube adapted to freely enter the pipe or tube to be plated, and within such insulating tube I provide anode material such as particles of plating metal, as zinc, silver or the like, and the terminal of the circuit is in contact with the plating metal particles. For this purpose in the drawings I have shown a rod passing through the insulating tube and supporting the same at the lower end, as by a disk, which also supports the metal plating particles and retains the same within the insulating tube, which rod is connected with the anode side of 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 top view thereof, the cathode plate being removed. Fig. 3 is a detail section, and Fig. 4 is a partly sectional view illustrating a modification.

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

The numeral 1 indicates a suitable tank which supports a conductor or ring 2 which

may be attached within the tank by clips 3 or in any other suitable manner, and at 4 I have shown hooks hanging from conductor 2, upon which hooks suitable anodes 5 depend into the tank. Within the outer anodes 5 is located the pipe, tube or the like 6 to be plated. In the drawings I have shown pipe or tube 6 detachably connected with a cathode plate 7, shown resting upon tank 1, which plate is shown provided with threads 7^a to receive the threaded end of the pipe. Within pipe 6 is a tube 8, of rubber or other suitable insulating material, and provided with any suitable number of perforations 8^a, which insulating tube is of less diameter than pipe or tube 6 so as not to contact with the same.

At 9 is a supporting rod shown passing through insulating tube 8 and provided at its lower end with a disk or closure 10, shown held in place by nut 11, whereby the insulating tube is supported upon the rod and the lower end of such tube is closed. Said rod is shown supported from cathode plate 7 and is insulated therefrom by suitable insulation 12. Within insulating tube 8 is placed the plating metal 13 in the form of particles, granules or the like, as indicated in Fig. 1, which plating particles are in circuit with rod 9. Anodes 5 and anode rod 9 are shown connected by wires 14^a, 14^b with one side of the line 14 and cathode plate 7 is shown provided with a binding post 15 connected with the other side of the line 14^c.

Instead of utilizing loose particles or granules of plating metal within the pipe or tube to be plated, and insulated therefrom as described, I may provide the rod or the like 13^a, of suitable plating metal having insulating material 8^b, such as one or more rubber or porcelain sleeves, mounted upon or attached to the rod, all adapted to be fitted within pipe or tube 6, as shown in Fig. 4, the insulation 8^b serving to keep the plating metal from contact with the pipe or tube 6.

In accordance with my improvements the anode within the pipe, tube or the like to be plated is suitably supported therein and out of contact therewith, all whereby the plating may simultaneously take place on the interior as well as the exterior of the pipe, tube or the like. In the construction shown in Fig. 1, the inner anode may remain suspended from its support, such as the cathode plate, for continuous use while the pipes or tubes 6

may be readily detached from such plate and replaced as required, and the inner anode with the pipe or tube to be plated may thus be inserted in and removed from the electrolytic bath simultaneously. Furthermore, by the arrangement shown the inner anode particles or granules may be readily removed and replaced within insulating perforated tube 8 by removing the closure 10 as required. The perforations of the insulating tube 8 permit the electro plating action on the interior of pipe or tube 6 while at the same time retaining the plating particles or granules within the tube.

Having now described my invention what I claim is:

1. An electro plating apparatus comprising a tank for an electrolyte, an anode within the tank, a cathode plate to support a hollow article within the tank and adjacent the anode, and means to simultaneously support an anode from said cathode plate within the hollow article while in the tank.

2. An electro plating apparatus comprising a tank for an electrolyte, means to support one or more anodes therein, means to support a pipe or tube within said anodes, an anode adapted to be supported within the pipe or tube by the pipe support, and means to insulate said anode from the pipe or tube and its support.

3. An electro plating apparatus comprising a tank for an electrolyte, one or more anodes supported therein, means to support a pipe or tube within said anodes, a cathode plate to support the pipe or tube, and an anode suspended from the cathode plate and insulated therefrom and located within the pipe or tube.

4. An electro plating anode comprising a perforated insulator, and particles of plating material supported therein and a rod passing through and supporting said insulator.

5. An electro plating anode comprising a perforated insulating tube, a closure at the lower end thereof, a support for the tube passing upwardly therein, and plating metal particles within said tube.

6. An electro plating anode comprising a perforated insulating tube, having a closure at the lower end, a conductor passing into said tube, and plating metal particles within said tube and in contact with said conductor and a cathode plate supporting said conductor.

7. An electro plating apparatus comprising a tank for an electrolyte, one or more anodes suspended therein, means to support a pipe within said anodes, and an anode within said pipe comprising a perforated tube and plating metal particles therein, and a conductor in circuit with said particles and supported by said pipe support.

8. An electro plating apparatus comprising a tank for an electrolyte, one or more anodes suspended therein, means to support a pipe within said anodes, an anode within said pipe comprising a perforated insulated tube, a closure at the lower end of the tube, metal particles within said tube, and a rod passing through the tube and connected with said closure and in circuit with said particles, and a support for said rod.

9. An electro plating apparatus comprising a tank for an electrolyte, one or more anodes suspended therein, means to support a pipe within said anodes, an anode within said pipe comprising a perforated insulated tube, a closure at the lower end of the tube, metal particles within said tube, and a rod passing through the tube and connected with said closure and in circuit with said particles, and a support for said rod, said support comprising a cathode plate from which said rod is insulated.

10. An electro plating apparatus comprising a tank for an electrolyte, anodes supported within the tank, a cathode plate, means for suspending a hollow article from said plate, an anode supported by and insulated from the cathode plate within the support for said hollow article, and means to insulate the inner anode from said article.

11. An electro plating apparatus comprising a tank for an electrolyte, one or more anodes supported therein, a cathode plate over the tank, means to suspend a hollow article therefrom, a rod insulated from and supported by said cathode plate, a perforated insulating tube receiving said rod and having a closure at the lower end supported by said rod, and plating metal particles within said insulated tube.

Signed at New York city, in the county of New York, and State of New York, this 27th day of May, A. D. 1908.

GEORGE A. LUTZ.

Witnesses:

T. F. BOURNE,

MARIE F. WAINRIGHT.