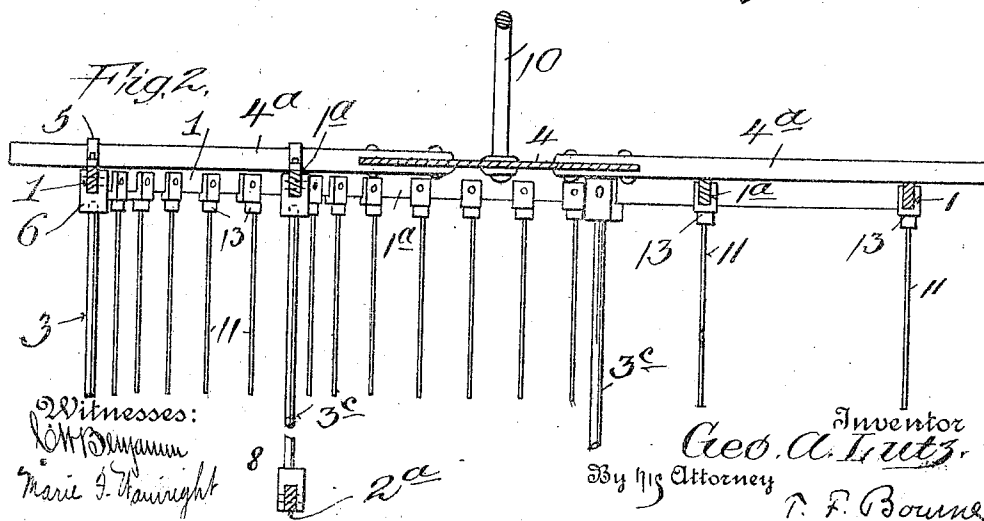
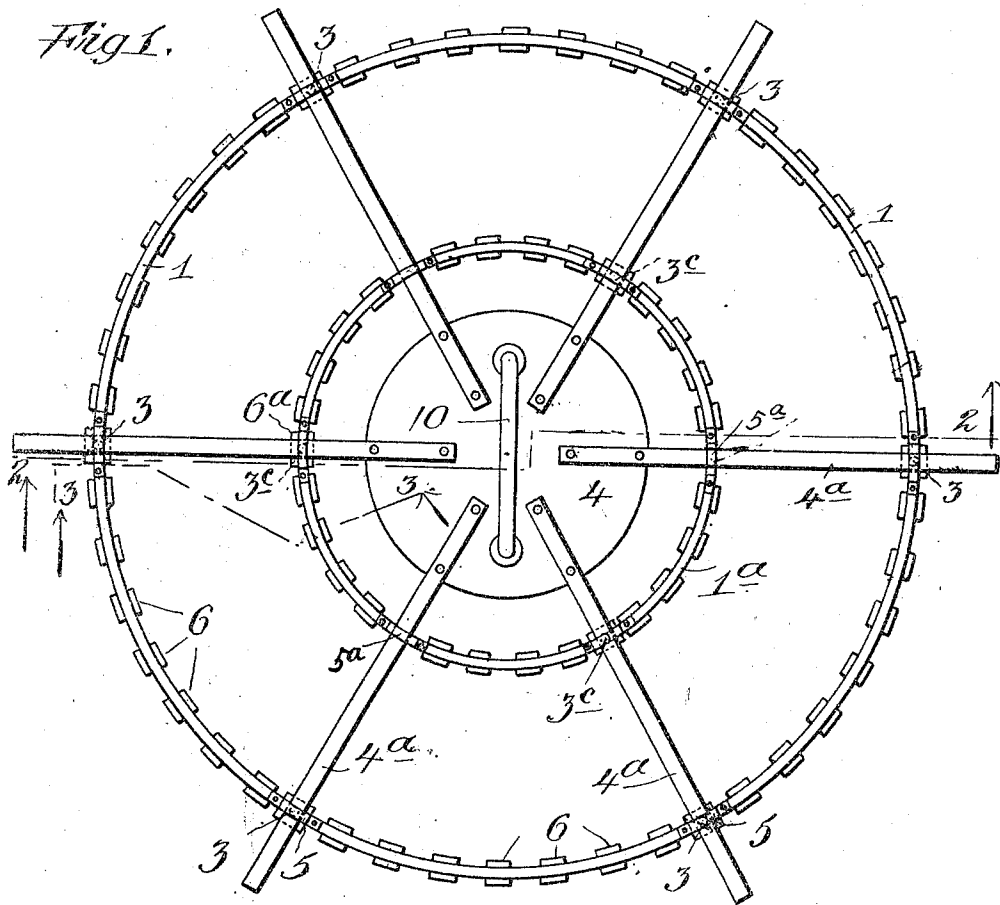


1,090,926.

Fig 1.

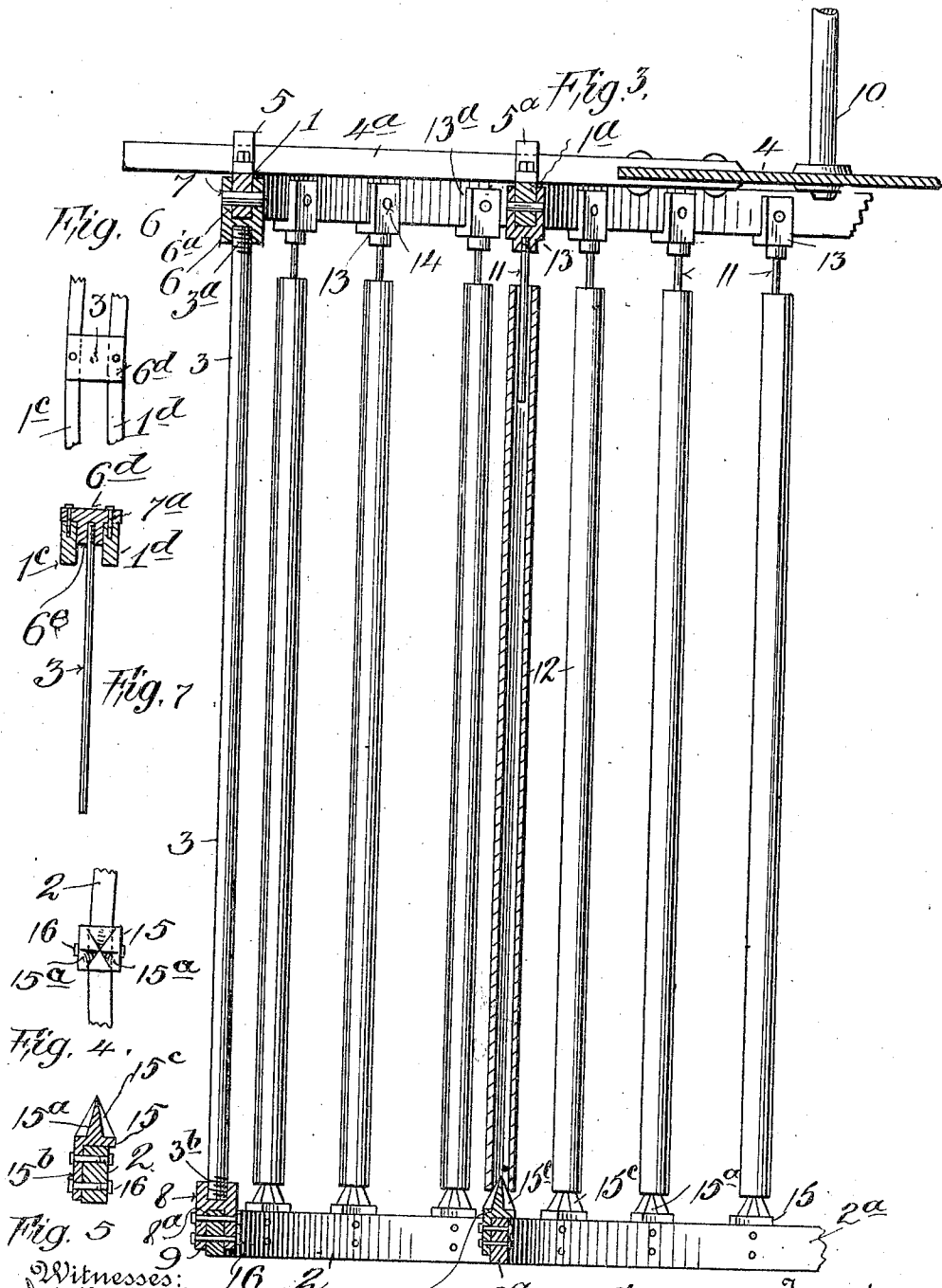


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ELECTROPLATING APPARATUS.
APPLICATION FILED DEC. 30, 1911.

1,090,926.

Patented Mar. 24, 1914.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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ELECTROPLATING APPARATUS.

1,090,926.

Specification of Letters Patent.

Patented Mar. 24, 1914.

Application filed December 30, 1911. Serial No. 669,602.

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 provide improved means for supporting a plurality of articles, such as pipes or conduits, for simultaneously electroplating the same, and to enable the ready placing of such articles in position in their supporting devices and the removal of the former from the latter as required, whereby a relatively large number of such articles may be expeditiously and economically plated.

My invention comprises 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 plan view of a cathode frame embodying my invention; Fig. 2 is a section on the line 2, 2, in Fig. 1 of the upper portion of said cathode frame; Fig. 3 is an enlarged vertical section substantially on the line 3, 3, in Fig. 2 of a portion of the cathode frame; Fig. 4 is a detail plan view of one of the lower rings and seats of the cathode frame; Fig. 5 is a section of Fig. 4; Fig. 6 is a detail plan view of a modification, and Fig. 7 is a vertical section of Fig. 6.

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

The numeral 1 indicates an upper conductor ring or member and 2 indicates a lower conductor ring or member of the cathode frame, ring 2 being hung or suspended from ring 1 by any suitable number of rods or the like 3.

4 indicates a central metallic plate or head from which conductor rods or arms 4^a project outwardly or radially, to which rods the ring 1 is connected by any suitable means, such as by clips 5, whereby said rods and conductor ring are mechanically and electrically secured together. At 6 are shown heads or castings secured to ring 1, being shown provided with jaws 6^a receiving said ring, and held in place by rivets 7. The threaded ends 3^a of rods 3 are shown screwed into threaded sockets or bores in

heads 6. The threaded ends 3^b of rods 3 are shown screwed into heads 8 (Fig. 3) having jaws 8^a receiving the lower ring 2 and secured thereto by rivets or bolts 9. The parts described may be of copper or other suitable material according to the electrolyte in which the parts are to be immersed, and said parts constitute a cathode frame adapted to be lowered into and raised from the electrolyte in a suitable tank. The plate or head 4 is shown provided with a rod or hook 10 for connection with any suitable tackle from an overhead crane or other device, for raising and lowering and moving the frame about with its attached articles to be plated.

The frame may be provided with any desired number of ring-like conductors. I have illustrated an inner upper ring-like conductor 1^a and an inner lower ring like conductor 2^a, both within the rings 1 and 2 respectively, the conductor 1^a having any desired number of heads 6^b secured thereto in the manner described with respect to heads 6, the ring 2^a being secured to rods 3^c, by heads similar to the heads 8 that are connected to ring 2 and rods 3, for supporting the ring 2^a from ring 1^a at a suitable distance from the latter. The upper conductor rings 1 and 1^a are provided with depending guides 11 adapted to enter the hollow articles 12 to be plated which, in the illustration, are shown in the form of pipes or conduits. Said guides are shown in the form of relatively short rods secured by threads to heads 13 having jaws 13^a receiving rings 1, 1^a, and secured thereto by rivets or the like 14. By means of the threaded connections between the rods 11 and heads 13 said rods may be removed and replaced when required. The lower rings 2, 2^a, at points in vertical alinement with corresponding rods 11, are provided with seats 15 for the pipes or other articles 12. Seats 15 are shown provided with upwardly extending cone-like parts 15^a and with flanges 15^b riveted or bolted at 16 to rings 2 and 2^a, said seats being shown provided with horizontally disposed parts resting upon rings 2, 2^a. Seats 15 are also shown provided with grooves or flutings 15^c providing channels to permit the electrolyte to enter the hollow articles or pipes 12 when immersed in the electrolyte or bath. While in Figs. 1 to 5 I have illustrated the rings 1, 1^a, 2, 2^a, as in unit form, said rings may each comprise a plurality of

members as illustrated in Figs. 6 and 7, wherein spaced conductor rings 1^c, 1^d are provided and the heads 6^a for rods 3 rest upon the ring members 1^c, 1^b, and have depending bosses 6^a between the rings 1^c, 1^d, receiving the suspension rods 3. The heads 6^a may be secured upon rings 1^c, 1^d by screws 7^a.

In accordance with my improvements, the parts of the cathode frame are all securely united together, and the rods 3 form part of the circuit between the upper and lower rings. When the hollow articles to be plated, such as pipes 12, are to be inserted in the cathode frame, their upper ends are passed over the depending guides or rods 11 and raised sufficiently to allow the lower ends of such articles to be rested upon the seats 15, upon which said articles are then lowered, whereby said hollow articles may be quickly and accurately applied in position and are retained upon seats 15 by the rods 11 which guide the upper ends of the pipes. When the pipes are to be removed they are lifted off the seats 15 and then lowered from rods 11.

The arrangement set forth affords a simple and efficient means for electrically uniting with a cathode frame a relatively large number of articles to be plated, and in such manner that the cathode frame in which such articles are installed may be readily raised and lowered and moved about while the articles to be plated remain in position thereon. A further advantage is that if any of the parts of the cathode frame become worn or eaten away they may be readily removed and replaced.

It will be understood that the rods or arms 4^a are to be connected in the electric circuit in any suitable manner, and that the cathode will be suspended in the electrolytic bath in which suitable anodes are located and connected in the circuit in any well known manner.

My improvements may be used as the cathode in an electroplating apparatus such as set forth in my application filed January 11, 1911, Serial No. 601,345, for improvements in electroplating apparatus, the portions of the arms 4^a extending beyond ring 1 being supported upon the terminals or supports for the cathode above the tank described in said application. Furthermore,

by having cone-like seats for the hollow articles to be plated, such seats will accommodate such articles of different dimensions without requiring the seats to be removed and replaced; for instance, the cone-like parts 15^a may be so shaped as to support pipes, or conductors of varying dimensions, as from $\frac{1}{4}$ inch to 1 inch bores.

Having now described my invention what I claim is:—

1. A cathode comprising a frame having inner and outer upper rings, bars connecting said rings, and inner and outer lower rings suspended from the upper rings, seats on the lower rings for articles to be plated, and guides on the upper rings for said articles.

2. A cathode comprising a frame having inner and outer upper rings, bars connecting said rings, a plate secured to the inner ends of said bars, and inner and outer lower rings suspended from the upper rings, seats on the lower rings for articles to be plated, said seats having upwardly projecting cone-like portions to receive said articles, and guides on the upper rings for said articles.

3. A cathode comprising a frame having inner and outer upper rings, radial bars connecting said rings, a plate secured to the inner ends of said bars, inner and outer lower rings suspended from the upper rings, seats on the lower rings for articles to be plated, said seats having upwardly projecting cone-like portions to receive said articles, said cone-like portions having recesses, and guides on the upper rings for said articles.

4. A cathode comprising a frame having inner and outer upper rings spaced apart, radial bars connecting said rings, a metallic plate substantially in line with the inner ring and secured to the inner ends of said bars, spaced guides depending from said rings, inner and outer lower rings suspended respectively from the inner and outer upper rings, and seats on the lower rings beneath the corresponding guides.

Signed at New York city, in the county of New York, and State of New York, this 29th day of December, A. D. 1911.

GEORGE A. LUTZ.

Witnesses:

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