

G. A. LUTZ.
ELECTROPLATING APPARATUS.
APPLICATION FILED JAN. 7, 1911.

1,022,487.

Patented Apr. 9, 1912.
2 SHEETS—SHEET 1.

Fig. 1.

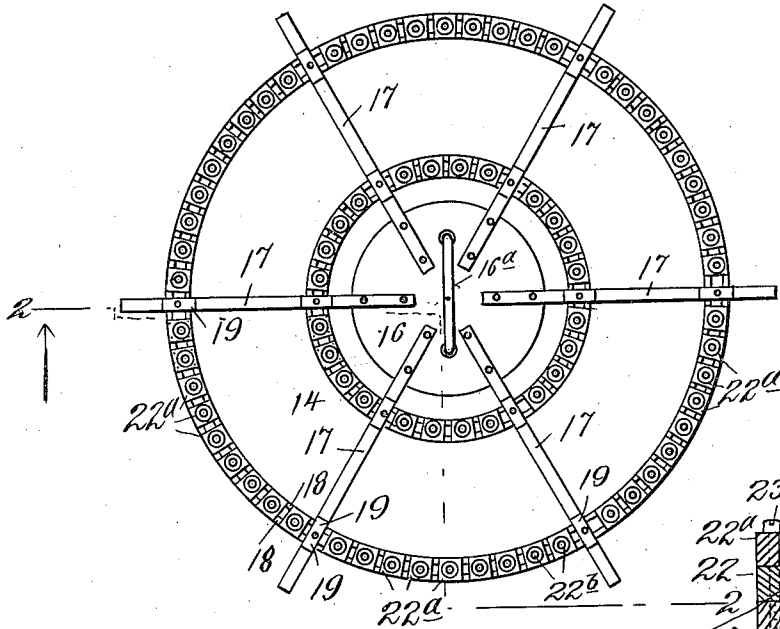


Fig. 4.

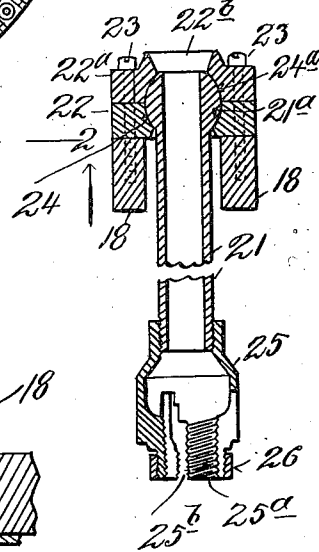


Fig. 3.

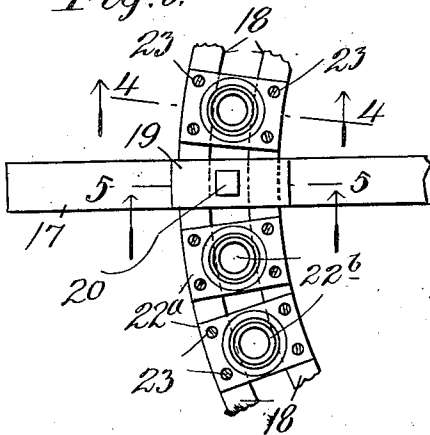
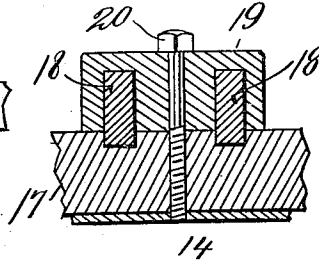


Fig. 5.



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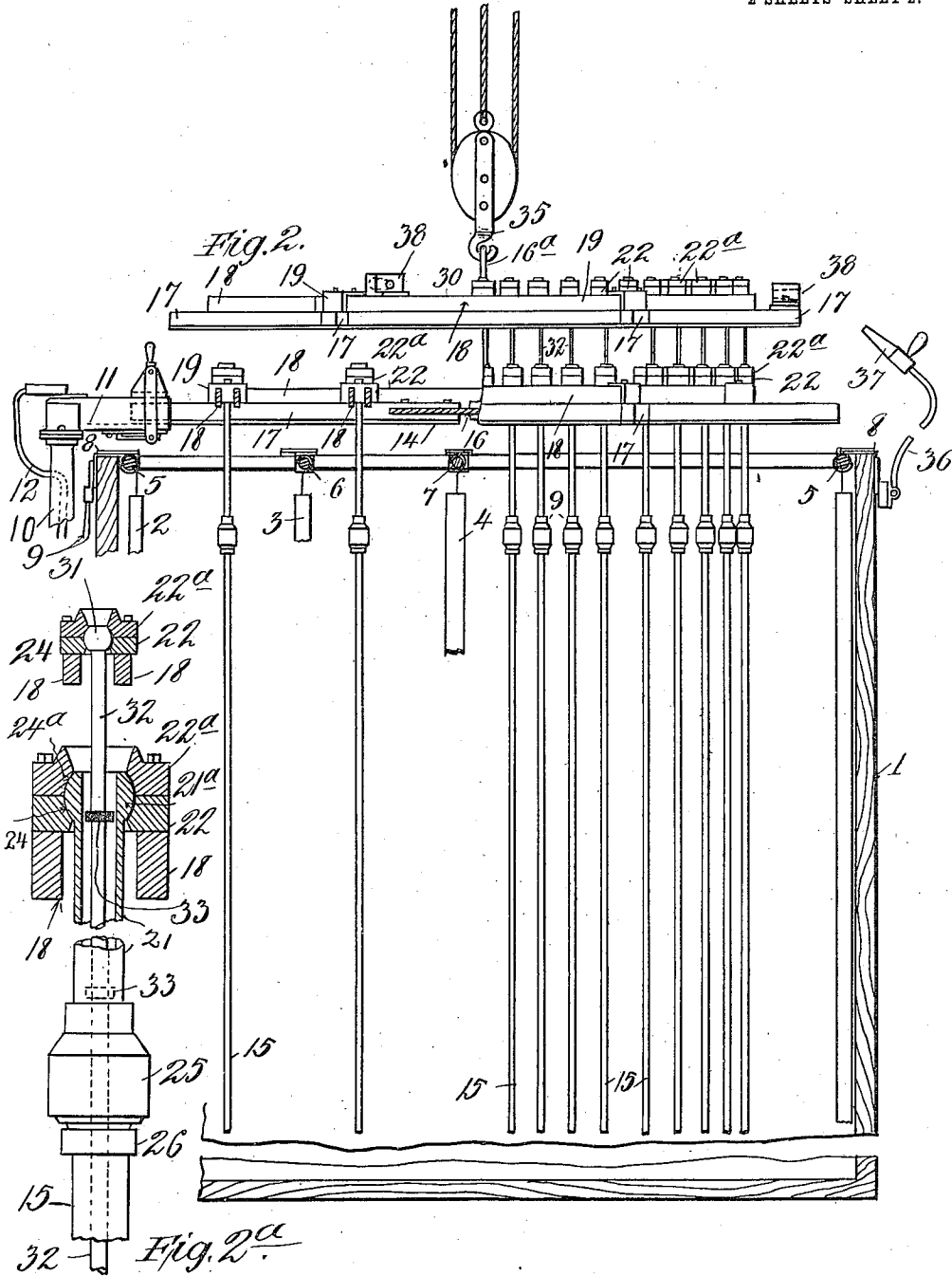
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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ELECTROPLATING APPARATUS.

1,022,487.

Specification of Letters Patent.

Patented Apr. 9, 1912.

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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 provide improved means adapted to permit simultaneous plating on the interior and exterior of hollow articles, such as pipes and conduits, and to enable a large number of such articles to be simultaneously and expeditiously plated.

In carrying out my invention I provide a frame or spider (adapted to be suspended over a suitable tank) having a series of hollow supports for articles to be plated; and another frame or spider adapted to be suspended over the first named frame or spider, provided with means for supporting a series of anodes adapted to pass through the first named hollow supports and into the pipes or other articles hanging from said supports, means being provided to permit the anodes to have free passage into and from said hollow supports and the articles to be plated when the frame carrying the anodes is raised and lowered.

Further features of my invention 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 frame or spider 14 for supporting articles to be plated; Fig. 2 is a partly sectional side elevation illustrating my improvements in position, the section being taken substantially on the plane of the line 2, 2, in Fig. 1; Fig. 2^a is a partly sectional detail view of the anode and cathode frame as adjusted for use in Fig. 2; Fig. 3 is an enlarged detail view of part of Fig. 1; Fig. 4 is a section on the line 4, 4, in Fig. 3, and Fig. 5 is a section on the line 5, 5, in Fig. 3.

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

At 1 is a suitable tank adapted to contain an electrolyte, and at 2, 3, 4 are series of circularly disposed anodes suspended within tank 1 from conductors 5, 6, 7 carried by said tank in any suitable manner,

as by straps or clips 8, to one or more of which the positive conductor 9 is connected, (see Fig. 2). At 10 are any desired number of posts disposed around the tank and provided with supports 11 to which the negative conductor 12 is connected, (Fig. 2). At 14 is indicated, generally, a cathode frame or spider from which articles 15, such as pipes, conduits or the like are adapted to be supported in tank 1. Spider or frame 14 is shown provided with a centrally disposed contact plate or head 16 and radially disposed conductor arms or bars 17 secured to and projecting therefrom, (Fig. 1) the ends of which arms are adapted to fit in the supports 11 for retaining said spider in position over tank 1, (Fig. 2). At 18 are annular bars secured upon arms 17, as by clips 19 receiving screws 20. Bars 18 are shown spaced apart and hollow sockets or supports 21 depend from and between said bars, (Figs. 2^a and 4). The hollow or tubular sockets or supports 21 are movably supported to permit swinging in the spaces between bars 18 as required, for which purpose said sockets or supports are shown provided with substantially spherically disposed heads 21^a received in suitable sockets supported by bars 18. I have shown the last named sockets comprising blocks 22 having caps 22^a secured in position by screws 23 passing through said caps and blocks and into bars 18, the blocks and caps 22, 22^a being provided with corresponding seats or sockets 24, 24^a against which the heads 21^a fit so as to swivel or swing in various directions, (Figs. 2^a and 4). The upper parts of caps 22^a are open at 22^b in line with the bores in sockets or supports 21. Suitable means may be provided for suspending from sockets or supports 21 the articles to be plated. When pipes having external threads are to be plated I provide connectors on couplings 25 attached to the lower ends of supports 21, which connectors or couplings are shown provided with internal threads 25^a (Fig. 4) to receive the external threads on the ends of pipes 15. I have shown the connectors or couplings 25 split or slotted vertically at the lower part, at 25^b, and provided with nuts 26, whereby the pipes may be readily clamped and released, and by means of the split or slotted portions 25^b of connectors or couplings 25

the electrolyte or solution may penetrate more or less to the threads of the pipe and engage the top portions of the pipes.

At 30 is an anode spider or frame adapted to be suspended above the spider or frame 14 over the tank, (Fig. 2). Spider or frame 30 is made similar to frame 14 and provided with bars 18, conductor arms 17, plate 16, blocks 22 and caps 22^a arranged as before described and provided with internal sockets 24 in which are hung and swiveled the heads 31 of anodes 32 which are adapted to pass through the hollow supports 21 and pipes 15, see Fig. 2^a. Anodes 32 are provided at suitable intervals with insulation 33 of such dimensions as to permit the same to slide within supports 21 and pipes 15 and yet keep anodes 32 from contact therewith. Plates 16 of said spiders or frames are provided with loops or eyes 16^a adapted to be hung from tackle or the like 35 extending from a crane or overhead support for moving said spiders and frames as required.

To plate hollow articles simultaneously on the interior and the exterior the articles, such as pipes 15, are attached to sockets or supports 21 of cathode frame 14 and the latter is then lowered over the tank so that its arms 17 rest upon and are secured to supports 11, whereby the pipes 15 are adjacent to the anodes 2 that are outside of said pipes. Spider or frame 30 is then brought over spider 14 and lowered so that the anodes 32 pass through the corresponding sockets or supports 21 and pipes 15, and anode spider 30 is held suspended a suitable distance above spider 14 so as to be insulated from the latter, which may be done by retaining anode spider 30 upon its tackle 35. One or more conductors 36, which are attached to the plate or plates 8, are provided with plugs or contacts 37 which are adapted to be inserted in sockets or jacks 38 attached to arms 17 of anode spider 30 (Fig. 2), whereby the outer anodes 2, 3, 4, and the inner anodes 32 are in circuit in the positive sides of the main line. The current will then flow from anodes 2, 3, 4 through the electrolyte to the outer surfaces of the pipes 15 and from the inner anodes 32 through the electrolyte within the pipes to the inner surfaces of the latter, and thence the current will flow through pipes 15 and the cathode spider 17 through supports 11 and conductor 12. The exterior and interior of the pipes or hollow articles will thus be simultaneously plated, and when the plating is effected spider 30 will be raised and moved to one side to remove anodes 32 from pipes 15, and then spider 14 will be raised to permit detachment of the plated pipes and replacement of other pipes or articles to be plated. The swiveling of sockets or supports 21 and anodes 32 upon their respective spiders or frames

enables a relatively large number of articles to be plated on the interior and exterior simultaneously, as the anodes 32 will be enabled to pass freely through sockets or supports 21 and pipes 15 without danger of injury, as each anode 32 may accommodate itself to the corresponding socket or support 21 and pipe 15 as spider 30 is lowered and raised.

Having now described my invention what I claim is:—

1. An electroplating apparatus comprising a tank, a cathode frame provided with hollow connectors for articles to be plated, means to support said cathode frame over the tank; an anode frame, anodes suspended therefrom and extending within the hollow connectors; means to support the anode frame above the cathode frame out of circuit therewith; a second set of anodes, and means for suspending the same within the tank.

2. An electroplating apparatus comprising a tank, a cathode frame provided with hollow connectors for articles to be plated, means to support said cathode frame over the tank; an anode frame, anodes suspended therefrom and extending within the hollow connectors; means to support the anode frame above the cathode frame out of circuit therewith; a second set of anodes, means for suspending the same within the tank, and means connecting the first and second named anodes in the same side of a circuit.

3. An electroplating apparatus comprising a tank, a cathode frame, hollow connectors movably connected with said frame to support articles to be plated, means to support said cathode frame over the tank, an anode frame, anodes suspended therefrom and extending within the hollow connectors, means to support the anode frame above the cathode frame out of circuit therewith, a second set of anodes, and means for suspending the same within the tank.

4. An electroplating apparatus comprising a tank, a cathode frame, hollow connectors movably connected with said frame to support articles to be plated, means to support said cathode frame over the tank, an anode frame, anodes suspended therefrom and extending within the hollow connectors, means to support the anode frame above the cathode frame out of circuit therewith, a second set of anodes, means for suspending the same within the tank, and means connecting said anodes in the same side of a circuit.

5. An electroplating apparatus comprising a tank, a cathode frame provided with hollow connectors for articles to be plated, means to support said cathode frame over the tank, an anode frame, means for movably suspending anodes from the anode frame to extend within the hollow con-

nectors, means to support the anode frame above the cathode frame out of circuit therewith, a second set of anodes, and means for suspending the same within the tank.

5 6. An electroplating apparatus comprising a tank, a cathode frame provided with hollow connectors for articles to be plated, means to support said cathode frame over the tank, an anode frame, means for mov-
10 ably suspending anodes from the anode frame to extend within the hollow connectors, means to support the anode frame above the cathode frame out of circuit therewith, a second set of anodes, means for sus-
15 pending the same within the tank, and means to connect said anodes in the same side of a circuit.

7. An electroplating apparatus comprising a tank, means to support anodes therein,
20 a frame, means to support said frame adjacent the tank, said frame being provided with sockets, hollow sockets movably retained in said first named sockets, and means to support a second set of anodes within
25 said supports.

8. An electroplating apparatus comprising a tank, means to support anodes therein, a cathode frame, means to support said frame adjacent the tank, said frame being pro-
30 vided with sockets, hollow sockets movably retained in said first named sockets, an anode frame provided with means to support a second set of anodes within said hollow sockets, and means to support the anode
35 frame above the first named frame.

9. An electroplating apparatus comprising a tank, means to support anodes therein, a cathode frame, means to support said frame adjacent the tank, said frame being
40 provided with sockets, hollow sockets movably retained in said first named sockets, an anode frame provided with sockets, a second set of anodes provided with heads movably retained in said sockets, and means to
45 support the anode frame over said hollow sockets.

10. An electroplating apparatus comprising a tank, means to support anodes therein, a frame, hollow connectors carried by said
50 frame and provided with slotted portions to permit the flow of electrolyte within said connectors, and means to suspend anodes within said connectors.

11. A frame for an electroplating apparatus comprising a supporting member, sockets carried thereby, hollow sockets movably
55 connected with said first named sockets and

supported thereby, and means to support articles from said hollow sockets.

12. A frame for an electroplating apparatus comprising a supporting member having
60 spaces, sockets carried by said member in line with said spaces, hollow sockets movably suspended in said first named sockets and having free motion within said spaces
65 and means to connect articles to said sockets.

13. A frame for an electroplating apparatus comprising bars spaced apart, sockets carried by said bars, hollow sockets movably carried by said first named sockets, and
70 means to support articles from said hollow sockets.

14. A frame for an electroplating apparatus comprising outwardly disposed arms, bars secured to said arms, sockets supported
75 by said bars, hollow sockets carried by said first named sockets, and means to support articles from the hollow sockets.

15. A frame for an electroplating apparatus comprising outwardly disposed conductor arms, circularly disposed bars secured
80 to said arms, sockets carried by said bars, hollow sockets movably carried by said first named sockets, and means to attach articles to said hollow sockets.

16. A frame for an electroplating apparatus comprising a supporting member, blocks carried by said member provided with seats,
hollow supports having parts fitting said seats, caps on the blocks having openings
90 alined with the bores of said supports, and means to attach articles to said supports.

17. A frame for an electroplating apparatus comprising a supporting member, blocks carried by said member and provided with
95 seats, hollow supports having heads movably fitted to said seats, caps on said blocks provided with openings alined with the bores in said supports, and means to attach
100 articles to said supports.

18. A frame for an electroplating apparatus comprising a supporting member, hollow supports attached thereto, said supports being provided with threaded couplings having
105 slotted portions for the admission of the electrolyte, and means to attach articles to said couplings.

Signed at New York city, in the county of New York, and State of New York, this 31st day of December, A. D. 1910.

GEORGE A. LUTZ.

Witnesses:

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