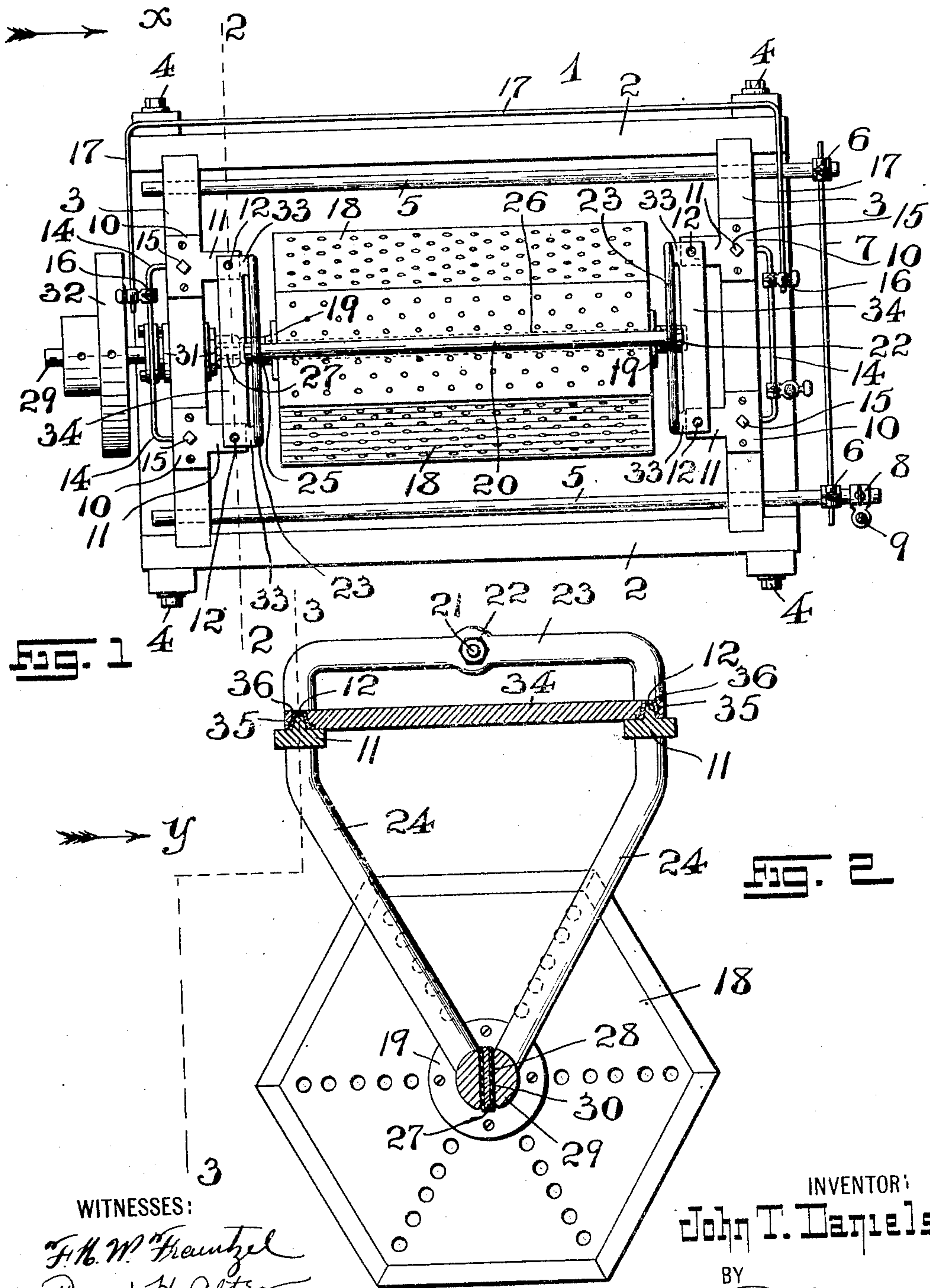


No. 888,067.

PATENTED MAY 19, 1908.

J. T. DANIELS.
ELECTROPLATING APPARATUS.
APPLICATION FILED JUNE 7, 1907.

2 SHEETS—SHEET 1.



WITNESSES:
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Anna H. Alter

INVENTOR:
John T. Daniels,

BY
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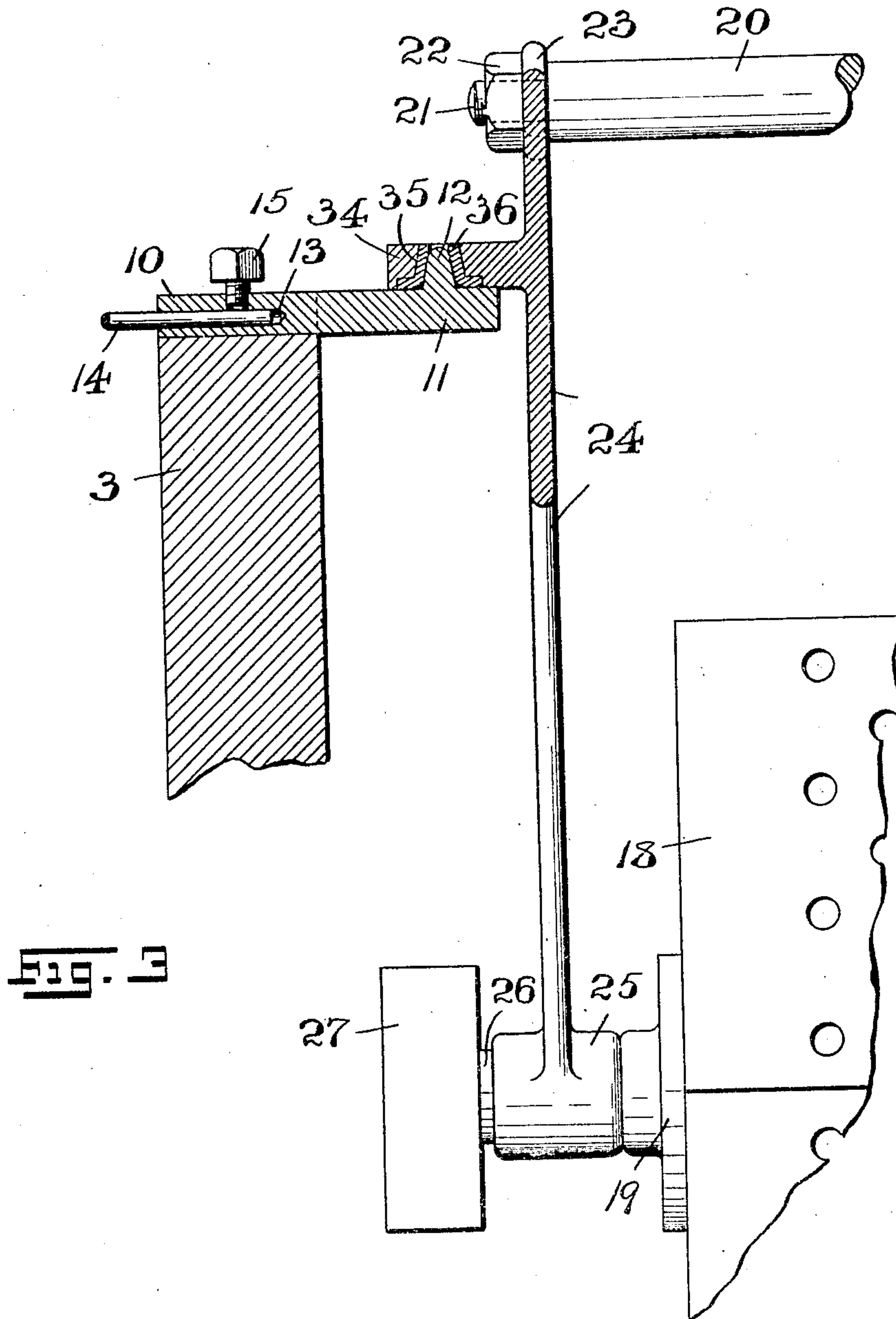


Fig. 3

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UNITED STATES PATENT OFFICE.

JOHN T. DANIELS, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE HANSON & VAN WINKLE COMPANY, A CORPORATION OF NEW JERSEY.

ELECTROPLATING APPARATUS.

No. 888,067.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed June 7, 1907. Serial No. 377,689.

To all whom it may concern:

Be it known that I, JOHN T. DANIELS, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electroplating Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention relates, generally, to improvements in apparatus for the electro-deposition of metals upon various articles; and the present invention is in the nature of an improvement in that class of electro-plating apparatus comprising a tank or vat in which the electrolyte is contained and in which is placed a rotatable drum, cylinder or basket, ordinarily termed the container, and in which the articles which are to be plated are placed, the container being supported upon contact-making brackets or supports extending from the sides or ends of the tank, and the container being provided with means for lowering and raising the said container, so that the container or basket-carrying frame will make or break electrical connection with the said contact-brackets or supports.

The invention, therefore, has for its principal object to provide a novel and simple arrangement of the contact-making bracket or support for the removable container or basket of an electro-plating apparatus, all arranged that a positive electrical contact will be made between the parts of the container or basket and the means for supporting the same in its operative relation within the tank or vat of the apparatus.

A further object of this invention is to provide an apparatus of the general character herein set forth, which is provided with a removably arranged revolving or rotatable drum, cylinder, or basket, said drum, cylinder or basket being supported by means of a suspension frame, which is provided with means which is adapted, as the drum, cylinder or basket is lowered into the electroplating solution, to automatically register with contact-teats or projections, so as to perfectly center the drum, cylinder or basket within the tank or vat, while making elec-

trical connection, and at the same time retain the suspension frame in which the container is mounted in its position against any lateral displacement, whereby the process of electro-deposition might possibly be interfered with.

Other objects of this invention not at this time more particularly enumerated will be clearly understood from the following detailed description of the present invention.

The invention consists in the novel electroplating apparatus hereinafter set forth; and, furthermore, this invention consists in the novel arrangements and combinations of devices and parts, all of which will be hereinafter more fully described and then finally embodied in the clauses of the claims which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a plan or top view of one form of electroplating apparatus provided with a revoluble container mounted in a suspension frame adapted to be brought in supporting engagement with the contact-making brackets or supports, all embodying the principles of this invention; Fig. 2 is a transverse section, on an enlarged scale, said section being taken on line 2—2 in said Fig. 1, looking in the direction of the arrow *x*, the tank or vat and some of the other parts, however, being omitted from said view; and Fig. 3 is a cross-section, on still a larger scale, said section being taken on line 3—3 in Fig. 2, looking in the direction of the arrow *y*, said view showing in connection therewith a transverse sectional representation of a portion of the tank or vat and the contact-making bracket or support.

Similar characters of reference are employed in all of the above described views, to indicate corresponding parts.

Referring now to the said drawings, the reference-character 1 indicates a suitable plating tank or vat, comprising the sides and ends 3, all of which are suitably connected and may be tied by means of the usual tie-bolts 4.

The reference-character 5 indicates suitably disposed anode-bars or rods, in the present drawings two of such bars being shown, said bars or rods being provided with contact-elements or fixtures 6, having a connecting circuit-wire or rod 7 between them. An-

other element or fixture 8 is connected with one of the anode-bars or rods, said element or fixture having connected therewith a circuit-wire or rod 9 which leads to the source of electric current. Of course, it will be evident, that but one anode-bar may be employed, or more than two of such bars may be used, from which the metal anodes are to be suspended, the electric wiring being arranged accordingly.

Suitably secured upon the upper edge or other suitable portions of the ends 3 of the tank or vat 1, is an arrangement of contact-making brackets or supports 10, each bracket having a forwardly extending arm 11 which is provided with an upwardly projecting teat or projection 12, which is preferably made cone-shape, and forms an electrical contact as well as a retaining or holding member, as will hereinafter more fully appear. Each bracket or support is also formed with a receiving socket 13, or other suitable means, for the connection therewith of the end-portion of an electric-wire or rod 14, the same being secured in its electrically connected relation by means of a set-screw 15, substantially in the manner illustrated in Figs. 1 and 3 of the drawings. One manner of electrically connecting all of the brackets or supports 10 in circuit is by connecting each pair of brackets or supports upon each end of the apparatus by means of said wires 14, a contact-element or fixture 16 being arranged upon each wire or rod 14. Suitably connected with said contact-elements or fixtures 16 are other electric wires or rods 17 which in turn are electrically connected at any point in circuit with the other main circuit-wire of the main source of electricity.

I have illustrated in connection with my invention, a revoluble or rotary drum, cylinder or container 18, which usually is a cylinder or drum of wood, or the like, but may be made in the form of a wicker basket. In the present construction the drum or cylinder is provided with end-bearings 19, by means of which the drum or cylinder is mounted upon the usual shaft 26, indicated in dotted outline in Fig. 1. The said container or drum, is suspended in its operative position in the tank or vat 1 by means of a suspension frame of any desired construction, that shown in the present case comprising a center-bar or lift 20, at each end of which is secured in any suitable manner, preferably by means of bolts 21 and nuts 22, a cross-bar or element 23. Each bar or element 23 is provided with downwardly extending arms or members 24, terminating in or connected with bearings 25 in which the shaft of the container is rotatably arranged. The shaft 26 is also provided with a flattened end-member 27, suitably insulated, as at 28, see Fig. 2, and which is adapted to be inserted in a slotted part 30 of a spindle or auxiliary shaft 29 which is

mounted in bearings 31, see Fig. 1, and is driven from a driving wheel, as 32, and all being arranged for the purpose of revolving the container or drum, when the shafts 26 and 29 have been brought in their connected relation with each other. That the said suspension device or frame may be properly supported in its contact-making relation upon the previously mentioned brackets or supports 10, laterally extending portions 33 are formed upon the sides of said arms or members 24, and connected with each pair of said portions 33 is a connecting bar or plate-like member 34. Each member 34 is formed with suitably disposed holes 35, of substantially the configuration shown in said Figs. 2 and 3 of the drawings, said holes being preferably lined with a wearing-sleeve, as 36, of copper or other suitable metal which is a good conductor of electricity. These various holes 35 and their sleeves 36 are disposed in said members 34 in such a manner, that, when the suspension frame and the container are lowered, they will register with said teats or projections 12, thus making a perfect electrical connection, and at the same time, retaining or holding the parts of the frame and container in their properly centered relations within the tank or vat against any lateral displacement, while the apparatus is in operation.

As has been stated, the teats or projections 12 are preferably made in a cone-shaped manner, or taper substantially as shown, the openings and sleeves in the members 34 being much larger at the bottom than at their tops, so that the said teats or projections, in case of a slight dis-alinement of the parts, will be caused to more readily enter into their contact-making engagement with the sleeves 36, as will be clearly understood.

The operation of the apparatus for plating purposes is well-known, and the completion of the electric circuit through the parts of the apparatus and through the anodes, and the electrolytic solution and the work which is to be plated are self-evident and need not be further described. It will also be evident, that my present invention can be readily applied to existing plating tanks or vats of the various kinds now in general use.

I claim:—

1. In an electro-plating apparatus, the combination with a tank, of a container, a suspension frame in which the container is mounted, a series of contact-making brackets connected with said tank, and a cone-shaped contact-teat on each bracket, said suspension frame being provided with inverted tapering teat-receiving holes adapted to register with said teats to make electrical contact.

2. In an electroplating apparatus, the combination with a tank, of a container, a suspension frame in which the container is mounted, a series of contact-making brackets

connected with said tank, and a cone-shaped contact-teat on each bracket, said suspension frame being provided with inverted tapering holes, and wearing sleeves in said holes adapted to register with said teats to make electrical contact.

3. In an electroplating apparatus, the combination with a tank, of a revoluble container removably arranged in said tank, a series of contact-making brackets connected with said tank, and a cone-shaped contact-teat on each bracket, said suspension frame being provided with inverted tapering teat-receiving holes adapted to register with said teats to make electrical contact.

4. In an electroplating apparatus, the combination with a tank, of a revoluble container removably arranged in said tank, a series of contact-making brackets connected with said tank, and a cone-shaped contact-teat on each bracket, said suspension frame being provided with inverted tapering holes, and wearing sleeves in said holes adapted to register with said teats to make electrical contact.

5. In an electro-plating apparatus, the combination with a tank, of a container in said tank, a shaft upon which said container is affixed, said container and shaft being removable from said tank, a suspension frame provided with bearings in which said shaft is mounted, a spindle rotatively arranged in one end of said tank, a means of separable connection between said spindle and said shaft, a series of contact-making brackets connected with said tank, and a cone-shaped contact-teat on each bracket, said suspension frame being provided with tapering teat-receiving holes adapted to register with said teats to make electrical contact.

6. In an electroplating apparatus, the combination with a tank, of a container in said tank, a shaft upon which said container is affixed, said container and shaft being removable from said tank, a suspension frame provided with bearings in which said shaft is

mounted, a spindle rotatively arranged in one end of said tank, a means of separable connection between said spindle and said shaft, a series of contact-making brackets connected with said tank, and a cone-shaped contact-teat on each bracket, said suspension frame being provided with tapering holes, and wearing sleeves in said holes adapted to register with said teats to make electrical contact.

7. In an electroplating apparatus, the combination with a tank, of electrically connected anode-bars mounted on said tank, electrically connected brackets connected with said tank, a suspension frame and container in said tank, said frame being provided with inverted tapering teat-receiving holes, a wearing sleeve in each hole, and cone-shaped teats on said brackets adapted to register with said sleeves in said frame to make electrical contact therewith and prevent lateral displacement of said frame and container.

8. In an electroplating apparatus, the combination with a tank, of a suspension frame for a container, said frame consisting of a center-bar, a cross-bar at each end thereof, arms extending downwardly from each cross-bar, and a plate-like member connecting said downwardly extending arms, said members being provided with inverted tapering teat-receiving holes, a wearing sleeve in each hole, a series of contact-making brackets on said tank, and cone-shaped teats on said brackets registering with said sleeves to make electrical contact with said plate-like members and prevent lateral displacement of said frame.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 6th day of June, 1907.

JOHN T. DANIELS.

Witnesses:

F. H. W. FRAENTZEL,
W. A. ANTHONY.