

J. WEBER, JR. & O. COPE.
ELECTROPLATING APPARATUS.
APPLICATION FILED APR. 27, 1911.

1,004,119.

Patented Sept. 26, 1911.

2 SHEETS—SHEET 1.

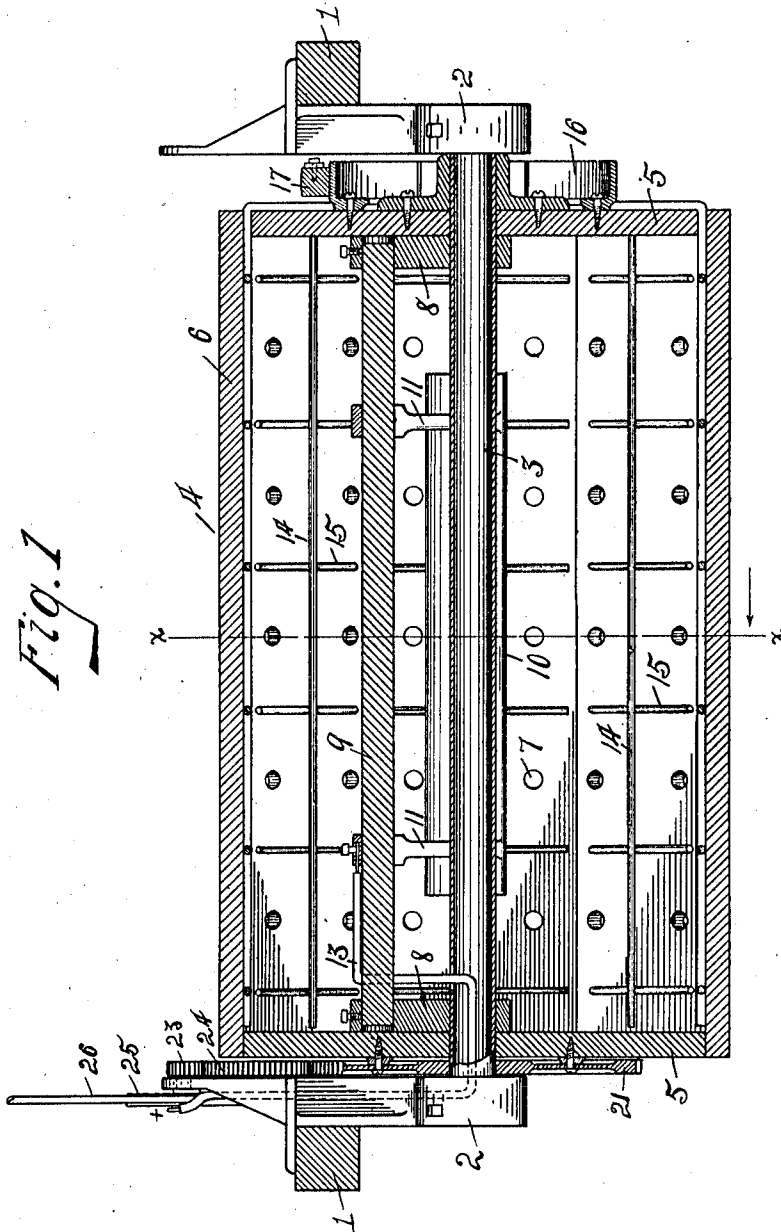


Fig. 1

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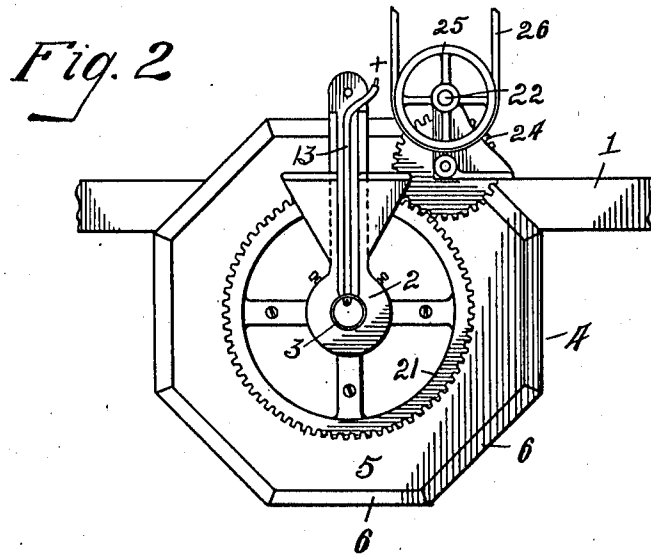


Fig. 3

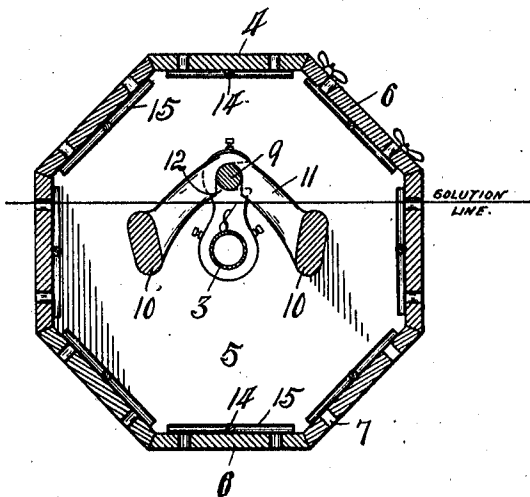
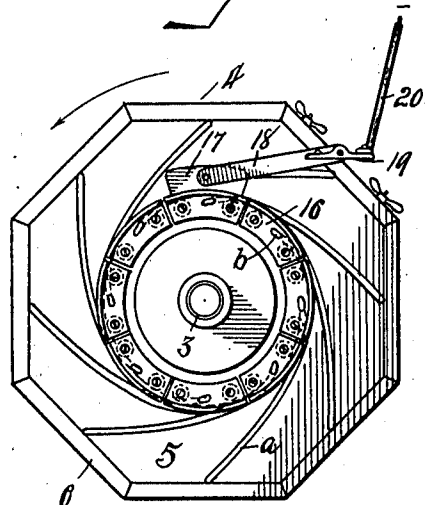


Fig. 4



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UNITED STATES PATENT OFFICE.

JOHN WEBER, JR., AND OBADIAH COPE, OF TOLEDO, OHIO.

ELECTROPLATING APPARATUS.

1,004,119.

Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed April 27, 1911. Serial No. 623,777.

To all whom it may concern:

Be it known that we, JOHN WEBER, Jr., and OBADIAH COPE, citizens of the United States, and residents of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Electroplating Apparatus; and we 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 the figures of reference marked thereon, which form a part of this specification.

Our invention relates to apparatus for the electroplating of metallic articles, and has reference more particularly to that class of such apparatus embodying a rotatable drum or container into which the work to be plated is placed.

The object of our invention is to provide an improved apparatus of this character which is simple in its construction, inexpensive of manufacture, and more rapid and efficient in its operation than apparatus of this nature heretofore used, thus enhancing its practicability and commercial value.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a central longitudinal section of an apparatus comprising our invention. Figs. 2 and 4 are opposite end elevations thereof, and Fig. 3 is a cross-section on the line X X in Fig. 1.

Referring to the drawings, 1, 1 represent cross-beams, which preferably rest at their ends upon the tops of the sides of a tank (not shown) in which the electroplating solution is disposed and with which the apparatus comprising our invention may be associated. Secured to and suspended from the beams 1 are shaft-hangers or bearing-arms 2, of any suitable form, in which the ends of a preferably hollow shaft 3 are stationarily mounted.

Mounted upon the shaft 3 for free rotation thereon is the drum or work container 4 of the apparatus. This drum, while shown in the present instance as of octagonal shape in cross-section, may be of any other suitable form, as desired, and

comprises the two ends 5, 5 and the side panels 6, which are of non-metallic material, and at least one of the latter is capable of being easily removed to facilitate the depositing of articles into or the removal of the same from the drum. The panels 6 are perforated or provided with openings 7 to permit the passage of the electroplating solution to the interior of the drum.

Rising from the shaft 3 within the end portions of the drum 4 are arms 8, which are preferably laterally notched at their upper ends, as shown in Fig. 3, to receive the respective ends of a shaft 9 of wood or other material suitable to serve as a nonconductor for electricity. The shaft 9 is intended for the support of the anode of the apparatus, which comprises the pair of bars 10 and the connecting arms 11 at or adjacent to the ends thereof. The arms 11 are substantially of inverted V-shape to adapt them to straddle the shaft 9, which is preferably above the solution line, and to suspend the bars 10 within the solution, as indicated in Fig. 3. The arms 11 are preferably notched at their crotches, as at 12, to provide seats for the shaft 9. An electric current is conducted to the anode through the positive wire 13, which leads from any suitable source of electricity, and is shown as extending down through one of the bearing arms 2, thence through the associated end of the shaft 3 and into the drum through an opening 3 in the shaft, after which it connects to the adjacent one of the anode arms 11.

The cathodes of the apparatus comprise the rods or wire-like members 14, one of which is preferably secured in any suitable manner to the inner side of each drum panel 6, and extends longitudinally thereof for substantially its entire length. For the purpose of increasing the area of each cathode unit it is provided within the drum with a plurality of spaced cross-arms 15 of wire or other material suitable for the purpose. The cross-arms 15 preferably terminate short of the side edges of the associated panel so as not to connect with the cross-arms of the adjoining cathodes. The cathode wires 14 project without the drum through one end thereof, and each connects with a separate segment of a commutator 16, which is mounted axially on such end of the drum to turn therewith. An electric-brush 17 rides on the top of the commutator and has

its arm 18 pivotally attached to a bracket-part 19, which may be mounted on the associated cross-beam 1 and has the negative 20 of the electric circuit connected thereto.

5 The cross-beam 1 is preferably of wood thus providing a mount of nonconductive material for the bracket 19. The cathode wires 14 do not connect to the commutator segments which are adjacent to their points of
10 emergence from the drum or to their respective drum panels, but connect with a segment which is disposed at or adjacent to the side of the commutator which is opposed to the panel, with which the wire is associated, so that only the cathode wire or a
15 few of such wires which are at the lower portion of the drum and in contact with the articles to be electroplated are charged or in circuit with the brush, as, for instance, the cathode wire which emerges from the
20 drum at the lowermost point in Fig. 4 has its lead a connected to the commutator as at b . This is found in practice to be quite an important feature of the apparatus, as
25 the electrical energy is thereby concentrated at the point where needed and is cut out from the cathode members which are not at or adjacent to the bottom of the drum.

Secured to the end of the drum which is
30 opposed to the commutator 16 in concentric relation thereto is a gear 21 to which rotation is communicated from a shaft 22 through the medium of the gears 23 and 24. A wheel 25 is mounted on the shaft
35 22, and power is communicated thereto from any suitable source through a belt 26.

It is apparent that we have provided a simple and efficient apparatus of the character described, the anode of which is capable of being easily and quickly mounted
40 within or removed from the drum and of freely swinging should articles within the drum move into contact therewith; and also that the arrangement and intermittent manner
45 of cutting the cathode units or members into and out of the electric circuit, not only enhances the efficiency of this class of apparatus but also prolongs the life of the cathodes.

50 We wish it understood that our invention is not limited to any specific construction or arrangement of the parts except in so far as such limitations are specified in the claims.

55 Having thus described our invention what we claim as new and desire to secure by Letters Patent, is,—

1. In an apparatus of the class described, a stationary shaft, a drum rotatably mount-

ed on said shaft, arms rising from the shaft 60 within the drum, a bar carried by and connecting said arms above the shaft, said bar being a nonconductor for electricity, and an anode carried by said bar and comprising members which are disposed on opposite 65 sides of the shaft in spaced relation thereto, and substantially inverted V-shaped arms which connect said members and cooperate with said bar to support the same.

2. In an apparatus of the class described, 70 a stationary shaft, a drum rotatably mounted on said shaft, arms rising from said shaft and having their upper ends laterally notched, a bar mounted in the notches of said arms and connecting the same above 75 the shaft, said bar being a nonconductor for electricity, and an anode mounted to freely rock upon said bar and having arms suspended from said bar at opposite sides of the shaft in substantial parallelism there- 80 with.

3. In an apparatus of the class described, a hollow stationary shaft, a drum rotatably mounted on said shaft, arms rising from said shaft, a member connecting said arms 85 above the shaft, an anode mounted to freely rock upon said member and having parts suspended on opposite sides of said shaft, and an electrical conductor entering the drum through an end of said shaft and at- 90 taching to said anode.

4. In an apparatus of the class described, a rotatable drum, a plurality of cathode units disposed within the drum and each comprising a bar-like member which extends 95 longitudinally of the drum and has a plurality of cross-arms.

5. In an apparatus of the class described, a rotatable drum, a segmental commutator carried by an end of the drum, an electrical 100 brush working on said commutator, and a plurality of cathode units disposed interiorly of the drum and each comprising at least one member which is secured to the side of the drum and extends longitudinally there- 105 of, cross-arms attached to said members, said members each having an end projecting without the drum and connected to a commutator segment.

In testimony whereof, we have hereunto 110 signed our names to this specification in the presence of two subscribing witnesses.

JOHN WEBER, JR.
OBADIAH COPE.

Witnesses:

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C. H. BILLS.