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F. P. GREEN

PLATING APPARATUS

Filed March 28, 1927

Fig. 1.



Fig. 2.

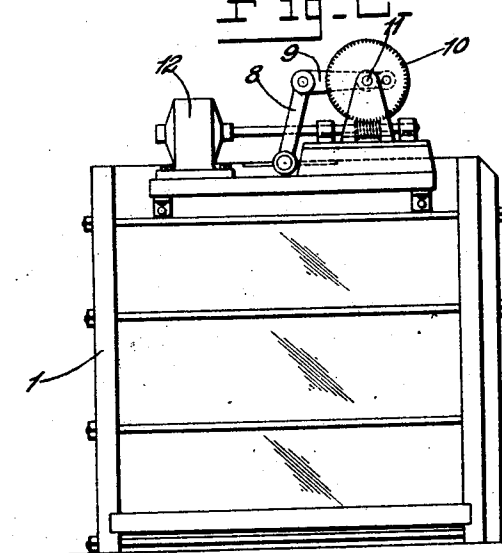


Fig. 3.

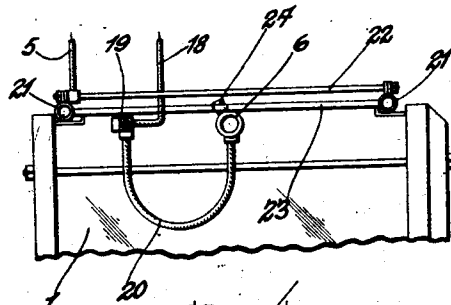
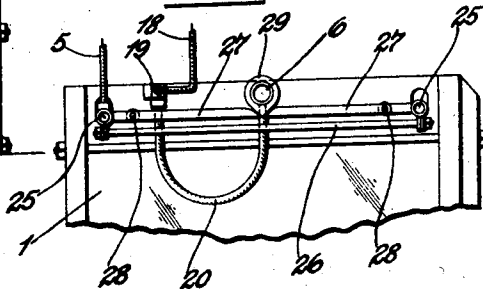


Fig. 4.



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PLATING APPARATUS.

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This invention relates to plating apparatus, and an object is to provide improved means for subjecting the materials or articles to be plated to the action of the electrolytic solution by oscillating the materials or articles approximately vertically within the solution and between two series of anodes.

Another object of the invention is to provide an improved plating apparatus including a tank containing the electrolytic solution and having a support near each side for the anodes, in combination with a shaft supported for rocking movements between the anode supports, means for supporting the materials or articles to be plated at selected distances from the anodes, and oscillating them vertically by rocking movements of said shaft.

Another object of the invention is to provide an improved plating apparatus having supports for the anodes and the articles to be plated, respectively, in combination with mechanism for moving said supports to move the anodes and the articles in the solution during the plating period.

Other objects will appear from the following description, reference being made to the drawing, in which

Fig. 1 is a plan view of my improved plating machine.

Fig. 2 is an end elevation.

Fig. 3 is a fragmentary end elevation showing devices for oscillating the anodes.

Fig. 4 is a fragmentary end elevation showing another form of oscillation device for the anodes.

The tank 1 which contains the electrolytic solution is preferably made of wood with an asphaltic tar lining. In the embodiment shown in Fig. 1, a tubular rod 2 is mounted near each side of the tank 1 and from these rods the anodes 3 are suspended in the solution in the tank. At one end of the tank, the rods 2 are connected by an electrical conductor 4 which is in circuit with a circuit wire 5. A rocking shaft 6 is mounted in insulation bearings 7 secured to the end walls of the tank. An arm 8 has one end rigidly attached to the shaft 6 and the opposite end pivoted to one end of a link 9, the other end of said link being pivoted eccentrically to a wheel 10 rotative on a support 11 and rotated by a motor 12.

A pair of arms 13 are attached to the

shaft 8 and extend laterally toward each side of the tank. These arms are provided in their upper edges with notches 14, designed and arranged to receive and retain supporting rods 15 at selected distances from each other and from the anodes; or a series of such rods 15 may be mounted on the arms 13, as desired. The arms 13 constitute supports for the hangers 16 from which the cathodes 17 constituting the materials or articles to be plated are suspended.

An electric circuit wire 18 for the negative side of the circuit leads to a connection 19 secured to one end of the tank and from which a wire 20 leads to connection with the shaft 6. In this form of the invention the rods 2 remain stationary while the rods 15 are oscillated nearly vertically. In the embodiment of the invention shown in Fig. 3, the anode supporting rods 21 corresponding to the rods 2 are connected by an electrical conductor 22 corresponding to the conductor 4, and by a rod or plate 23 extending across the end of the shaft 6 and being slotted to receive an arm 24 projecting from said shaft 6. It being understood that the shaft 6 is equipped with the arms 13, it will be seen that, by this form of the invention, the cathode or work supporting rods are oscillated the same as in the device shown in Fig. 1, and that the anode rods 21 are oscillated back and forth.

In the embodiment of the invention shown in Fig. 4 the anode supporting rods 25 are connected by an electrical conductor 26 corresponding to the conductor 4 of Fig. 1 and the conductor 22 of Fig. 3. I provide a pair of levers 27 which are mounted on pivots 28 and have their outer ends connected to the rods 25 respectively. The inner ends of the levers 27 terminate under the shaft 6 and are beveled, whereby a cam or eccentric 29 on said shaft 6 will oscillate the levers 27 as said shaft 6 is rocked. In this way, the anode rods 25 are alternately raised and lowered, thus moving the anodes in the solution during the operation of the machine.

From the foregoing, it will be seen that my improved machine oscillates the work nearly vertically instead of laterally in the solution in the tank and supports the various elements or pieces of work continuously about the same distance from the anodes, except that, in Fig. 3, the anodes are oscillated toward and away from the work.

Thus, the articles or pieces of work are plated more uniformly than is the case where only lateral oscillation of the work is obtained. I am aware that the invention may be modified in various particulars without departure from the nature and principle of the invention. I do not restrict myself in unessential particulars, but what I claim and desire to secure by Letters Patent is:—

10 1. In a plating apparatus, a tank for electrolytic solution, means for supporting anodes in the solution in the tank, a rock shaft, a pair of arms attached to said rock shaft above the level of the solution in the tank, rods supported by said arms at opposite sides of said shaft for supporting the work, and means for rocking said shaft and said arms to raise and lower the work in the solution substantially the same distance from the anodes.

20 2. A plating apparatus comprising a tank for electrolytic solution, series of anodes suspended in the solution in the tank, a rock shaft, arms attached to said rock shaft and provided with notches in their upper edges, rods arranged to be seated in said notches at selected distances from the anodes, means for suspending the work constituting cath-

odes from said rods, and mechanism for rocking said shaft and thereby raising and lowering the work in approximately vertical planes and maintaining the work at all times approximately the same distance from the anodes.

3. A plating apparatus comprising a tank for electrolytic solution, supports for supporting the anodes in the solution in the tank, a rock shaft, a pair of arms supported on said rock shaft, a rod supported by said arms for suspending the work constituting the cathodes in the solution, mechanism for imparting rocking movements to said shaft and causing said arms and said rod on said arms to oscillate the work vertically in the solution, and means operated by said shaft for oscillating said anode supports.

4. A plating apparatus comprising a tank for electrolytic solution, rods for supporting the anodes in the solution in the tank, a rock shaft, means for supporting a rod from said rock shaft, means for suspending the work from said rod, mechanism for rocking said shaft, and means for moving said anode supporting rod from said shaft.

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