March 1, 1938. C. F. OTT 2,109,975

ANODE

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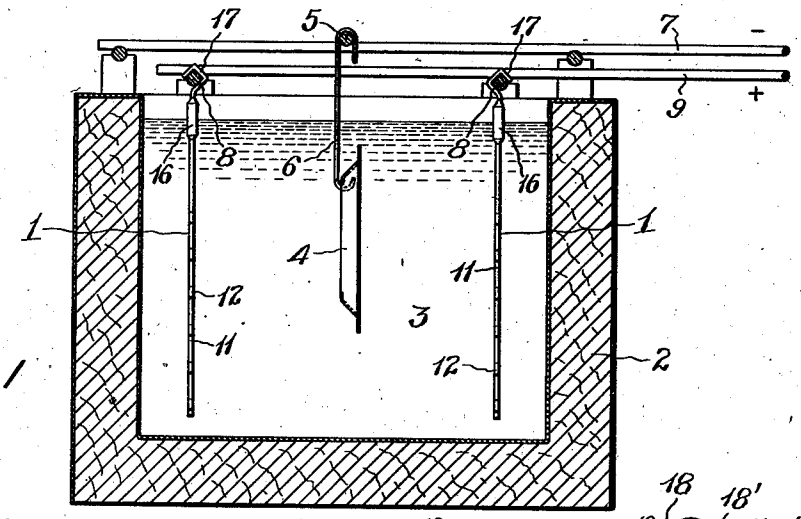


FIG. 1

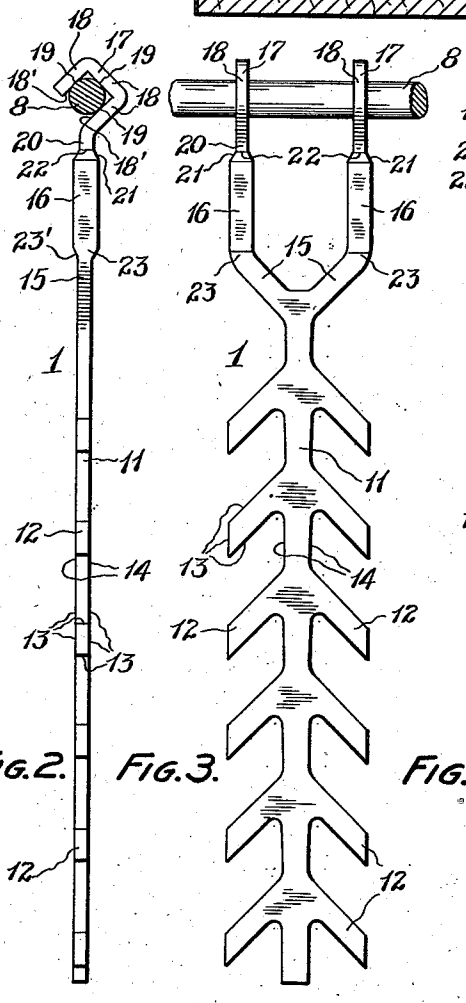


FIG. 2

FIG. 3

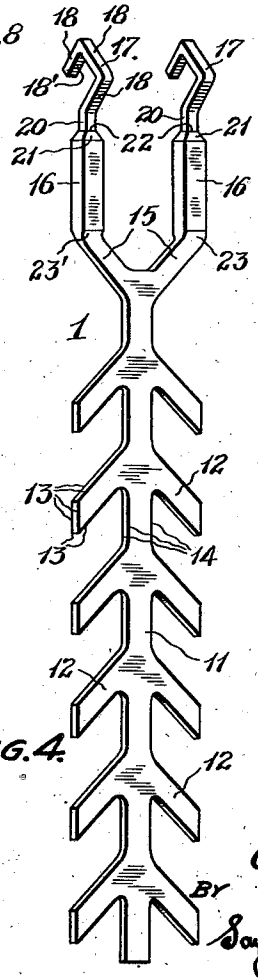


FIG. 4

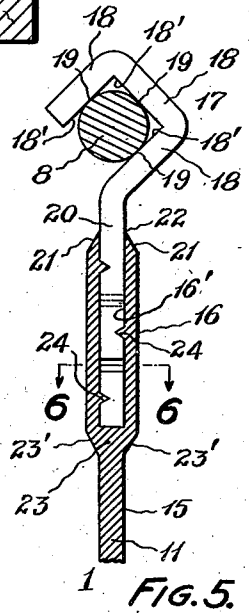


FIG. 5

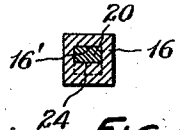


FIG. 6

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ANODE

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Application June 18, 1936, Serial No. 85,932

2 Claims. (Cl. 204—4)

My invention relates to anodes for use in electroplating, and I particularly utilize the same in chromium electroplating. The objects of the invention are to provide an anode which will not readily be broken or injured, the parts of which will not be adversely affected by the constituents of the electrolytic bath, which has an even and uniform wear in service, which may be economically manufactured and used and conveniently applied for use, and which will be very effective in use through the provision of a great number of throws or discharge lines for the current.

The annexed drawing and the following description set forth in detail certain means embodying my invention, such means constituting, however, but one form in which the principle of the invention may be embodied.

In said annexed drawing:

Figure 1 is a vertical section of a more or less conventional assembly of a treating tank, electrolytic bath, and suitable electrical connections, for electroplating, in which my invention serves as the anode;

Figure 2 is an enlarged side view of the improved anode of Figure 1 with a section of the bus-bar from which the anode depends;

Figure 3 is a face view of the elements shown in Figure 2;

Figure 4 is a perspective view of the anode shown in Figures 2 and 3 detached from the supporting bus-bar;

Figure 5 is a fragmentary enlarged longitudinal section, showing the upper part of the anode, this view particularly illustrating means for connecting the anode body to a hook by means of which the anode is dependingly supported from the supporting bus-bar; and

Figure 6 is a transverse section, taken in the plane indicated by the line 6—6, Figure 5.

Referring particularly to the annexed drawing in which the same parts are indicated by the same respective numbers in the several views, my improved anode 1, preferably a cast member, is of the herring-bone type and, as used in practice, is shown in Figure 1, wherein two of the anodes 1 are shown, suspended in a suitable electrolytic bath 3 serving as the plating solution, preferably a mixture of chromic and sulphuric acids for chromium plating, the bath 3 being contained in a suitable treatment tank 2 having an inside lining of sheet lead. The article 4 to be plated, is suspended in the bath 3 by a hook 6 upon a bus-bar 5 mounted upon the conductor 7 and thereby the article 4 is connected in circuit with the negative pole of a source of electric current. The anodes 1 are dependingly supported by the bus-bars 8 suitably mounted upon the tank 2 and in turn supporting the conductor 9 whereby the anodes 1 are connected with the positive pole of the current source.

My improved anode 1 comprises a herring-bone body or stem 11 having a plurality of oppositely-disposed spaced laterally-extended fins 12. The body 11 and fins 12 are flat plane members with their adjacent sides substantially relatively right angular so that there are provided six sharp edges 13 on each arm 12, and two sharp edges 14 on the body member 11 between adjacent arms 12, thus to provide the anode 1 with a comparatively great number of electric throws or discharge lines, whereby the anode has great capacity. Also, such construction permits the use of a comparatively light anode compared to its capacity, and also provides even and uniform wear as the anode is consumed.

The supported end of the anode 1 is of bifurcated formation, providing two legs 15 whose terminal portions 16 are enlarged and formed with deep sockets 16'. However, the depth of the sockets 16' is not as great as the length of the enlargements 16 so that a strengthened section 23 is formed between the main portion of the leg 15 and the bottom of the socket 16'. This strengthened section 23 is for the purpose of providing against a break occurring in this section by reason of the weight of the anode, and preferably, this section 23 is of fillet formation 23'.

The anode 1 is supported upon the bar 8 by means of hook-like members 17 having stems 20 which are secured within the sockets 16' of the enlarged portions 16 of the legs 15. These hooks 17 have a contacting field which is substantially square in cross-section, and within this field the actual contacting areas consist of three lines of contact, this arrangement being afforded by the fact that the hook 17 consists of a three-sided member whose adjacent sides 18 are substantially relatively right angular and are each provided with an inside plane face 18' by which is provided a line of contact 19 with the round supporting rod 8.

In order that liquid seepage may be avoided at the joint where the stem 20 enters the socket 16', the upper ends of the enlarged member 16 are drawn in, in beveled formation 21, and the extreme upper edges of these beveled parts 21 are secured to the adjacent portions of the stem 20 by fused joints 22. In order to reinforce the hooks 17, which preferably are formed of copper, and thus require protection against

acids and acid radicals, particularly at the level of the depositing solution, I preferably face these hooks 17 with a coating of tin and lead, preferably 60% tin and 40% lead. The anode proper, consisting of the stem 11, arms 12, and legs 15—16, consists of an alloy, of which the preponderant portion is lead, preferably about 94% lead, mixed with a minor portion of metal of the order of antimony or tin to the amount of substantially 6%.

The sections 16 of the anode 1 are preferably cast around the hook stems 20, and a secure connection between the sections 16 and stems 20 effected by first roughing up the outer surface of the stems 20, as by providing notches 24, Figures 5 and 6. The tin-lead coating of the stems 20 assists in providing, or may entirely provide, the desired leak-proof joints 22, inasmuch as the casting of the anode will bring the coating to a brazing temperature.

What I claim is:

1. An anode for electroplating comprising a flat body member having longitudinally-spaced laterally-extended arms, adjacent sides of said body member and arms being in substantially right angular relation, said body member being formed with an enlarged and socketed end portion, and a supporting member secured at one end in the socket of said body end portion and formed at the other end with an open-ended hook having a support-engaging face substantially square in cross-section whereby to provide three lines of contact with a round main support.

2. An anode for electroplating comprising a supporting member having an end portion formed on its exterior surface with a plurality of spaced notches, and a herring-bone body member formed with an enlarged end portion cast around said notched end portion of the supporting member and secured to the latter by a drawn-in beveled terminal fused to the supporting member.

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