

COMMISSIONER'S DECISION

OBVIOUS & LACK NOVELTY: Patentable Advance/Not Defined on the Claims.

Amended claims proposed in response to Final Action, fail to set out the essentials of what may be considered the patentable advance in the art on the points argued by the applicant.

FINAL ACTION: Affirmed.

This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated June 6, 1973 on application 984,415 (Class 204-25). This application was filed on March 6, 1967 in the name of Edgar J. Seyb and refers to a "Process for Electrodepositing Chromium".

Briefly this application relates to a process for electrodepositing chromium comprising maintaining a chromium plating bath containing chromic acid; maintaining in said bath (a) a cathode and (b) an anode core bearing an anodically electrodeposited coating of lead dioxide covering the immersed active portion of said anode; and passing electric current from said anode to said cathode thereby depositing chromium upon said cathode.

In the Final Action the examiner refused claims 1 to 3 for lack of novelty, and claims 3 and 6 for obviousness in view of the following reference (only some of the group of substances of claim 3 lack novelty):

British Patent

946,958

Jan. 15, 1964

Brandes

In the Final Action the examiner stated (in part):

Brandes has shown that it is known to electrodeposit chromium from a chromic acid plating solution by using an electrolytic cell the anode of which has a core of precious metal such as platinum or palladium, having a coating of lead dioxide (page 1, lines 68 to 75). Reference to chromic acid is found on page 1, line 34 and page 4, line 16.

Attorneys have submitted that the lead dioxide of the reference is formed in situ, but this argument is not borne out by the fact that Brandes explicitly refers to anodes being used which have a coating. Such coating must evidently have been formed prior to the use of the anode in the electrolytic process, and as at present, in a different bath.

The anode of claims 1 and 2 is shown on page 1, line 45 as well as Tables 4 and 5 of the reference, which also applies to claim 3 with respect to platinum and silver (line 72). The metals iron, titanium, nickel, lead, steel, and aluminium in claims 3 and 6 are of the type not readily attacked by the acid bath as referred to on page 1, line 50 of the reference. Steel anodes would not be inventive, as the term includes those of stainless steel which is in the group of metals just referred to.

The applicant in his response dated September 6, 1973 to the Final Action stated (in part):

Prior art anodes may possess thick heavy scales of lead chromate and lead oxides after extended use in a chromium plating bath and one to several hours may be required to "activate" such a lead alloy anode before a "steady state" current is obtained. When such anodes have been used over a long period of time, it may be necessary to remove the anodes from the bath and clean the scale from the lead by chemical means or by physical scrubbing. This procedure is difficult in large installations and generally is employed as a last resort. Thus, it has heretofore been common to start up a chromium plating bath (especially after an extended period of idleness) by using "dummy" or warm-up conditions. According to this method, the bath may be electrolyzed with any desired cathode until the build up of current indicates that the operation under actual plating conditions can be expected to be normal. Typically, this warm up may take several hours, depending upon the duration of the "downtime" and the thickness of the scale on the anode. It is clear that the anodes employed in prior art chromium plating processes have caused extensive problems which render the plating operation relatively inefficient.

...

While it is believed that the reason for the relatively poor performance of prior art anodes is due to the inclusion of impurities in the lead dioxide deposits which may form on these conventional lead or lead alloy anodes during chromium plating, whereas the applicant's novel anodes are prepared so as to be essentially free of such inclusion impurities, the applicant's invention is clearly not to be construed as dependent upon any particular theory of operation.

The applicant respectfully submits that the process claims placed on file by this amendment, clearly and explicitly distinguish the present invention from the invention to Brandes and are novel, useful and unobvious. The subject matter of the claims is directed to a problem not mentioned in the cited art and the claimed invention is not anticipated, suggested, or rendered obvious by the reference of record.

The Brandes et al reference, is concerned with a process for the electrolytic deposition of high purity chromium using a precious metal anode coated with lead dioxide which is partially immersed in an electrolyte bath which is saturated with lead chromate.

The BRANDES reference discloses that it is known to electrodeposit chromium from a chromic acid plating solution by using an electrolytic cell, the anode of which has a core of precious metal such as platinum or palladium, which anode has a coating of lead dioxide (page 1, lines 68 to 75). Claim 1 of this reference reads:

A method of electrolytically winning chromium of a high degree of purity from an aqueous fluoride bath using an anode of a metal or alloy that is not attacked by the bath, the bath containing lead in solution and/or the anode having a coating of lead oxide (PbO_2).

The question to be decided is whether the applicant has made a patentable advance in the art. Amended claim 1 now proposed by the applicant reads:

A process for electrodepositing chromium wherein steady state current is quickly reached and maintained, said process comprising maintaining a chromium plating bath containing chromic acid, maintaining in said bath;

(a) a cathode, and

(b) an anode core bearing an anodically electrodeposited coating of lead dioxide covering the immersible active portion of said anode; and passing electric current from said anode to said cathode thereby depositing chromium upon said cathode, said coating of lead dioxide having been deposited precedent to electrodepositing said chromium.

As previously mentioned this application relates to the use of an electrodeposited coating of lead dioxide on the immersible portion of an anode used in chrome plating apparatus.

It is observed from the reference that the patentee is concerned with a method of electrolytically winning chromium of a high degree of purity by electrolysis in an aqueous fluoride bath using an anode of a metal or alloy that is not attacked by the bath, the bath containing lead salt and/or metallic lead in such a way as to produce a coating of lead oxide on the anode.

The applicant has argued that "the anodes are prepared so as to be free of inclusion impurities which would give rise to the relatively poor performance of the prior art anodes." The claims, however, relate to an anodically electrodeposited coating of lead dioxide which, according to page 10, line 26, may have been derived from lead nitrate, lead perchlorate, or lead acetate, rather than lead fluoride as disclosed in the reference (page 1, line 63). If the difference of the source of lead is significant, this has not been set out in the claims.

The applicant has also commented that the anode of the reference "is partially immersed in an electrolyte bath which is saturated with lead chromate." Page 1 line 59 of the reference, however, merely states that "where a lead salt is added to the bath, it may be lead chromate." The instant claims relate to a "plating bath containing chromic acid." Table 1, on page 2 of the reference, discloses the use of chromic anhydride (CrO_3) in solution. These terms however, may be interchangeably used.

In addition the applicant makes reference to the chromium electro-deposit having "a specified thickness of 0.1-5 microns preferably at a temperature of between 40 and 55°C." The disclosure of this application does not suggest that this is a significant feature as page 13 line 3 reads: "... to obtain a typical decorative chromium plate having a thickness of 0.1-5 microns, say 1 micron." Here again there is no restriction of this nature in the claims.

On considering the difference between the reference cited and that defined in claim 1 it is observed from the previous discussion that the claim lacks novelty. There has been added to the claim a statement that "steady state current is quickly reached and maintained." This effect would also occur in the Brandes process, and proposed claim 1, therefore, in our view, fails to distinguish from the reference.

Claim 2, which depends on claim 1, states that "the anode core is made of conductive material." The anode of the reference is also made of conductive material, and therefore this claim must also be rejected.

Claim 3, which depends on claim 1, specifies that the anode core is selected from the group consisting of aluminum, steel, lead, iron, graphite, platinum, titanium, copper, nickel and silver. The reference states that the metal or alloy of the anode may be platinum

or palladium or any alloy of these sufficiently noble not to be chemically attacked by the bath. As shown in the "Corrosion Engineering Handbook, Fontana and Greene, 1967 at page 259," (which is not on the record) it is known that some steels, lead, copper and nickel are resistant to hydrogen fluoride, and consequently could be used in the electrolytic bath. While aluminum was presumably not considered by Brandes (as it is likely to be attacked by a fluoride bath Perry's Handbook 23-13), it is obvious that in the absence of fluorides, a wider range of metals would be available for the anode metal. The reference stressed that the anode may be made of "a metal or alloy that is not attacked by the bath" (see page 1, column 2, lines 42 and 43). We believe it is fair to say that any person skilled in the art would know what materials satisfy the prerequisites of not being attacked by a particular bath. This claim therefore fails to distinguish in a patentable sense from the reference cited.

Claim 6 differs from claim 1 in that the anode has an aluminum core. However, the arguments with respect to claim 1 and also of claim 3 (anode of aluminum) apply equally to this claim, and it also fails for lack of a patentable advance in the art.

The Board is satisfied that proposed claims 1, 2, 3 and 6 do not set out the essentials of a process which can be considered a patentable advance in the art, and recommends that the Final Action be affirmed.


J.F. Hughes,
Assistant Chairman,
Patent Appeal Board.

I concur with the findings of the Patent Appeal Board and refuse to grant a patent on proposed claims 1, 2, 3 and 6. The applicant has six months within which to appeal this decision under the provisions of Section 44 of the Patent Act.

Decision accordingly,


A. M. Laidlaw,
Commissioner of Patents.

Dated at Hull, Quebec,
this 13th day of
September, 1974,

Agent for Applicant

Fetherstonhaugh & Co.,
Ottawa, Ontario.