

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAIME A. ARIAS

Appeal No. 2000-0012
Application No. 09/024,413

ON BRIEF

Before KIMLIN, GARRIS and KRATZ, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-9.

Claim 1 is illustrative:

1. A method for removing copper or other metal from sulphide ore without adding gaseous oxygen to the ore and without producing NO_x gases, said method comprising the steps of:

crushing said ore to <6 mm;

treating said ore with concentrated sulphuric acid to agglomerate fine particles and to impregnate the ore with acid;

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stacking the treated ore in a heap less than twelve meters high;

irrigating said heap with a dilute aqueous solution consisting essentially of sulphuric acid and sodium nitrate to produce a leach product, whereby said sodium nitrate is consumed in the production of the leach product;

collecting said leach product from said heap; and

recovering metal from said leach product by electrolysis to produce a depleted leach product.

The examiner relies upon the following references as evidence of obviousness:

Stetefeldt (Patent Specification)	287,787	Oct. 30, 1883
Mackay	1,737,425	Nov. 26, 1929
Keyes	2,009,667	Jul. 30, 1935
Abell et al. (Abell)	3,269,832	Aug. 30, 1966
Carnahan et al. (Carnahan)	3,912,330	Oct. 14, 1975
Kintaichi et al. (Kintaichi)	5,336,476	Aug. 9, 1994
Altaev et al. (SU '761) (Soviet Union Inventor's Certificate)	SU 1581761	Jul. 30, 1990

Appellant's claimed invention is directed to a method for removing metal, such as copper, from sulphide ore without adding gaseous oxygen and without producing NO_x gases. The method involves agglomerating crushed ore by treating with concentrated sulphuric acid and stacking the ore in what is known in the art as a heap. The heap is irrigated with a dilute aqueous solution of sulphuric acid and sodium nitrate which produces a leach

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product and consumes the sodium nitrate. The metal is recovered from the leach product by electrolysis.

Appealed claims 1-9 stand rejected under 35 U.S.C. § 103 as being unpatentable over SU '761 in view of Abell, Keyes, Stetefeldt, Mackay, Carnahan and Kintaichi.

Appellant submits at page 4 of the Brief that "[c]laims 1, 4, and 5 stand or fall together." Also, appellant groups the remaining appealed claims as follows: (a) claim 2; (b) claim 3; (c) claims 6, 7 and 9; and (d) claim 8.

Upon thorough review of the positions espoused by appellant and the examiner, we find ourselves in complete agreement with the examiner that the subject matter of appealed claims 1-5 would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, in sustaining the examiner's rejection of claims 1-5, we will adopt the examiner's reasoning as set forth in the Answer.

SU '761 discloses a method, like appellant's, for removing copper from ore without adding gaseous oxygen which comprises the claimed steps of crushing the ore to less than 6 mm, treating the ore with concentrated sulphuric acid, stacking the ore in a heap, and then leaching the heap. SU '761 does not disclose the leaching composition. However, based on the prior art cited by

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the examiner, we are confident that it would have been obvious for one of ordinary skill in the art to employ appellant's dilute aqueous solution of sulphuric acid and sodium nitrate as the leaching composition in the method of SU '761. As shown by the examiner, Abell and Keyes disclose leaching copper from ore by using a solution of sulphuric acid, while Stetefeldt and Carnahan discloses the use of an aqueous solution of sulphuric acid and sodium nitrate to leach copper from its ore. Indeed, Carnahan teaches that the nitrate is added for the same reason presently claimed by appellant, i.e., to speed the dissolution of the copper (see claim 9 on appeal). As for the claimed recitation of performing the method without producing NO_x gases, we agree with the examiner that one of ordinary skill in the art would have been motivated to use the catalytic, stoichiometric amounts of nitrate disclosed by Carnahan for the obvious purpose of eliminating the generation of noxious gases.

Regarding the claimed step of treating the ore with concentrated sulphuric acid to agglomerate the fine particles, we find that the method of SU '761 of treating the crushed ore having a size less than 6 mm with concentrated sulphuric acid would necessarily agglomerate the particles before the leaching step. We also agree with the examiner that it is of no moment

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that Abell discloses, as urged by appellant, that the water constituent of the solution of sulphuric acid agglomerates the ore. Clearly, the claimed treatment with concentrated sulphuric acid also subjects the particles to water.

Concerning the disclosure of Stetefeldt, appellant maintains that "[i]t is not seen how building a tower to contain fumes would lead one of ordinary skill in the art to use a dilute aqueous solution of sulphuric acid and sodium nitrate to eliminate the emission of NO_x fumes from a heap" (page 6 of Brief, penultimate sentence). Certainly, Stetefeldt, an old reference dating back to 1883, does not teach using a dilute solution of sulphuric acid and sodium nitrate, but was cited by the examiner to firmly establish that it was old in the art to leach copper from its ore by utilizing an aqueous solution of sulphuric acid and sodium nitrate. The motivation to use a dilute solution emanates from Carnahan, as explained above.

Appellant also maintains at page 6 of the Brief that Keyes teaches away from heap leaching. However, we agree with the examiner that there is no meaningful distinction between the claimed step of stacking the treated ore in a heap and Keyes' disclosure of forming the agglomerated ore in a heap enclosed by a tank.

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Appellant also points out that "[t]he Carnahan patent also discloses using sodium nitrate as a catalyst" (page 7 of Brief, paragraph 2). We concur with the examiner, however, that Carnahan's use of the term "catalyst" in describing sodium nitrate is in keeping with the small amount used. Manifestly, Carnahan's description of the reaction between the nitrate ion with the sulphide moiety of a copper-iron sulphide belies the meaning of the term "catalyst" in its classical sense. As discussed above, Carnahan teaches the use of sodium nitrate for the same purpose recited in claim 9 on appeal, namely, to speed the dissolution of copper from the ore. Also, appealed claim 1 does not preclude the sodium nitrate as functioning as a catalyst.

We now turn to the examiner's rejection of claims 6, 7 and 9, as a group, and claim 8. Appellant presents the separate argument at page 8 of the Brief that "[c]laims 6, 7, and 9 each distinguish over the prior art in the recitation of the conditioning step." In fact, claim 9 recites no such step. Only claims 6 and 7 specify a conditioning step. However, although appellant states that the conditioning step "is not addressed in the Examiner's final rejection" (page 8 of Brief, penultimate paragraph), the examiner has not offered a response to

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appellant's argument. The same scenario also applies to the examiner's rejection of claim 8, which recites adding sodium sulphate in order to buffer the oxidizing action of the nitrate. Accordingly, we are constrained to reverse the examiner's rejection of claims 6, 7 and 8. We will sustain the examiner's rejection of claim 9 because, as explained above, Carnahan expressly teaches adding sodium nitrate to the dilute aqueous solution of sulphuric acid in order to speed the dissolution of copper from the ore.

In conclusion, based on the foregoing, the examiner's rejection of claims 1-5 and 9 under 35 U.S.C. § 103 is affirmed. The examiner's rejection of claims 6-8 is reversed. In addition, since it is not clear on this record that the examiner has examined the limitations of claims 6-8, this application is remanded to the examiner to consider whether claims 6-8 should be rejected under any of the patent statutes.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

This application, by virtue of its "special" status, requires immediate action by the examiner. See the Manual of Patent Examining Procedure, § 708.01(D) (8th ed., Aug. 2001). It

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is important that the Board of Patent Appeals and Interferences be informed promptly of any action affecting the appeal in this case.

AFFIRMED-IN-PART AND REMANDED

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Administrative Patent Judge)	
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BRADLEY R. GARRIS)	BOARD OF PATENT
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