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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ANDREW NISBETT

Appeal 2015-005998
Application 12/811,285
Technology Center 1700

Before JEFFREY T. SMITH, KAREN M. HASTINGS, and MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 1–5 and 10–21. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

Claim 1 is illustrative of the subject matter on appeal and is reproduced below:

> 1. A process for recovering desired metal values from crushed and milled ore solids comprising the steps of:
>
> (a) mixing a first aqueous leach solution with the crushed and milled ore solids in a first agitated tank leach unit, whereby at least a portion of the desired metal values in the ore solids is

dissolved into the first aqueous leach solution to obtain a first aqueous leach pulp comprising a mixture of leached solids and first aqueous leach solution;

(b) subjecting the first aqueous leach pulp to a first solids-liquid separation, without significant water dilution, to provide a first clarified aqueous leach solution and a second aqueous leach pulp, wherein the second aqueous leach pulp comprises leached solids at a per cent solids level that is greater than that in the first aqueous leach pulp;

(c) subjecting the first clarified aqueous leach solution to a first solvent extraction, whereby at least a portion of the desired metal values are extracted into a first organic phase comprising one or more extraction reagents specific for the desired metal, and a first aqueous raffinate, depleted of desired metal values, is obtained;

(d) mixing a second aqueous leach solution with the second aqueous leach pulp in a final agitated tank leach unit, whereby at least a portion of the desired metal values formerly in the second aqueous leach pulp is dissolved into the second aqueous leach solution to obtain a third aqueous leach pulp, wherein the third aqueous leach pulp comprises a mixture of twice-leached solids and a second aqueous leach solution, rich in desired metal values;

(e) subjecting the third aqueous leach pulp to a second solids-liquid separation, without significant water dilution, to provide a second clarified aqueous leach solution and a fourth aqueous leach pulp, wherein the fourth aqueous leach pulp comprises leached solids at a per cent solids level that is greater than that in the third aqueous leach pulp;

(f) subjecting the second clarified aqueous leach solution to a second solvent extraction, whereby at least a portion of the desired metal values are extracted into a second organic phase comprising one or more extraction reagent(s) specific for the

> desired metal, and a second aqueous raffinate, depleted of desired metal values, is obtained;
>
> (g) subjecting the fourth aqueous leach pulp to a third solids-liquid separation, with significant dilution via an aqueous stream, to provide a third clarified aqueous leach solution and a fifth aqueous pulp, wherein the concentration of desired metal values in the third clarified aqueous leach solution is less than the concentration of desired metal values in the second clarified aqueous leach solution, and the fifth aqueous pulp comprises a mixture of leached solids and aqueous leach solution; and
>
> (h) subjecting the third clarified aqueous leach solution to a third solvent extraction whereby at least a portion of the desired metal values are extracted into a third organic phase comprising one or more extraction reagents(s) specific for the desired metal, and a third aqueous raffinate, depleted of desired metal values, is obtained.

Appellant requests review of the Examiner's rejection of claims 1–5 and 10–21 under 35 U.S.C. § 103(a) as unpatentable over Kordosky '512 (US 2005/0031512 A1, published February 10, 2005), Kordosky '458 (US 2006/0088458 A1, published April 27, 2006) and Haavanlammi (US 7,799,114 B2, issued September 21, 2010). App. Br. 7; Final Act. 3–8.

OPINION

Prior Art Rejection[1, 2]

After review of the respective positions provided by Appellant and the Examiner, we AFFIRM the Examiner's prior art rejection under 35 U.S.C. § 103(a) for the reasons presented by the Examiner and add the following for emphasis.

Independent claim 1 is directed to a process for recovering desired metal values from crushed and milled ore solids through multiple leaching and solvent extraction steps.

We refer to the Examiner's Final Action for a statement of the rejection. Final Act. 3–8.

Appellant argues, absent impermissible hindsight, one skilled in the art would not have combined the teachings of the two Kordosky references because they relate to disparate types of leaching processes. App. Br. 9. According to Appellant, Kordosky '512 is directed to metal leaching operations and methods of improving the recovery of leaching agents from solvent extraction operations while Kordosky '458 is directed to metal heap and dump leaching coupled with metal solvent extraction. App. Br. 8; Kordosky '512 ¶ 7; Kordosky '458 ¶ 18. Thus, Appellant argues the two types of leaching processes are fundamentally different such that the teachings related to one type of leaching do not necessarily translate to the

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[1] Appellant does not argue any claim separate from the other. Accordingly, we select claim 1 as representative of the subject matter before us on appeal. Claims 2–5 and 10–21 stand and fall with claim 1.

[2] A discussion of Haavanlammi is unnecessary for disposition of this appeal. Appellant does not address the Examiner's reliance on this reference. *See* Appeal Brief, *generally*.

other. App. Br. 9. In support of these arguments, Appellant presents a Declaration under 37 C.F.R. § 1.132 by the inventor Andrew Nisbett.[3] App. Br. 9; Decl. ¶¶ 5–7.

We are unpersuaded by these arguments. Appellants' arguments are premised on bodily incorporation and are not focused on the Examiner's reason for combining the cited art. It is well established that the obviousness inquiry does not ask "whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole." *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (*en banc*); see also *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (*stating* "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference").

The Examiner found Kordosky '512 teaches a method of recovering desired metal values from crushed and milled ore solids using a split circuit leaching and solvent system much like the prior art depicted by Appellant in his Figure 2. Final Act. 3–4; Kordosky '512 Figure 2, ¶¶ 11. The Examiner recognized that the claimed intervening leaching/extraction steps are essentially a repetition of the initial ones. Final Act. 3. The Examiner found Kordosky '512 does not disclose the second set of leaching/extraction steps following the initial leaching/extraction steps using a separate leaching/extraction circuit equipment. Id. at 4. The Examiner found Kordosky '458 discloses repetition of leaching/extraction processes using separate equipment as a well-known technique to maximize the recovery of the desired metals. Final Act.4–5; Kordosky '458 Figure 5, ¶¶ 15, 28–31,

[3] The Declaration was submitted by Appellant on June 11, 2012 and entered into the record by the Examiner in the Non-Final Action of May 28, 2014.

58–61. The Examiner also found Kordosky '458 recognizes that metal left in leached ore can have significant economic value and, thus, it is desirable to use multiple leaching/extraction steps and systems to recover the metal values as well as recycling acid within each leaching/extraction circuit. Final Act. 5; Ans. 4; Kordosky Figure 5, ¶ 15, 58–61. The Examiner determined it would have been obvious to one of ordinary skill in the art to modify the metal recovery process of Kordosky '512 by incorporating a second sequential leaching/extraction split circuit to maximize the recovery of the desired metal in view of the teachings of Kordosky '458. Final Act. 4. Thus, the Examiner provided a reasonable basis for one skilled in the art to conclude that providing a second split circuit in the process of Kordosky '512 would predictably result in maximizing the recovery of desired metals from crushed ore. Appellant has not shown any reversible error in the Examiner's determination that one of ordinary skill in the art, using no more than ordinary creativity, would have been capable of adapting the split circuit solvent extraction process of Kordosky '512 to incorporate additional sequential split circuit solvent extraction steps/systems in view of the teachings of Kordosky '458.

Appellant also argues that the modification of the equipment for the process of Kordosky '512 requires specialized equipment (i.e., mills, leach tanks, clarifiers, etc.) that would result in much greater capital and operational cost than the heap/dump leaching process of Kordosky '458. App. Br. 10; Decl. ¶ 8. We find this argument also unavailing because it does not address the Examiner's reason for combining the cited art as discussed above.

Appellant and Declarant argue Table 2 of Example 3 of the Specification shows the claimed method results in unexpected results in the form of an economic benefit of over $17 million in savings when compared with the prior art split circuit method savings of about $8 million. Spec. 22; App. Br. 11; Decl. ¶¶ 9–10. According to Appellant and Declarant, such savings are unexpected because one of ordinary skill in the art would have expected the claimed method to result in less incremental savings than the prior art split circuit as much of the metal would have been recovered in the initial leaching/extraction steps. App. Br. 11; Decl. ¶ 10.

We are unpersuaded by this evidence and argument. Kordosky '458 recognizes the use of multiple leaching/extraction units result in cost savings in terms of recovered metal values that would have otherwise been lost and in terms of the recycling of leaching solution. Kordosky Figure 5, ¶ 15, 58–61. Thus, the incorporation of an additional sequential split circuit in Kordosky '512 would be expected to also result in similar cost savings. As noted by Appellant, Table 2 of Example 3 shows the prior art split circuit leaching/extraction process results in about $8 million in savings (Spec. 22). The same table shows Appellant's sequential split circuit leaching/extraction process results in an additional $8 to $9 million in savings. Given that Appellant's sequential process is also an economically beneficial split circuit leaching/extraction process, one skilled in the art would have expected that this additional unit would result in savings within the order of magnitude of the savings for the first split circuit leaching/extraction process. Appellants' evidence in Table 2 shows that the combination of the two sequentially oriented split circuits results in an expected result; an approximate doubling of the savings of a single split circuit recovery (Spec. 22). Thus, contrary to

Appellant's contention, the proffered economic benefit analysis is not considered unexpected. Accordingly, we sustain the Examiner's prior art rejection under 35 U.S.C. § 103(a) for the reasons presented by the Examiner and given above.

ORDER

The Examiner's prior art rejection of claims 15–25 under 35 U.S.C. § 103(a) are affirmed.

TIME PERIOD

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

AFFIRMED