

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

Paper No. 36

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

Ex parte SHUNJI WATANABE, TSUGIO SAKAI, and HIDEO SAKAMOTO

---

Appeal No. 1998-2190  
Application No. 08/593,266

---

ON BRIEF

---

Before PAK, WALTZ, and PAWLIKOWSKI, Administrative Patent Judges.  
WALTZ, Administrative Patent Judge.

**DECISION ON APPEAL**

This is a decision on an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 54 through 56, 58, 60, 62, 63, 65 through 69, and 71 through 81, which are the only claims remaining in this application (Brief, page 3; Answer, page 2).<sup>1</sup>

---

<sup>1</sup>Appellants have submitted three amendments subsequent to the final rejection, dated July 28, 1997, Paper No. 22, Nov. 3, 1997, Paper No. 26, and Apr. 27, 1998, Paper No. 31. All of these amendments have been entered by the examiner (see the Answer, page 2, paragraph (4), and the Letter dated May 12, 1998, Paper No. 32).

Appeal No. 1998-2190  
Application No. 08/593,266

According to appellants, the invention is directed to an alkaline primary battery without mercury comprising a positive electrode, an electrolyte and a negative electrode having an active material containing mercuryless zinc powder (Brief, pages 4 and 6).

Appellants state that the claims are separately patentable in each of five groups (see the Brief, page 9) and presents specific, substantive reasons for the separate patentability of some claims on pages 23-24 of the Brief. Accordingly, pursuant to the provisions of 37 CFR § 1.192(c)(7)(1995), we consider each claim separately to the extent the claims are argued separately by appellants. A copy of illustrative independent claims 54 and 60 is attached as an Appendix to this decision.

The examiner has relied upon the following references<sup>2</sup> as evidence of obviousness:

|                    |           |               |
|--------------------|-----------|---------------|
| Kawakami           | 3,642,539 | Feb. 15, 1972 |
| Lee                | 3,653,965 | Apr. 04, 1972 |
| Julian             | 4,563,403 | Jan. 07, 1986 |
| Tada et al. (Tada) | 5,139,900 | Aug. 18, 1992 |

The claims on appeal stand rejected under 35 U.S.C. § 103(a) as unpatentable over Tada in view of Kawakami, Lee and Julian

---

<sup>2</sup>The reference to Shinoda et al., U.S. Patent No. 5,348,816, issued on Sep. 20, 1994, was applied in the final rejection but has been withdrawn in the Answer as "cumulative." See the Answer, page 3.

(Answer, page 4).<sup>3</sup> We *affirm* this rejection but, since we rely on different reasoning and claim interpretation than those set forth by the examiner, we denominate this "affirmance" as a new ground of rejection pursuant to the provisions of 37 CFR § 1.196(b). Our reasoning follows.

### OPINION

#### A. *The Negative Electrode with Indium Embodiment*

The claims on appeal are directed to two embodiments. We discuss the embodiment recited in claim 60 first, which is the embodiment where the negative electrode has an active material comprising mercuryless zinc powder and contains one or more indium compounds selected from the group consisting of indium sulfate, indium sulfamate and indium chloride.<sup>4</sup>

The examiner finds that Tada discloses an alkaline battery without mercury having a negative electrode comprising mercuryless zinc alloy powder as an anode active material and manganese dioxide, silver oxide or nickel hydroxide as a cathode active material (Answer, page 4). The examiner further finds that Tada

---

<sup>3</sup>The final rejection of claims 54-56, 58, 60, 62, 63, 65-69 and 71-81 under the first paragraph of 35 U.S.C. § 112 has been withdrawn by the examiner (Answer, page 4).

<sup>4</sup>This embodiment additionally is recited in claims 62, 63, 65, 69, 71, 72, 75-77 and 81.

Appeal No. 1998-2190  
Application No. 08/593,266

teaches coating of the zinc powder with indium to increase zinc resistance to corrosion and prevent deterioration of its discharge performance, thus eliminating the need for mercury and the chance of environmental pollution from the disposal of mercury (*id.*).

We determine that Tada specifically discloses the use of indium sulfate to coat a zinc alloy powder (col. 3, ll. 50-63). Accordingly, we determine that Tada discloses an alkaline primary battery without mercury (col. 1, ll. 59-66) comprising an electrolyte (e.g., aqueous potassium hydroxide; see col. 4, ll. 10-11); a positive electrode (e.g., manganese dioxide; see col. 4, ll. 5-7); and a negative electrode having a mercuryless zinc alloy powder active material (col. 2, ll. 28-30) wherein the negative electrode contains an indium compound such as indium sulfate (col. 3, ll. 50-63). Although Tada discloses the use of zinc alloy powder as the active material of the negative electrode (see col. 3, ll. 1-21), this reference also teaches the use of pure zinc powder, although pure zinc does not produce the best results (see col. 4, l. 12, and Comparative Example 3). See *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976) (All disclosures of a reference must be considered in an analysis of obviousness, even unpreferred embodiments).

Appeal No. 1998-2190  
Application No. 08/593,266

Furthermore, it was well known in the art to use either zinc or zinc alloy powders as the active material for the negative electrode in alkaline batteries without mercury.<sup>5</sup> Additionally, we construe the limitation of "an active material comprised of mercuryless zinc powder" in claim 60 on appeal as including zinc or zinc alloys. See *In re Morris*, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997) (During prosecution before the Patent and Trademark Office, the claimed language must be given the broadest reasonable interpretation in light of the specification as it would have been interpreted by one of ordinary skill in the art). See the specification, page 32, where the negative electrode active material comprises zinc powder containing 500 ppm of bismuth, indium and lead. We also note that the transitional term "comprised" means that the scope of the claim includes the recited material as an essential element (i.e., mercuryless zinc powder) but any other materials or elements (i.e., alloy components) may be part of the claimed scope. See *Vehicular Tech. v. Titan Wheel Int. Inc.*, 212 F.3d 1377, 1383, 54 USPQ2d 1841, 1845 (Fed. Cir. 2000).

For the foregoing reasons, we determine that the examiner has established a *prima facie* case of obviousness for the subject

---

<sup>5</sup>See *Shinoda et al.*, cited in the final Office action, at col. 2, ll. 53-66.

Appeal No. 1998-2190  
Application No. 08/593,266

matter of the first embodiment as recited in claims 60, 62, 63, 65, 69, 71, 72, 75-77, and 81, in view of the reference evidence.<sup>6</sup>

Appellants argue that Tada does not disclose or suggest a negative electrode having an active material comprised of mercuryless zinc powder, as recited in claims 54, 60, 66 and 69, nor disclose a negative electrode containing the claimed indium compounds as recited in claims 60 and 69 (Brief, page 14). Contrary to appellants' arguments, as discussed above, Tada does disclose and suggest the use of mercuryless zinc powder (and zinc alloy powders which are included in the scope of claim 60) as active materials in a negative electrode, as well a negative electrode containing indium sulfate (see col. 3, ll. 50-63; col. 4, l. 11-12 and 40-69).

*B. The Electrolyte containing Indium Embodiment*

Appellants' second embodiment is found in the subject matter of claims 54-56, 58, 66-68, 73, 74 and 78-80, which recites that the alkaline primary battery without mercury has an electrolyte containing one or more indium compounds selected from the group

---

<sup>6</sup>A discussion of Kawakami, Lee and Julian is unnecessary to our decision for the subject matter recited in claim 60 and dependent claims.

Appeal No. 1998-2190  
Application No. 08/593,266

consisting of indium sulfate, indium sulfamate and indium chloride (see claim 54).

We determine that Tada discloses use of non-amalgamated zinc or zinc alloy powder as an anode active substance "whose surface is coated with indium" (col. 2, ll. 25-31; col. 3, ll. 40-69). We further determine that Tada discloses that the anode is prepared by gelling the electrolytic solution with polyacrylic acid, the solution containing zinc oxide and aqueous potassium hydroxide, with the zinc alloy or zinc powder dispersed in the resulting gel (col. 4, ll. 7-12). Accordingly, the electrolyte of Tada contains dispersed zinc or zinc alloy powder with indium adhered to the surface thereof (see col. 3, ll. 50-63). Thus Tada describes all of the limitations of claim 54 on appeal. Therefore we determine that the examiner has established a *prima facie* case of obviousness for the subject matter of the second embodiment, as found in claim 54, in view of the reference evidence to Tada. See *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982) (The lack of novelty is the ultimate or epitome of obviousness).

We also note that the examiner has cited Kawakami as evidence of the use of indate ion in the electrolyte of zinc-alkali storage batteries to improve the storage performance for a long duration of time (abstract; col. 1, ll. 1-15; ll. 49-53; l. 73-col. 2, l. 6).

Accordingly, we determine that Kawakami discloses further evidence of the beneficial results achieved during storage by the use of indium compounds such as indium sulfate in the electrolyte solution (see Tada, col. 1, ll. 15-17).

Appellants argue that Tada fails to disclose or suggest an electrolyte containing the claimed indium compounds as recited in claims 54 and 66 (Brief, page 14). Appellants' argument is not well taken for reasons stated above.

Appellants also argue that Kawakami cannot be combined with Tada since Kawakami is directed to a secondary battery while the claimed invention requires a primary battery (Brief, pages 15-16; Reply Brief, pages 4-9). This argument is not persuasive since, as noted by the examiner (Answer, page 6), the batteries of Kawakami and Tada are both zinc-alkaline storage batteries that are capable of being recharged. Furthermore, it is well known that indium can be added to anodes of both primary and secondary batteries as a high hydrogen-overvoltage material.<sup>7</sup>

Appellants' argument that the battery of Kawakami does not contain mercuryless zinc (Brief, page 16; Reply Brief, page 8) is not persuasive. The examiner has not relied upon Kawakami for the

---

<sup>7</sup>See Yoshizawa et al. U.S. Patent No. 5,168,018, issued Dec. 1, 1992, of record, at col. 1, ll. 34-36.

Appeal No. 1998-2190  
Application No. 08/593,266

teaching or disclosure of an anode active material containing mercuryless zinc. The examiner has relied upon Kawakami for the teaching of the use of indate ion in the electrolyte solution to provide beneficial results for a zinc-alkaline battery (Answer, page 5). Obviousness is tested by what the combined teachings of the references would have suggested to one of ordinary skill in the art, not what the individual references contain or fail to disclose. See *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

The examiner has cited Lee to show zinc-alkaline cells with manganese dioxide or silver oxide cathodes and an electrolyte containing potassium hydroxide or sodium hydroxide with dissolved zinc oxide, where the additive material can be dissolved in the electrolyte or incorporated in the zinc anode (Answer, page 5). The examiner cites Julian merely for the well known application of zinc-alkaline batteries as power sources for electronic devices (*id.*). We find no reversible error in the examiner's findings and application of these references.

Appellants argue that Julian does not disclose an electronic apparatus in combination with an alkaline primary battery without mercury containing a negative electrode comprised of mercuryless zinc (Brief, page 17). Again, this argument is not well taken

Appeal No. 1998-2190  
Application No. 08/593,266

since obviousness is tested by what the combined disclosures of the references teach, not the failings of the individual references. See *In re Keller, supra*.

Appellants' argument that Lee does not disclose or suggest the suppression of gas generation due to corrosion of the battery during storage is not well taken (Brief, page 23). Again, we note that Lee was not cited for this feature (see the Answer, page 5). Appellants also argue the limitation of claims 58, 65, 68 and 72, that the positive electrode has an active material selected from silver oxide and manganese dioxide (Brief, page 24). However, this limitation is clearly disclosed by Tada (see col. 4, ll. 5-7). The use of KOH or NaOH as the electrolyte, as recited in claims 67 and 71 (Brief, page 24) is also taught by Tada (see col. 4, ll. 8-12).

For the foregoing reasons, we determine that the examiner has established a *prima facie* case of obviousness for the subject matter of the second embodiment as recited in claims 54-56, 58, 66-68, 73, 74, and 78-80.

For the first time in the Reply Brief (pages 12-13), appellants submit that any *prima facie* case of obviousness has been rebutted by a showing of unexpected superior properties. However, appellants have not met their burden of explaining why the comparative tests are considered to be with the closest prior art,

Appeal No. 1998-2190  
Application No. 08/593,266

i.e., Tada. See *In re Burckel*, 592 F.2d 1175, 1179, 201 USPQ 67, 71 (CCPA 1979). We note that Tada discloses an example with indium sulfate while the comparative tests only compare indium sulfate, sulfamate, and chloride against no indium compound or indium oxide (specification, pages 32-35). Furthermore, appellants have not explained why the comparative results are commensurate in scope with the claims. See *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). The claims are quite broad in scope while the showing is limited to much narrower, specific materials. In fact, embodiment 1 is limited to a zinc alloy powder similar to that taught by Tada (see the specification, page 32).

For the foregoing reasons, based on the totality of the record, giving due consideration to appellants' evidence and arguments, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of section 103. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Accordingly, the examiner's rejection of the claims on appeal under 35 U.S.C. § 103 over Tada in view of Kawakami, Lee and Julian is affirmed. Since we have used reasoning which differs from the examiner, as well as interpreting the references and construing the claims in a different manner, we

Appeal No. 1998-2190  
Application No. 08/593,266

denominate this "affirmance" of the examiner as a new ground of rejection to avail appellants of the provisions of 37 CFR § 1.196(b).

This decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b) (amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53,131, 53,197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. & Trademark Office 63,122 (Oct. 21, 1997)). 37 CFR § 1.196(b) provides that, "A new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (§ 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner. . . .

(2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record. . . .

Appeal No. 1998-2190  
Application No. 08/593,266

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

**AFFIRMED - 37 CFR § 1.196(B)**

|                             |   |                 |
|-----------------------------|---|-----------------|
| CHUNG K. PAK                | ) |                 |
| Administrative Patent Judge | ) |                 |
|                             | ) |                 |
|                             | ) |                 |
|                             | ) |                 |
|                             | ) | BOARD OF PATENT |
| THOMAS A. WALTZ             | ) | APPEALS         |
| Administrative Patent Judge | ) | AND             |
|                             | ) | INTERFERENCES   |
|                             | ) |                 |
|                             | ) |                 |
|                             | ) |                 |
| BEVERLY A. PAWLIKOWSKI      | ) |                 |
| Administrative Patent Judge | ) |                 |

TAW/jrg

Appeal No. 1998-2190  
Application No. 08/593,266

ADAMS AND WILKS  
50 BROADWAY  
31ST FLOOR  
NEW YORK, NY 10004

Appeal No. 1998-2190  
Application No. 08/593,266

**APPENDIX**

54. An alkaline primary battery without mercury comprising: a negative electrode having an active material comprised of mercuryless zinc powder; a positive electrode; and an electrolyte containing one or more indium compounds selected from the group consisting of indium sulfate, indium sulfamate and indium chloride.

60. An alkaline primary battery without mercury comprising: an electrolyte; a positive electrode; and a negative electrode having an active material comprised of mercuryless zinc powder; wherein the negative electrode contains one or more indium compounds selected from the group consisting of indium sulfate, indium sulfamate and indium chloride.