

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RYOICHI IMAI

Appeal No. 1998-2475
Application No. 08/505,020

ON BRIEF

Before THOMAS, HAIRSTON, and LEVY, Administrative Patent Judges.
LEVY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection¹ of claims 10 and 12-16, which are all of the claims pending in this application.

BACKGROUND

¹ An amendment (Paper No. 8, filed September 8, 1997) filed subsequent to the final rejection has been entered (Paper No. 9, filed September 16, 1997).

The appellant's invention relates to an ink jet apparatus and a conductive ink mixture. An understanding of the invention

can be derived from a reading of exemplary claims 10 and 16, which are reproduced as follows:

10. An ink jet apparatus, comprising:

a storing section for storing an electrically conductive ink containing an electrically conductive liquid and an electrically conductive material having an electrical conductivity higher than that of the conductive liquid, said conductive material comprising a plurality of conductive particles having at least conductive surfaces with electrical conductivity to generate heat thereat;

electrode means located in the storing section for applying an alternating current to said conductive ink stored in the storing section, said conductive particles in said conductive ink allowing the alternating current to flow therethrough and generating heat thereat for forming bubbles in the conductive liquid by a skin effect caused by application of said alternating current; and

a nozzle attached to the storing section for ejecting the conductive ink due to generation of said bubbles by application of the alternating current.

16. A conductive ink comprising an electrically conductive liquid and an electrically conductive material dispersed in said conductive liquid, said conductive material having an electrical conductivity higher than that of said conductive liquid and comprising a plurality of conductive particles to allow an alternating current to flow through the

conductive particles, said conductive particles having at least conductive surfaces having electrical conductivity to generate heat thereat for forming bubbles on the conductive particles in said conductive liquid by a skin effect caused by application of the alternating current.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Kobayashi et al. (Kobayashi)	4,243,994	Jan. 6, 1981
Conta et al. (Conta)	4,595,937	Jun. 17, 1986
Sakai et al. (Sakai) (Japanese Patent Application) ²	3-110170	May 10, 1991

Claims 10 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakai in view of Kobayashi.

Claims 13-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakai in view of Kobayashi, and further in view of Conta.

Claim 16 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Kobayashi.

² In determining the teachings of Sakai, we will rely upon the translation provided by the USPTO. A copy of the translation is attached for appellant's convenience.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the final rejection (Paper No. 7, mailed June 10, 1997) and the examiner's answer (Paper No. 12, mailed January 13, 1998) for the examiner's complete reasoning in support of the rejections, and to appellant's brief (Paper No. 11, filed November 21, 1997) for appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have carefully considered the subject matter on appeal, the rejections advanced by the examiner, and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the brief along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the invention as set forth in claims 10 and 12-16. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988);

Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole. See id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

We consider first the rejection of claims 10 and 12 based on the teachings of Sakai and Kobayashi. The examiner's position (final rejection, page 2) is that Sakai does not disclose that the electrically conductive ink contains an electrically

electrically conductive material having an electrical conductivity higher than that of the conductive liquid. To overcome this deficiency in Sakai, the examiner turns to Kobayashi for a teaching of an electrically conductive ink containing an electrically conductive material (carbon black), with the electrical conductivity of the conductive material being higher than the conductivity of the liquid.

Appellant asserts, inter alia, (brief, pages 8 and 9) that the invention requires a specific relationship between the conductive liquid and the conductive material, i.e., the conductivity of the conductive material is higher than the conductivity of the conductive liquid in the conductive ink. In Kobayashi, the specific conductivity of the carbon black relative to the carrier liquid is not disclosed. The examiner admits (answer, page 7) that Kobayashi does not disclose the specific relationship between the conductive liquid and the conductive particles. However, the examiner asserts (id.) that "the carbon black particles of Kobayashi would inherently have a higher conductivity than that of the carrier liquid." We disagree. When relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical

reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. See Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Patent App. & Int. 1990). The examiner relies upon the disclosure in Kobayashi (col. 9, lines 17-32) that carbon black is a preferred material because of its "elevated infrared absorbing efficiency when infrared ray is used as the source of thermal energy." The record reflects no evidence or reasoning to establish that carbon black pigmentation having an elevated absorbing efficiency in an infrared ray environment would therefore have an electrical conductivity higher than the electrical conductivity of the conductive liquid. Neither Sakai nor Kobayashi discloses the electrical conductivity of conductive liquid or conductive particles. Additionally, we note³ that the electrical conductivity of carbon black can vary.

An element of a claim is not "inherent" in the disclosure of prior art unless extrinsic evidence clearly shows that

³ Kirk-Othmer Encyclopedia of Chemical Technology, vol.4, pp 1063-1066, John Wiley & Sons, 1992. A copy of the cited pages accompanies the decision.

missing descriptive matter is necessarily present in the reference. Inherency may not be established by mere probabilities or possibilities. See In re Robertson, 169 F.3d 743,744-45, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). As the record does not reflect that the electrical conductivity of the carbon black pigment is higher than the electrical conductivity of the conductive liquid, we therefore conclude that the examiner has failed to establish a prima facie case of obviousness with respect to claims 10 and 12. Accordingly, the rejection of claims 10 and 12 under 35 U.S.C. § 103(a) is therefore reversed.

We turn next to the rejection of dependent claims 13-15 under 35 U.S.C. § 103 as unpatentable over Sakai in view of Kobayashi, and further in view of Conta. From our review of Conta, we find that Conta does not overcome the basic deficiencies of Sakai and Kobayashi. Accordingly, the rejection of claims 13-15 under 35 U.S.C. § 103(a) is reversed.

We now turn to the rejection of claim 16 under 35 U.S.C. § 103(a) as unpatentable over Kobayashi. As claim 16 also recites "said conducting material having an electrical

conductivity higher than that of said conductive liquid" the rejection of claim 16 under 35 U.S.C. § 103(a) is reversed based upon the same reasoning we applied to claims 10 and 12, supra.

CONCLUSION

To summarize, the decision of the examiner to reject claims 10 and 12-16 under 35 U.S.C. § 103(a) is reversed.

REVERSED

JAMES D. THOMAS)
Administrative Patent Judge)
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) BOARD OF PATENT
KENNETH W. HAIRSTON) APPEALS

