

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 10

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BRIAN J. KEEFE, ALI EMAMJOMEH, ROGER J. KOLODZIEJ,
MICHAEL J. REGAN, HAROLD LEE VAN NICE

Appeal No. 2001-0743
Application 08/938,346

ON BRIEF

Before JERRY SMITH, FLEMING and SAADAT, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1-6 and 8-16, which constitute all the claims remaining in the application.

The disclosed invention pertains to a thin film printhead for use in an ink jet printer.

Representative claim 1 is reproduced as follows:

1. A thin film printhead, comprising:

a thin film substrate comprising a plurality of thin film layers;

a plurality of ink firing heater resistors defined in said plurality of thin film layers;

a polymer fluid barrier layer; and

a diamond like carbon layer disposed on said plurality of thin film layers, with said polymer fluid barrier layer disposed directly on said carbon layer, for bonding said polymer fluid barrier layer to said thin film substrate, such that said carbon layer is formed between said plurality of ink firing heater resistors and said polymer fluid barrier layer.

The examiner relies on the following references:

Helbert	4,497,890	Feb. 05, 1985
Ikeda	4,663,640	May 05, 1987
Drake et al. (Drake)	4,678,529	July 07, 1987
Burolla	5,255,022	Oct. 19, 1993
Sueoka et al. (Sueoka)	5,485,185	Jan. 16, 1996

R. E. Schroder et al. (Schroder), "Analysis of the composite structures in diamond thin films by Raman spectroscopy," Physical Review B, Vol. 41, No. 6, February 15, 1990, pages 3738-3745.

Dylyn®: A Novel Coating with Unique Properties, an Advanced Refractory Technologies White Paper, date unknown (hereinafter Dylyn).

The following rejections are on appeal before us:

1. Claims 1, 4-6 and 11-16 stand rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Drake in view of Burolla, Ikeda and Dylyn.

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2. Claim 2 stands rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Drake in view of Burolla, Ikeda and Dyllyn and further in view of Sueoka.

3. Claim 3 stands rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Drake in view of Burolla, Ikeda and Dyllyn and further in view of Sueoka.

4. Claims 8-10 stand rejected under 35 U.S.C. § 103 as being unpatentable over the teachings of Drake in view of Burolla, Ikeda and Dyllyn and further in view of Schroder.

Rather than repeat the arguments of appellants or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

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 appellants' arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

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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 obviousness of the invention as set forth in claims 1-6 and 8-16. Accordingly, we reverse.

Even though the examiner has applied four different groupings of references to reject all the claims on appeal, appellants have, nevertheless, indicated that the claims should stand or fall together as a single group [brief, page 3]. Since appellants have not argued each of the rejections independently, we will consider the rejection against independent claim 1 as representative of all the claims on appeal. Note In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983).

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

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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 and the relative persuasiveness of the arguments. 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). Only those arguments actually made by appellants have been considered in this

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decision. Arguments which appellants could have made but chose not to make in the brief have not been considered and are deemed to be waived by appellants [see 37 CFR § 1.192(a)].

With respect to representative, independent claim 1, the examiner cites Drake as the primary reference and notes that Drake does not teach the claimed polymer fluid barrier layer and the diamond like carbon layer. The examiner cites Burolla as teaching a channel plate made from an elastomer. The examiner cites Ikeda as teaching an ink jet recording head which has a diamond like carbon layer for bonding thin film layers of the print head together. The examiner finds that it would have been obvious to the artisan to use a diamond like carbon layer as an adhesive layer to join together other layers of the recording head. The examiner cites Dyllyn as a teaching that the material Dyllyn(a carbon like layer) is an excellent adhesive and that it would have been obvious to the artisan to use Dyllyn to bond the polymeric fluid layer to the other layers of the ink jet print head [answer, pages 3-5].

Appellants note that they have already admitted that the known prior art teaches the claimed invention except for the use of a diamond like layer in the location recited in independent claim 1. Appellants argue that Dyllyn relates to the coating art

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and would not be considered for a layer to be used internally in a structure as an adhesive layer. Appellants also argue that Ikeda uses a diamond like layer as a heat sink between the heaters and the substrate and has no teaching that the diamond like layer should be used as an adhesive between the polymer fluid barrier layer and the thin film substrate. Appellants note that a diamond like layer located in the position recited in claim 1 would defeat the purpose of the diamond like layer of Ikeda which operates as a heat sink [brief, pages 3-6].

We note that appellants also refer to a declaration they filed by co-inventor Brian J. Keefe to show unexpected results. This declaration, however, is directed to a thin film printhead as recited in claim 1, but only when the diamond like carbon layer has the properties recited in dependent claims 8-10. Since this decision is based on the patentability of claim 1 only, the declaration is directed to claim limitations which are not before us.

The examiner responds that Dilyn and Ikeda teach that a diamond like layer has excellent adhesive characteristics and could be used as an adhesive to bond layers of a print head together. The examiner also responds that the claimed invention would have the same undesirable heat transfer properties as the

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proposed combination. Finally, the examiner responds that the diamond like carbon layer of Ikeda would maintain its intended function at a different location in the print head structure [answer, pages 8-13].

Appellants respond that the diamond like carbon layer of Ikeda is the lower layer of the print head and that Ikeda does not suggest placing the diamond like carbon layer between the fluid barrier layer and the thin film layers as claimed. Appellants repeat their argument that Ikeda only teaches the diamond like carbon layer for drawing heat down into the substrate so that Ikeda teaches away from placing the diamond like carbon layer above the resistor layer [reply brief].

We do not sustain the examiner's rejection of representative claim 1. Appellants have admitted that the prior art teaches the invention of claim 1 except for the specific location of the diamond like carbon layer. Ikeda and Dyllyn teach that a diamond like carbon layer can have the property of adhesion and the property of being a good conductor of heat. We agree with appellants, however, that the examiner's reliance on Ikeda has fatally weakened the rejection. If the only question based on the facts in this case were the obviousness of substituting one type of known adhesive for another type of known

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adhesive, the examiner's rejection might have had some merit. We must consider all the teachings of the applied references, however. Ikeda uses the diamond like carbon layer below the heating resistive layers to act as a heat sink to help draw heat away from the print head and into the substrate. Claim 1, however, recites that the diamond like carbon layer is above the heating resistive layers. The examiner concedes that the diamond like carbon layer would retain this heat sink property in its new location. The examiner has provided no motivation, however, why the artisan would select a diamond like carbon layer as an adhesive located in the claimed position when this layer would draw heat in the opposite direction from which Ikeda teaches that the heat should be drawn. In fact, the examiner appears to have failed to even recognize that the proposed combination would have the effect of mitigating the heat transfer characteristics of the diamond like carbon layer of Ikeda. Therefore, although there may be motivation to replace the adhesive of Drake with another adhesive, the applied prior art suggests that a diamond like carbon layer used as an adhesive would have heat transfer effects which are undesirable.

For the reasons discussed above, we do not sustain the examiner's rejection of representative, independent claim 1 or of

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claims 4-6 and 11-16 which are rejected on the same combination of references. Since none of the additionally applied references overcome the deficiencies in the basic combination of references applied against claim 1, we also do not sustain the rejection against claims 2, 3 and 8-10. Therefore, the decision of the examiner rejecting claims 1-6 and 8-16 is reversed.

REVERSED

JERRY SMITH)	
Administrative Patent Judge)	
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MICHAEL R. FLEMING)	BOARD OF PATENT
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