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

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte LISA J. JIMAREZ and DAVID N. LIGHT

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Appeal No. 2000-0882
Application No. 08/890,582

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ON BRIEF

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Before JERRY SMITH, GROSS, and BLANKENSHIP, Administrative Patent Judges.

GROSS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 12 and 14 through 22, which are all of the claims pending in this application.

Appellants' invention relates to a printed circuit board and metal back plate connected via a bonding layer. The bonding layer is formed of a conductive metal dispersed in an adhesive polymer, and the conductive metal has an EMF of less than zero volts. Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A printed circuit board assembly comprising:

a) a printed circuit board comprising a dielectric substrate, a first metallic layer disposed on one opposing face of said substrate, and a second metallic layer disposed on another opposing face of said substrate;

b) a metal back plate having a connection surface; and

c) a bonding layer bonding the second metallic layer of said printed circuit board to the connection surface of said metal back plate; said bonding layer comprising an adhesive polymer and a conductive metal having an EMF of less than zero volts, said conductive metal being dispersed throughout said polymer; said conductive metal being present at a weight of from about 45% to about 90% by weight of the total bonding layer weight; said polymer selected from the group consisting of an acrylic polymer, an epoxy-based polymer and a thermoplastic polymer.

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

Iliou et al. (Iliou)	4,616,413	Oct. 14, 1986
Capote et al. (Capote)	5,538,789	Jul. 23, 1996

Claims 1 through 12 and 14 through 22 stand rejected under 35 U.S.C. § 103 as being unpatentable over Iliou in view of Capote.

Reference is made to the Examiner's Answer (Paper No. 13, mailed December 22, 1999) for the examiner's complete reasoning in support of the rejection, and to appellants' Brief (Paper No. 12, filed October 25, 1999) for appellants' arguments thereagainst.

OPINION

As a preliminary matter, we note that appellants indicate on page 7 of the Brief that all of the claims stand or fall together. Accordingly, we will treat the claims as a single group with claim 1 as representative. In addition, as indicated by the examiner (Answer, page 2), appellants' second issue, whether the introduction of Figure 1 into the disclosure by amendment constitutes submission of new matter, is a petitionable matter, rather than appealable, and will not be addressed in this decision.

We have carefully considered the claims, the applied prior art references, and the respective positions articulated by appellants and the examiner. As a consequence of our review, we will affirm the obviousness rejection of claims 1 through 12 and 14 through 22.

The examiner states (Answer, page 4) that:

> [A]s shown by Capote, the use of an adhesive polymer having the claimed ranges of conductive material is well known in the art and it would have been within the level of ordinary skill in the art to employ any known conductive adhesive including the claimed conductive adhesive as desired for a printed circuit board of the sort here involved.

The examiner further asserts (Answer, page 5) that "since Iliou does not specify any particular conductive adhesive, it would have been within the level of ordinary skill in the art to employ

any known conductive adhesive used for a printed circuit board including the adhesive disclosed by Capote." We agree.

Although Iliou discloses Ablefilm ECF 550, Iliou does not limit teachings to any specific conductive adhesive. Accordingly, any known conductive adhesives could be used. Capote teaches (column 1, line 53-column 2, lines 5) that the object of his invention is to provide materials which are conductive, are highly resistant to corrosion and degradation at high temperatures and relative humidities while forming strong adhesive bonds with good high temperature stability. Thus, the skilled artisan would have been motivated to use the adhesives of Capote in Iliou's device.

The conductive adhesives disclosed by Capote include epoxies (see columns 5 and 6), among others (though epoxy is the preferred material), and 0-65% of a first metal or 6-65% of a second metal. The first metal may be copper, silver, aluminum, gold, platinum, palladium, beryllium, rhodium, nickel, cobalt, iron, or molybdenum, and the second metal may be Sn, Bi, Pb, Cd, Zn, Ga, In, Te, Hg, Tl, Sb, Se, or Po. Of these metals, at least aluminum, beryllium, nickel, cobalt, iron, Sn, Pb, Cd, Zn, Ga, In, Te, Tl and Se have EMF values less than zero, according to the ***CRC Handbook of Chemistry and Physics*** pp. D-120 - D-120 (55th ed. 1974-75). Thus, the combination of Iliou and Capote would include an adhesive formed of epoxy mixed with up to 65% of

one of 25 metals, 14 of which satisfy the claimed invention. Accordingly, the combination would have a reasonable expectation of success and, thus, renders the claims ***prima facie*** obvious. ***See In re O'Farrell***, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

Appellants argue (Brief, page 10) that "Capote '789 does not discuss the electromotive force of the components of the bonding layer at all. There is no objective teaching in Capote '789 of a conductive metal component having an EMF of less than zero." We agree. However, the combination of Capote and Illiou would have been obvious in view of the teachings therein, and the combination of the two references includes adhesives with several components that have an EMF of less than zero. A disclosure that includes a multitude of effective adhesives does not render any particular adhesive less obvious, particularly when the claimed composition is used for the same purpose taught by the prior art. ***See Merck & Co. v. Biocraft Labs., Inc.***, 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir.), ***cert. denied***, 493 U.S. 975 (1989). Further, "the mere absence from the prior art of a teaching or a limitation recited in the patent at issue is insufficient for a conclusion of nonobviousness." ***Id.***

We should note that evidence of unexpected results could overcome the *prima facie* case of obviousness. However, the single example and comparative example disclosed in the specification are not representative of all parameters and all materials and, therefore, are insufficient to show that it is the EMF value that produces the superior results, particularly since the conditions for the example and comparative example are not identical. Accordingly, we will sustain the rejection of claims 1 through 12 and 14 through 22.

CONCLUSION

The decision of the examiner rejecting claims 1 through 12 and 14 through 22 under 35 U.S.C. § 103 is affirmed.

AFFIRMED

JERRY SMITH Administrative Patent Judge	)	
ANITA PELLMAN GROSS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
HOWARD B. BLANKENSHIP Administrative Patent Judge	)	

APG:clm

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Application No. 08/890,582

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