

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte GREGG W. FREY, JONATHAN E. SNYDER and AJAY A. BHAVE

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Appeal No. 1997-3026  
Application No. 08/344,053

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ON BRIEF

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Before KRASS, FLEMING, and HECKER, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 through 3, 5 through 12, 14 and 15. Claims 4 and 13 have been canceled.<sup>1</sup>

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<sup>1</sup> We note that although the appendix to the principal brief shows claim 5 dependent on a canceled claim 4, claim 5 is actually non dependent on claim 1.

The invention pertains to ultrasound probes and, more particularly, to a method and system of connecting a transducer array to a coaxial cable in such a probe. Rather than individually connecting the wires of the coaxial cable to the corresponding terminals on the transducer flex circuit, all pairs of opposing terminals are mass-connected electrically in a single operation by pressing the terminal areas of two flex circuits together.

Representative independent claim 6 is reproduced as follows:

6. A system for electrically connecting a multiplicity of electrodes on a transducer array to a corresponding multiplicity of wires of a coaxial cable, comprising:

a first flexible circuit having one end electrically connected to said signal electrodes of said transducer array; and

a second flexible circuit having one end electrically connected to said wires of said coaxial cable,

wherein the other end of said first flexible circuit overlaps and is electrically connected to the other end of said second flexible circuit, said other end of said first flexible circuit having a first row of terminals spaced with a first linear pitch and said other end of said second flexible circuit having a second row of terminals spaced with said first linear pitch, each terminal of said first row of terminals overlapping a respective terminal of said second row of terminals, said overlapping terminals being bonded by a layer of cured adhesive

sandwiched therebetween, said layer of cured adhesive comprising electrically conductive means.

The examiner relies on the following references:

|                                |           |          |
|--------------------------------|-----------|----------|
| Ishiyama<br>1987               | 4,686,408 | Aug. 11, |
| Gorton et al. (Gorton)<br>1992 | 5,126,616 | Jun. 30, |
| Smith<br>1994                  | 5,329,496 | Jul. 12, |

Claims 1 through 3, 5 through 12, 14 and 15 stand rejected under 35 U.S.C. 103. As evidence of obviousness, the examiner offers Smith, Ishiyama and Gorton.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

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 (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). 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).

With respect to the instant claims, the examiner basically finds that either one of Smith or Ishiyama discloses an ultrasound probe, as claimed, but for the use of plural, joined flex circuits to interface with the coaxial cable. The examiner relies on Gorton for providing "multiple joined flex circuits for ease of connection between piezoelectric elements and their drive/output circuitry" [answer-page 2]. The examiner specifically relies on Figures 84-87 of Gorton.

Figures 84-87 of Gorton depict flex circuits 824 and 825 and while Figure 84 shows these two flex circuits juxtaposed

with respect to each other, there is no teaching that they are connected in the manner set forth in independent claims 1, 6 and 9.

The only connection between the two flex circuits in Gorton appears to be via printed circuit board 884 in Gorton's Figure 87. The examiner does not deny that this is the only connection taught by Gorton. At page 2 of the answer, the examiner states, "[t]he examiner concedes that Gorton uses a small printed circuit board 884 'having various components' thereon to bridge the terminals on the flex circuit 824 and 825." However, it is the examiner's position that it would have been obvious to remove the printed circuit board and connect the flex circuits together, directly, without the printed circuit board.

To appellants' argument [with which we agree] that removal of the printed circuit board would destroy the function of Gorton's system since the necessary circuitry on the printed circuit board would be gone, the examiner indicates that the necessary circuitry would be provided at a remote location. We find this reasoning of the examiner to be faulty since we find no suggestion anywhere in Gorton that would have led the

skilled artisan to remove the printed circuit board, which interfaces the two flex circuits in Gorton, and then connect the two flex circuits 824 and 825 in any manner, let alone in the manner specifically set forth in the instant claims, e.g., with the recited pitch and having overlapping areas. Even if the printed circuit board in Gorton is removed, there is no indication, whatsoever, in Gorton, as to how the two flex circuits, 824 and 825, would be connected. The examiner does not address this issue.

Since the examiner has failed to establish a prima facie case of obviousness with regard to the claimed subject matter, the examiner's decision rejecting claims 1 through 3, 5 through 12, 14 and 15 under 35 U.S.C. 103 is reversed.

REVERSED

|                             |   |                 |
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| ERROL A. KRASS              | ) |                 |
| Administrative Patent Judge | ) |                 |
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|                             | ) | BOARD OF PATENT |
| MICHAEL R. FLEMING          | ) | APPEALS         |
| Administrative Patent Judge | ) | AND             |
|                             | ) | INTERFERENCES   |
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| STUART N. HECKER            | ) |                 |
| Administrative Patent Judge | ) |                 |

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