

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TUROKEVERE R. GURURAJA

Appeal No. 1997-2074
Application No. 08/292,634

ON BRIEF

Before KRASS, RUGGIERO and DIXON, 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 and 17 through 26.

The invention pertains to piezoelectric transducers for use in medical environments.

Independent claim 1 is reproduced as follows:

1. A transducer comprising:

a transducer element for ultrasonic imaging of the human body having a 2-2 or 1-3 composite structure and driven in a k_{31} transverse mode, the element having a plurality of relatively thin spaced piezoceramic wafers having relatively large area opposing major surfaces with electrodes, wherein the wafers are connected electrically in parallel to provide electrical impedance matching to an electrical impedance of an ultrasonic imaging system, and a layer of passive polymer between electrodes on adjacent wafers to provide acoustic impedance matching to the acoustic impedance of a human body, and wherein the relative thickness of the polymer layer is less than that of the wafer in order to increase the number of wafers connected electrically in parallel per element volume.

The examiner relies on the following reference:

Kleinschmidt et al. [Kleinschmidt]	4,677,337	Jun. 30, 1987
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Claims 1 through 3 and 17 through 26 stand rejected under 35 U.S.C. 103 as unpatentable over Kleinschmidt.

Reference is made to the brief and answer for the respective positions of appellant and the examiner.

OPINION

We reverse because the examiner has clearly failed to set forth a prima facie case of obviousness with regard to the instant claimed subject matter.

Independent claim 1 calls for specific structure relating to the transducer including, inter alia, a transducer element for ultrasonic imaging of the human body "having a 2-2 or 1-3 composite structure and driven in a k_{31} transverse mode." The examiner does not address these claims limitations.

Claim 1 further calls for a specific relative thickness of the wafers and polymer layers, "wherein the relative thickness of the polymer layer is less than that of the wafer...". The examiner has pointed to nothing in Kleinschmidt to teach or suggest these relative thicknesses. In fact, in Kleinschmidt, the thickness of the polymer layer appears to be greater than that of the wafer.

The claim also recites that the structure provides "acoustic impedance matching to the acoustic impedance of a human body."

The examiner admits that Kleinschmidt fails to teach the specifically claimed property values such as impedance and does not teach the specifically recited relative dimensions, or thicknesses of the polymer and wafer layers. However, the examiner holds that "optimizing a known device...via selection of particular parameters" would have been obvious, within the

meaning of 35 U.S.C. 103. We disagree. Appellant has a specific purpose for the recitations of the relative thicknesses and impedance matching. The specifically claimed transducer structure and its attendant dimensional relationships between elements enables a desired electrical impedance matching and acoustic impedance matching, in a relatively small package, important for use in the medical field. The structural relationships claimed are more than a mere design choice or optimization. They have been chosen by appellant for a very specific, desirable purpose and the examiner has provided no evidence that the instant invention is no more than an optimization of known variables for a known purpose.

While there are many discrepancies between the instant claimed subject matter and the disclosure of Kleinschmidt, just the fact, taken alone, that Kleinschmidt discloses a polymer layer whose thickness is greater than that of the wafer, which is the reverse of what is claimed by appellant, is enough for us to find that the examiner's rejection of the claims under 35 U.S.C. 103 is improper.

The examiner's decision rejecting claims 1 through 3 and
17 through 26 under 35 U.S.C. 103 is reversed.

REVERSED

ERROL A. KRASS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH F. RUGGIERO)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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JOSEPH L. DIXON)	
Administrative Patent Judge)	

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