

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 9

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN R. VIG
and RAYMOND L. FILLER

Appeal No. 98-0174
Application 08/545,162¹

ON BRIEF

Before KRASS, TORCZON and CARMICHAEL, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 through 16², all of the claims in the application.

¹ Application for patent filed October 19, 1995.

² While the appendix to the brief shows claims 1 through 13 and 15 through 17, claim 15 was renumbered as claim 14 in accordance with 37 CFR 1.126, which resulted in claim 16 becoming new claim 15 and claim 17 becoming new claim 16.

The invention is directed to a method and apparatus for measuring small mass changes by quartz crystal microbalances. In order to avoid the temperature dependency problem of the prior art microbalance measurements, the invention senses mass changes using a quartz crystal microbalance which automatically compensates for variations in ambient temperatures without affecting the accuracy of the microbalance. More particularly, this is accomplished by forming a quartz crystal resonator excitable in two different modes at the same time in such a manner that the mass change and the temperature change can be measured independently.

Independent method claim 1 is reproduced as follows:

1. A method of measuring small mass changes, comprising the steps of;

utilizing a quartz crystal resonator onto which a material of a certain mass is added, wherein the quartz crystal can be excited along two modes simultaneously;

exciting the quartz crystal along the two modes simultaneously;

measuring a change in a first resultant frequency of said resonator;

measuring a change in a second resultant frequency of said resonator; and

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calculating the change in said mass from the changes in said first and said second frequencies.

The examiner relies on the following references:

EerNisse et al. (EerNisse)	4,535,638	Aug. 20, 1985
Vali et al. (Vali)	5,179,028	Jan. 12, 1993

Claims 1 through 16 stand rejected under 35 U.S.C. 103 as unpatentable over EerNisse in view of Vali.

Rather than reiterate the arguments of appellants and the examiner, reference is made to the brief and answer for the respective details thereof.

OPINION

We will sustain the rejection of claims 1 through 7 under 35 U.S.C. 103 but we will not sustain the rejection of claims 8 through 16 under 35 U.S.C. 103.

Turning first to claims 1 through 7, we view claim 1 as being much broader than appellants [and the examiner] view it. Vali clearly discloses a method for measuring small mass changes

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[this is done by sensing an absolute frequency shift in the oscillating frequency of an antibody-coated oscillator]. Vali utilizes a quartz crystal resonator upon which specific antibodies are deposited. The crystal is certainly capable of being excited along two modes simultaneously. Note the use of a fundamental frequency and a higher frequency (column 5, lines 47-50 of Vali) by Vali, which appears to correspond to appellants' alternative mode described from the bottom of page 4 to the top of page 5 of the instant specification. Also, EerNisse discloses, at column 2, lines 1-8, the capability of these crystals to be excited along two modes. Vali also teaches the measuring of changes in two different frequencies of the resonator and using a ratio of these changes for detecting a change in mass.

Alternatively, the teaching by Vali, at column 5, lines 57-63, of using the ratio of a frequency harmonic to a fundamental frequency for change of mass detection along with the teaching of this ratio being independent of temperature and pressure would appear to have been a strong suggestion to the artisan to so employ the frequencies of EerNisse to calculate change in mass in addition to the force and temperature calculated by EerNisse.

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Appellants' argument that EerNisse was fully aware of the Vali...method...? [brief-page 7] but failed to arrive at the claimed invention is unpersuasive under 35 U.S.C. 103 because under that portion of the patent statute, we look to what the fictional artisan of ordinary skill would have been led to do with the disclosures before him/her. The fact that one particular person, e.g., EerNisse, might not have been led to do something does not speak to what the fictional artisan of ordinary skill within the meaning of 35 U.S.C. 103, would have been deemed to do.

Similarly, appellants' argument that the claimed subject matter would not have been obvious because none of the commercially available quartz microbalances use two modes for temperature compensation? [brief-page 7] is not persuasive; first, because none of the method claims 1 through 7 requires a microbalance? and, second, because the mere absence of appellants' claimed invention from the marketplace does not, per se, make for patentability under 35 U.S.C. 103.

Thus, we sustain the rejection of claims 1 through 7 under 35 U.S.C. 103.

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We reach an opposite result, however, with regard to claims 8 through 16. We will not sustain the rejection of these claims under 35 U.S.C. 103 because we do not find in the applied references any teaching or suggestion of employing two frequencies in a crystal microbalance in order to calculate a mass applied to the crystal wherein a first frequency is temperature sensitive and a second frequency is mass sensitive, as required by instant claim 8. Note that unlike independent claim 8, independent claim 1 does not specify that each frequency is particularly parameter sensitive..

The examiner's decision rejecting claims 1 through 16 under 35 U.S.C. 103 is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR 1.136(a).

AFFIRMED-IN-PART

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