

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID S. BOMSE, D. CHRISTIAN HOVDE,
and JOEL A. SILVER

Appeal No. 1998-1814
Application No. 08/347,814

HEARD: November 29, 2000

Before HAIRSTON, GROSS, and LEVY, Administrative Patent Judges.
LEVY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 110-177¹, which are all of the claims pending in this application.

¹ The examiner (answer, page 2) states that "claims 115-116, 149-150 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims." We find this statement to be inconsistent with the examiner's rejection of these claims under 35 U.S.C. § 112, second paragraph (answer, page 3). We presume that the examiner meant to say that claims 115-116 and 149-150 would be allowed if rewritten in independent form and to overcome their indefiniteness.

BACKGROUND

The appellants' invention relates to a dual modulation laser line-locking technique for wavelength modulation. An understanding of the invention can be derived from a reading of exemplary claims 110, 117, 119, and 121, which are reproduced as follows:

110. Optical spectroscopy apparatus providing wavelength stabilization and improved precision and accuracy of optical absorbance measurements, the apparatus comprising:

light source means for producing a light beam;

modulator means for modulating a wavelength of said light source means, said modulator means comprising means for simultaneously modulating said wavelength with a first frequency and a second frequency, said first frequency being different than said second frequency; and

detector means positioned to receive said light beam for producing output signal means comprising signal means representative of an absorber species quantity and wavelength stabilization means of said light source means.

117. The invention of claim 110 further comprising demodulator means for demodulating said output signal means.

119. The invention of claim 117 wherein said demodulator means comprises first and second demodulator means.

121. The invention of claim 119 wherein a first demodulating frequency of said first and said second demodulator means is greater than a second demodulating frequency of said first and second demodulator means.

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

Mantz et al. (Mantz '273)	4,410,273	Oct. 18, 1983
Gallagher et al. (Gallagher ²)	4,765,736	Aug. 23, 1988
Mantz et al. (Mantz '448)	4,937,448	Jun. 26, 1990

Cassidy et al. (Cassidy) "Harmonic Detection with Tunable Diode Lasers - Two-Tone Modulation", Applied Physics B, vol. 29, 1982 pp. 279-285.

Claims 110-177 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which appellants regard as the invention.

Claims 110-112, 117-146, and 151-177 stand rejected under 35 U.S.C. § 103 as unpatentable over Mantz ('448) in view of either the prior art cited by appellants on page 19, lines 15-20 of the specification (reference to US Patent 4,765,736 to Gallagher) or Cassidy.

Claims 110-114, 117-148, and 151-177 stand rejected under

² The Gallagher reference is also referred to by the examiner as the prior art cited by appellants on page 19, lines 15-20 of the specification.

35 U.S.C. § 103 as unpatentable over Mantz ('273) in view of either the prior art cited by appellants on page 19, lines 15-20 of the specification (reference to US Patent 4,765,736 to Gallagher) or Cassidy.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 19, mailed January 12, 1998) for the examiner's complete reasoning in support of the rejections, and to the appellants' brief (Paper No. 18, filed October 9, 1997) for the appellants' arguments thereagainst. Only those arguments actually made by the appellants have been considered in this decision. Arguments which the appellants could have made but chose not to make in the briefs have not been considered. See 37 CFR 1.192(a).

OPINION

In reaching our decision in this appeal, 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 brief and at the Oral Hearing, along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

We begin with the rejection of claims 110-177 under 35 U.S.C. § 112, second paragraph. Starting with claim 110, the claim language at issue is "detector means ... producing ... signal means representative of ... wavelength stabilization means of said light source means." The examiner takes the position (answer, page 3) that "[t]he claim language is incorrect in that the detector does not produce wavelength stabilization means. From the Figures, it appears that the locking mixers and lockings [sic] somehow produce wavelength stabilization of the laser, not the detector." In response, the appellants direct our attention to the following language in the specification (page 9, lines 17-18) "[t]he detector may also provide demodulation." The appellants assert (brief, page 7) that "[t]his description of the detector encompasses the specific

components - mixers and lockin amplifiers - that provide demodulation and are depicted in the Figures and itemized in the descriptions of the embodiments and examples."

We first note that the claim language does not indicate that the detector produces wavelength stabilization means, but, rather, specifies that the signal produced by the detector represents wavelength stabilization means. Nonetheless, we agree with the examiner that claim 110 is indefinite, since the signal produced by the detector does not represent the wavelength stabilization means, but, rather, is for the wavelength stabilization means. Only the signal output from the wavelength stabilization means represents the wavelength stabilization means. Although we agree with the appellants that claim 110, taken alone, could be interpreted as proposed by appellants, an interpretation that the detector includes the wavelength stabilization means is inconsistent with claims which depend from claim 110. For example, claim 117 recites "[t]he invention of claim 110 further comprising demodulator means for demodulating said output signal means." In other words, claim 117 requires a separate element for demodulation, which is inconsistent with the claim from which it depends. Therefore, we cannot accept

appellants' interpretation. Accordingly, we conclude that claim 110 is indefinite, as asserted by the examiner.

With regard to claim 144, instead of reciting that the detector output signal is representative of wavelength stabilization means, the claim recites "producing by a detector . . . an output signal representative of . . . and providing for wavelength stabilization. . . ." However, similar to claim 110, it is not the detector that provides for wavelength stabilization, but rather the demodulator, since claim 151, for example, requires a separate demodulator.

The examiner further asserts that claims 143 and 177 are unclear. Starting with claim 143 (claim 177 has similar language) the language in question is "wherein said detector means comprises a single detector means for producing output signal means representative of known and unknown quantities of the absorber species." The examiner takes the position (answer, page 3) that because the detector means of claim 110 produces signal output means representative of an absorber species and wavelength stabilization means and therefore requires two detectors, that the single detector means of claim 143, contradicts claim 110. From our reading of claims

110 and 143, we find claim 143 to be definite. Claim 143 does not recite that the detector means comprises a single detector. Claim 143 simply states that a single detector means produces the output signal representative of the absorber series. Claim 143 does not preclude the detector means including other detectors which output signals for wavelength stabilization. Accordingly, we see no inconsistency between claim 143 and claim 110. As claim 177 contains similar language to claim 143, we also find claim 177 to be definite under 35 U.S.C. § 112, second paragraph. Nonetheless, as none of the claims dependent upon claims 110 and 144 make up for the indefiniteness of claims 110 and 144, the rejection of claims 110-177 under 35 U.S.C. § 112, second paragraph, is affirmed.

We now turn to the rejections of claims 110-114, 117-148, and 151-177 under 35 U.S.C. § 103. At the outset, we note that at the Oral Hearing, appellants conceded the obviousness of all of the claims rejected by the examiner, with the exception of claims 121 and 155. We therefore affirm the rejection of the remaining claims rejected by the examiner under 35

U.S.C. § 103 for the reasons set forth in the examiner's answer, and we will limit our determinations to claims 121 and 155.

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 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. 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).

Claims 121 and 155 stand rejected under 35 U.S.C. § 103 as unpatentable over either Mantz ('448) or Mantz ('273) in view of either Gallagher or Cassidy. The examiner's position (answer, pages 4 and 5) with respect to the claims from which claims 121 and 155 depend, is that both Cassidy and Gallagher teach simultaneous modulation. We find that both Cassidy (page 280, col. 2) and Gallagher (Figure 1) suggest simultaneous modulation of the wavelength of the light source with first and second frequencies. With regard to claims 121

and 155, appellants assert (brief, pages 9 and 10) that appellants' invention combines dual wavelength modulation with sequential demodulation, and that the references do not teach sequential demodulation. The examiner takes the position (answer, page 14) that the claims are silent as to sequential demodulation.

As stated by the court in In re Hiniker Co., 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998) "[t]he name of the game is the claim." Claims will be given their broadest reasonable interpretation consistent with the specification, and limitations appearing in the specification are not to be read into the claims. In re Etter, 756 F.2d 852, 858, 225 USPQ 1, 5 (Fed. cir. 1985).

We agree with the examiner that the claims do not recite sequential demodulation. The claims require first and second demodulator means, and that a first demodulating frequency is greater than a second demodulating frequency. As drafted, claims 121 and 155 read on the parallel demodulation of Mantz ('448). Mantz ('448) discloses (Figure 2) demodulators 46 and 48. Demodulator 46 mixes the detector signal with the chopping frequency ω_{ch} , which has a 400 Hz frequency (col. 6,

lines 1-4, and col. 5, lines 13-16). Demodulator 48 mixes the detector signal with a signal at the second harmonic of the laser modulation frequency, which is selected to be "between 500 Hz and ten kilohertz, 6.6 kilohertz being presently preferred" (col. 2, lines 5-9 and col. 4, line 68 through col. 5, line 1). Mantz ('273) similarly discloses (figure 1) parallel demodulation. Amplifier 40 is used as a phase sensitive detector (col. 6, lines 55-68) for "locking the mid-frequency of the cyclical laser scan to the absorption maximum." Mantz ('273) further discloses (col. 4, lines 47-51) that amplifier 40 is tuned to the frequency of laser 20, and that amplifier 42, is preferably a tuned amplifier that is tuned to twice the frequency of amplifier 40. Mantz ('273) additionally discloses (col. 7, lines 12-15) that if amplifier 42 is a tuned phase-locked amplifier, the advantages of synchronous detection (i.e., noise and background suppression) may be realized.

From these teachings, we conclude that Mantz ('448) and Mantz ('273) teach the limitations of claim 121. Claim 155 contains language similar to claim 121. We therefore affirm the

Appeal No. 1998-1814
Application No. 08/347,814

Page 13

rejection of claims 121 and 155 for the same reasons.

Accordingly, the rejection of claims 110-114, 117-148, and

151-177 under 35 U.S.C. § 103 is affirmed.

CONCLUSION

To summarize, the decision of the examiner to reject claims 110-177 under 35 U.S.C. § 112, second paragraph is affirmed. The decision of the examiner to reject claims 110-114, 117-148, and claims 151-177 under 35 U.S.C. § 103 is affirmed.

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

AFFIRMED

KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
)	
)	
)	
)	BOARD OF PATENT
ANITA PELLMAN GROSS)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
STUART S. LEVY)	

Appeal No. 1998-1814
Application No. 08/347,814

Page 15

Administrative Patent Judge)

Appeal No. 1998-1814
Application No. 08/347,814

Page 16

PEACOCK MYERS AND ADAMS P C
P O BOX 26927
ALBUQUERQUE NM 8715-6927