

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FIELDPIECE INSTRUMENTS, INC.
Petitioner,

v.

TWIN RIVERS ENGINEERING, INC.
Patent Owner.

Case IPR2017-00362
Patent 7,022,993

Before JENNIFER S. BISK, MATTHEW R. CLEMENTS, and
MONICA S. ULLAGADDI, *Administrative Patent Judges*.

ULLAGADDI, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

A. Background

Fieldpiece Instruments, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) for *inter partes* review of claims 2, 3, 6, 7, and 9 of U.S. Patent No. 7,022,993 (Ex. 1001, “the ’993 patent”). Twin Rivers Engineering, Inc. (“Patent Owner”) timely filed a Preliminary Response. Paper 10 (“Prelim. Resp.” or “Preliminary Response”).

Pursuant to 35 U.S.C. § 314(a), an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

Upon consideration of the Petition and supporting evidence, as well as Patent Owner’s Preliminary Response and supporting evidence, for the purposes of this decision and based on the particular circumstances of this case, we decline to institute an *inter partes* review of the ’993 patent as to challenged claims 2, 3, 6, 7, and 9.

B. Related Proceedings

The parties inform us that the ’993 patent is at issue in the following proceeding: *Twin Rivers Engineering, Inc. v. Fieldpiece Instruments, Inc.* et al., Civil Action No. 2:16-cv-04502 (C. D. Cal.). Paper 8, 1; Pet. 69.

C. The ’993 Patent

The ’993 patent is entitled “Infrared Leak Detector” and describes “identifying the presence and concentration of a selected gas.” Ex. 1001, [54], [57]. The leak detector uses infrared radiation (IR) output by an IR emitter to penetrate a sample that is spectrally analyzed with reference to a specific

wavelength. *Id.* at [57]. Optical filters are employed to control the wavelength of radiation that penetrates the sample and, thus, the types of compounds that can be detected in the sample. *Id.* The sample causes a wavelength-specific output to be generated. *Id.*

The portable gas leak detector disclosed in the '993 patent includes “an optical chamber to efficiently couple infrared (IR) energy from an optical source to an optical sensor, while maximizing IR interaction with the sample material gas.” *Id.* at 5:10–13. Figure 1 of the '993 patent is a cross-sectional view of the optical chamber of the gas leak detector.

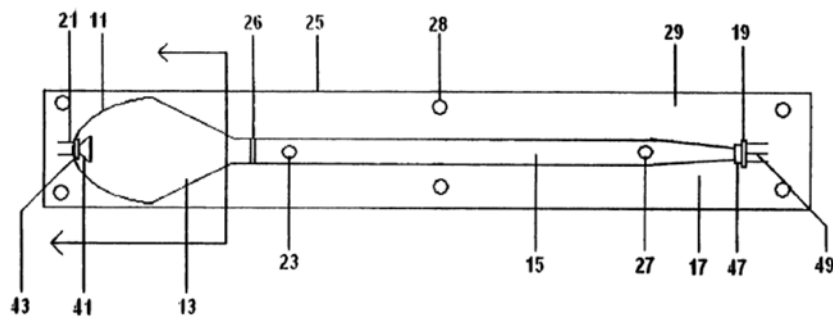


Figure 1 of the '591 patent illustrates a cross-sectional view of an optical chamber of an infrared leak detector.

In Figure 1, IR energy emitted by IR emitter 41, passes through hemispherical shape 11 and is directed into the chamber, first passing through first filter 26, which “blocks energy from approximately 6 microns down.” *Id.* at 5:25–27, 5:37–40. The '993 patent discloses that “the [IR] energy continues through the chamber and is absorbed by sample gas coming from inlet 27 continuing through the chamber through the cone shape directing into the [IR] sensor 47.” *Id.* at 5:40–43. The leak detector “can include an optical filter ‘window’ that is designed to only allow access to IR wavelengths that interact (get absorbed) strongly with” wavelengths corresponding to the molecule being detected, i.e., “in-band”

wavelengths. *Id.* at 6:20–24. The '993 patent discloses that this bandpass filter can have a narrow bandwidth of approximately 8.48 to approximately 9.9 microns that allows energy to pass into IR sensor 47. *Id.* at 5:44–46. The IR sensor's output "can be amplified first by a tuned amplifier 250 with a band-pass peak response optimized to approximately 1 to approximately 3 Hertz." *Id.* at 9:18–20. The output of the IR sensor is amplified by a series of analog amplifiers 255 and fed to an analog-to-digital (A/D) digitizer and chirp generator. *Id.* at 9:23–24, 9:37–38. The '993 patent discloses that, "[u]pon detection of a small leak, the digitizer 260 can immediately shift (264) the chirp generator 270 to a readily-noticed 2 Hz chirp rate" and that "[i]f the leak is larger, the chirp rate can be increased in proportion to the size of the leak detected." *Id.* at 9:56–59.

D. Illustrative Claims

As noted above, Petitioner challenges claims 2, 3, 6, 7, and 9 of the '993 patent, of which claims 2, 6, 7, and 9 are independent. Claim 2 is representative and is reproduced herein below.

2. A portable handheld infrared (IR) leak detector for detecting gas leaks, comprising:
 - (a) an infrared (IR) sampling chamber having
 - (ai) an infrared (IR) emitter for emitting IR energy;
 - (aii) a first filter for blocking IR energy from approximately 6 microns down through the sampling chamber;
 - (aiii) a second filter for allowing a selected IR energy range of approximately 8 to approximately 10 microns to pass through the sampling chamber;
 - (aiv) a sensor for detecting resultant IR energy from the first filter and the second filter; and
 - (b) a pump for pulling a sample gas from a single suspected gas leak that emanates from a single pressurized gas source through the sampling chamber;

- (c) a detector-sensor for detecting presence of selected gas constituents in the suspected gas leak from the sensor; and
- (d) a handheld housing for supporting the chamber, the pump and the detector-sensor, so that the leak detector is portable and is carryable in a single hand, wherein the leak detector detects if a leak exists in the single pressurized gas source without introducing or mixing a secondary tracer within the leak detector.

E. The Evidence of Record

Petitioner relies upon the following references, as well as the Declaration of Leonard Laub (Ex. 1003):

Reference	Patent/Printed Publication	Date	Exhibit
Wong et al. (“Wong”)	U.S. Patent No. 5,889,199	Mar. 30, 1999	1004
Wallack	U.S. Patent No. 3,832,548	Aug. 27, 1974	1005
Sibley et al. (“Sibley”)	U.S. Patent No. 4,649,711	Mar. 17, 1987	1006
Bley et. al. (“Bley”)	U.S. Patent No. 6,635,875	Oct. 21, 2003	1007
Horiba et al. (“Horiba”)	U.S. Patent No. 4,236,827	Dec. 2, 1980	1008
Johnson Controls	Johnson Controls, RLD-H10P Product/Technical Bulletin	Mar. 1996	1009
Moyer	U.S. Patent No. 6,255,652	July 3, 2001	1010
McFadden	U.S. Patent No. 6,489,787	Dec. 3, 2002	1011
Liebermann et al. (“Liebermann”)	U.S. Patent No. 3,742,475	June 26, 1973	1012
Blades	U.S. Patent No. 6,114,700	Sept. 5, 2000	1013

Reference	Patent/Printed Publication	Date	Exhibit
Kobayashi	JP Publication No. 10-038930 ¹	Feb. 13, 1998	1014
Craft	U.S. Patent No. 3,701,022	Oct. 24, 1972	1015

F. The Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 2, 3, 6, 7, and 9 of the '993 patent based on the following grounds:

References	Basis	Claim(s) Challenged
Wong and Wallack or Sibley in view of Bley, Horiba, and Johnson Controls	§ 103(a)	2, 3, and 9
Wong or Moyer and Johnson Controls in view of McFadden, Liebermann, and Blades	§ 103(a)	6
Wong in view of Blades and Kobayashi or Craft	§ 103(a)	7

II. DISCUSSION

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable construction standard). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as would

¹ Petitioner submits an English language Abstract of Kobayashi, but does not appear to submit the underlying Japanese language document corresponding to JP Publication No. 10-038930.

be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Claim terms need only be interpreted to the extent necessary to resolve the controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

We determine that no claim term requires an express construction.

B. Analysis of Petitioner's Obviousness Challenges

Petitioner contends claims 2, 3, and 9 of the '993 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Wong and Wallack or Sibley in view of Bley, Horiba, and Johnson Controls. Pet. 21–46. Petitioner further contends claim 6 of the '993 patent is unpatentable under 35 U.S.C. § 103(a) as obvious over Wong or Moyer and Johnson Controls in view of McFadden, Liebermann, and Blades. *Id.* at 46–58. Finally, Petitioner contends claim 7 of the '993 patent is unpatentable under 35 U.S.C. § 103(a) as obvious over Wong in view of Blades and Kobayashi or Craft. *Id.* at 59–68. Patent Owner disputes these contentions. *See* Prelim. Resp. 6–38.

For the reasons that follow, we determine Petitioner has not demonstrated a reasonable likelihood of prevailing in showing that any of challenged claims 2, 3, 6, 7, and 9 would have been unpatentable under 35 U.S.C. § 103(a).

1. Overview of Wong

Wong is entitled “Portable Leak Detector” and discloses “locating leaks through the wall of a chamber us[ing] a non-dispersive infrared (NDIR) type detector.” Ex. 1004, [54], [57]. The portable leak detector “includes a gas sampling probe into which a continuous sample of gas is drawn.” *Id.* at [57]. The gas sample is conducted from the gas sampling probe to a gas sample chamber

which “contains a source of light or infrared radiation and a detector.” *Id.* Figure 1, reproduced below, depicts components of Wong’s portable leak detector.

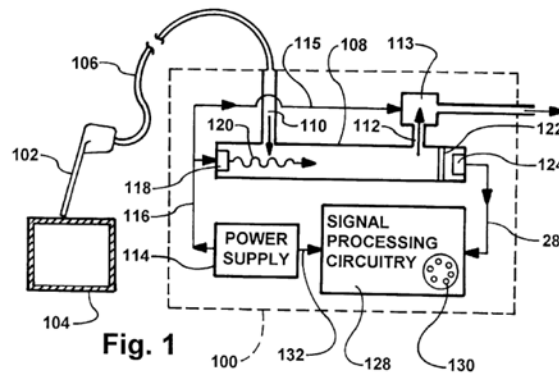


Figure 1 of Wong illustrates components of a leak locating system.

In Figure 1, Wong illustrates suction pump 113, which “draws the gas sample into the gas sample chamber 108 through the inlet port 110 and draws the gas out of the outlet port 112, discharging the gas sample into the atmosphere or into a bag.” *Id.* at 3:66–4:2. The portable leak detector also includes lamp 118 that produces the IR radiation, which “is guided by the cylindrical walls of the gas sample chamber 108 to the detector 124.” *Id.* at 4:8–11.

The portable leak detector further includes narrow pass band filter 122, which “is interposed between the lamp 118 and the detector 124, so that the only radiation reaching the detector 124 is radiation having a wavelength equal to the wavelength passed by the filter 122.” *Id.* at 4:12–15. The center of the passband of filter 122 is “selected to coincide . . . [with] the wavelength of a strong absorption band of the test gas . . . at which the ambient gas does not absorb radiation.” *Id.* at 4:15–19. Wong’s detector 124 produces an electrical signal that is “representative of the concentration of the test gas in the gas sample chamber 108.” *Id.* at 4:33–35. Signal processing circuitry 128 generates alarm 130 in response to “certain changes in the concentration of the test gas.” *Id.* at 4:38–40.

2. Overview of Wallack

Wallack is entitled “Gas Detector Unit” and discloses “[a]n infrared detector for detecting and quantitatively measuring a plurality of select gases in a gaseous medium which includes an infrared (IR) source.” Ex. 1005, [54], [57]. Radiation emitted by the IR source passes through sample tube or cell 16 containing a specimen to be measured. *Id.* at 3:29–30. Wallack describes how “[t]he two ends of the sample tube 16c and 16d are IR transmissive windows which are transmissive throughout the spectral range of interest.” *Id.* at 3:35–38. More particularly, Wallack describes how continuous variable filter 18 “is constructed to provide filter segments which will selectively pass IR waves of a particular wavelength.” *Id.* at 3:45–48. Wallack further discloses that “[a]s a result of the construction of this filter, at any one angular position[,] only a single wavelength, or narrow band of wavelengths[,] is transmitted,” and “[t]hus, by determining the wavelength at which a particular gas absorbs, the absorption point of that gas can be easily coordinated” with respect to continuous variable filter 18. *Id.* at 3:61–67. Subsequent to Wallack’s continuous variable filter 18, detector 20 is positioned. *Id.* at 5:35–36.

3. Overview of Sibley

Sibley is entitled “Apparatus and Method for Infrared Optical Electronic Qualitative Analysis of a Fluid Independent of the Temperature Thereof” and discloses “infrared qualitative analysis of a fluid independent of the temperature of the fluid.” Ex. 1006, [54], [57]. Sibley discloses infrared analyzer 26 that includes main body 36 having intersecting passages 38, 40. *Id.* at 3:43–46. Sibley further discloses that, “[a]t one end of passage 40 is an infrared source 46 for transmitting infrared energy through passage 45, tube 42 and lubricant flowing therethrough, to

the opposite end of passage 40.” *Id.* at 3:55–58. At the opposite end of passage 40, infrared detector 48 detects infrared energy passing through passage 40. *Id.* at 3:60–63. Filter 50 is placed in front of infrared detector 48 and permits only selected bandwidths of IR energy to pass. *Id.* at 3:63–66. Filter 50 can filter out all IR energy except IR energy having wavelengths in a preferred range of about 7 to 14 or an optimum range of about 9.75 to 10.25 microns. *Id.* at 5:3–7.

More particularly, Sibley discloses that:

In operation, as lubricant flows through tube 42, infrared source 46 is pulsed on for one second and off for twelve seconds by controller 76 and light timer 78. The pulse of infrared energy passes through tube 42, the lubricant flowing therethrough, filter 50, and strikes detector 48. Detector 48 generates a voltage output signal in response to the amount of infrared energy falling on its surface . . . Thus, the voltage output of the detected IR energy is a function of the amount of energy striking detector 48.

Id. at 4:64–5:3, 5:7–8.

4. Overview of Horiba

Horiba is entitled “Opto-Acoustic Gas Analyzer” and discloses “filtering out light other than the wavelengths of light absorbed by the gas being analyzed, and an opto-acoustic detector which receives the filtered light” and analyzes gas that passes through the opto-acoustic detector. Ex. 1008, [54], [57]. Horiba further discloses measuring carbon monoxide in atmospheric air using a gas analyzer that emits infrared light from black body light source 1, which is then “intercepted intermittently by a chopper 2,” and “then passes through the interference filter 3 having a plurality of solid film layers and reaches the detector 4.” *Id.* at 2:52–63. If compartments a and b of the gas analyzer are filled with a gas that does not absorb infrared rays, “there will be no pressure increase in either compartment and no displacement of the condenser diaphragm 10.” *Id.* at 2:63–67. Otherwise, if

energy absorption does occur, condenser diaphragm 10 is displaced in proportion with the concentration of carbon monoxide. *See id.* at 3:1–10.

5. Overview of Johnson Controls

Johnson Controls discloses a refrigerant leak detector that detects refrigerants and refrigerant blends. Ex. 1009, 1. Johnson Controls discloses an air pump that supplies constant air flow to a positive ion emission heated diode sensor that detects halogenated refrigerant gases, as well as a visual and an audible signal that indicates the magnitude of a leak. *Id.*

6. Overview of Moyer

Moyer is entitled “Method and Apparatus for Detecting Insect Infestation in Enclosed Areas” and discloses that the concentration of a “tell-tale gas” such as CO₂ can be determined to detect an insect infestation. Ex. 1010, [54], [57]. Moyer discloses that pump 25 pulls air through intake opening 5 down the bore of intake nozzle 10 through hose 30 and pushes it toward infrared analyzer 50. *Id.* at 4:22–25. Moyer further discloses “air being pulled through an intake nozzle [is] segregated from ambient air” and “is analyzed by the infrared analyzer and compared to the baseline CO₂ reading for the ambient air analyzed in stage 1.” *Id.* at 3:43–45, 3:53–56. Moyer discloses that its apparatus “can be set to give both visual and audible alarms.” *Id.* at 4:50–51.

7. *Whether the references teach “the leak detector detects if a leak exists in the single pressurized gas source without introducing or mixing a secondary tracer within the leak detector” as recited in independent claims 2 and 9 and as similarly recited in independent claims 6 and 7*

Claims 2 and 9 of the '993 patent recite, *inter alia*, “wherein the leak detector detects if a leak exists in the single pressurized gas source without introducing or mixing a secondary tracer within the leak detector.” For this limitation, Petitioner asserts “none of the above-cited prior art teaches the negative limitation of detecting a leak by ‘introducing or mixing a secondary tracer within the leak detector.’ *See generally* EX1004 (*Wong*); EX1005 (*Wallack*); EX1006 (*Sibley*); EX1008 (*Horiba*); EX1009 (*Johnson Controls*).” Pet. 44. Claims 6 and 7 of the '993 patent recite, *inter alia*, “wherein the leak detector detects if the gas leak exists without introducing or mixing a secondary tracer within the leak detector.” For this limitation, Petitioner makes the same assertion set forth above with respect to independent claims 2 and 9, but generally cites to Wong, Moyer, and Johnson Controls instead. *See* Pet. 58 (discussing claim 6); *see id.* at 68 (discussing claim 7).

Petitioner appears to take the position that, because the “without . . . secondary tracer” limitations are “negative” limitations (i.e., they define an invention in terms of what it is *not*), the limitation need not be disclosed expressly in a reference, but rather can be inferred to be taught by a reference as long as it does not teach affirmatively the *presence* of the feature. Stated differently, Petitioner argues that the “without . . . secondary tracer” limitations are taught or suggested by Wong, Wallack, Sibley, Horiba, Johnson Controls, and Moyer because none of these references expressly discloses detecting a leak by introducing or mixing a secondary tracer. *See* Pet. 44, 58, 68.

We are not persuaded by Petitioner’s arguments because Petitioner does not point to sufficient evidence or explain how Wong, Wallack, Sibley, Horiba, Johnson Controls, and Moyer teach or suggest the “without . . . secondary tracer” limitations recited in claims 2, 6, 7, and 9. In the present proceeding, citing to these references generally, particularly without citation to specific portions, is insufficient to meet Petitioner’s burden of persuasion. *See DeSilva v. DiLeonardi*, 181 F.3d 865, 866–67 (Fed. Cir. 1999) (“A brief must make all arguments accessible to the judges, rather than ask them to play archeologist with the record.”).

Moreover, we disagree with Petitioner’s contention that the silence of the references regarding the “without . . . secondary tracer” limitations teaches or otherwise suggests the negative limitation recited in claims 2, 6, 7, and 9. *See Santarus, Inc. v. Par Pharm., Inc.*, 694 F.3d 1344, 1351 (Fed. Cir. 2012) (“Negative claim limitations are adequately supported when the specification describes a reason to exclude the relevant limitation.”); *see also Inphi Corp. v. Netlist, Inc.*, 805 F.3d 1350, 1357 (Fed. Cir. 2015) (“We hold that *Santarus* did not create a heightened written description standard for negative claim limitations and that properly described, alternative features are sufficient to satisfy the written description standard of § 112, paragraph 1 for negative claim limitations.”)

Furthermore, Wong at least suggests “introducing or mixing a secondary tracer within the leak detector,” which is directly contrary to the negative limitations at issue. Specifically, Wong discloses

The chamber 104 that is to be tested is filled with a test gas and preferably is pressurized with the test gas so as to accelerate the leakage, if any, of the test gas from the chamber. The chamber is surrounded by an ambient gas which may be the air of the atmosphere, or, alternatively, *the chamber 104 may be placed within a larger chamber so as to permit the chamber 104 to be surrounded by a chosen*

ambient gas other than air. In another embodiment, shown in FIG. 3 a localized region on the surface of the chamber may be flooded by a chosen ambient gas that temporarily displaces the air that otherwise would be present.

Ex. 1004, 3:52–62 (emphasis added).

Petitioner’s Declarant, Mr. Laub, testifies that “Wong discloses a hand-held portable infrared leak detector . . . which detects leaks without introducing or mixing a secondary tracer,” but fails to cite any underlying record evidence supporting his testimony.² Ex. 1003 ¶ 103. Mr. Laub also fails to address the disclosure of Wong described above. Mr. Laub presents similarly unsupported testimony with respect to Wallack and Sibley. *See id.* ¶¶ 107, 113. We do not find persuasive Mr. Laub’s conclusory and unsupported testimony regarding the disclosure of Wong, Wallack, and Sibley. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”). With respect to claim 6, Mr. Laub supports his testimony by citing portions of Moyer. *Id.* ¶ 172 (citing Ex. 1010, 3:43–45, 3:53–56, 4:22–25). We have reviewed the cited portions of Moyer and disagree that they disclose or suggest the “without . . . secondary tracer” limitations recited in independent claims 2, 6, 7, and 9.

² Petitioner does not actually cite to this specific portion of Mr. Laub’s testimony. *See* 37 C.F.R. § 42.104(b)(5) (requiring petitions to include a statement of the precise relief requested, including “identifying specific portions of the evidence that support the challenge . . . [t]he Board may exclude or give no weight to the evidence where a party has failed to state its relevance or to identify specific portions of the evidence that support the challenge”). It is unnecessary to invoke rule 104(b)(5) here because even considering this portion of Mr. Laub’s testimony, we do not find its contents persuasive.

8. Summary

Based on the record before us, we determine that Petitioner has not shown sufficiently that the negative limitations of 2, 6, 7, and 9 would have been obvious in view of the asserted references. Petitioner's challenge to claim 3, which depends from independent claim 2, suffers from the same deficiency. We, therefore, determine that Petitioner has not demonstrated a reasonable likelihood of prevailing on any of its asserted obviousness challenges.

III. CONCLUSION

For the reasons discussed above, we determine that Petitioner has not demonstrated a reasonable likelihood it would prevail in establishing the unpatentability of challenged claims 2, 3, 6, 7, and 9 of the '993 patent. Accordingly, we decline to institute an *inter partes* review.

IV. ORDER

In consideration of the foregoing, it is

ORDERED that the petition for *inter partes* review is *denied* and no trial is instituted.

IPR2017-00362
Patent 7,022,993

FOR PETITIONER:

Niky Bukovcan
BUETHER JOE & CARPENTER, LLC
Niky.Bukovcan@BJCIPLaw.com

John R. Kasha
KASHA LAW LLC
John.Kasha@kashalaw.com

FOR PATENT OWNER:

Russell O. Paige
FARKAS + TOIKKA, LLP
rop@farkastoikka.com

Lawrence Harbin
HARBIN & HEIN PLLC
larry.harbin@verizon.net