

No. 13-

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IN THE  
**Supreme Court of the United States**

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NAUTILUS, INC.,

*Petitioner,*

*v.*

BIOSIG INSTRUMENTS, INC.,

*Respondent.*

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ON PETITION FOR A WRIT OF CERTIORARI TO THE  
UNITED STATES SUPREME COURT OF APPEALS  
FOR THE FEDERAL CIRCUIT

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**PETITION FOR A WRIT OF CERTIORARI**

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## **QUESTIONS PRESENTED**

Does the Federal Circuit’s acceptance of ambiguous patent claims with multiple reasonable interpretations—so long as the ambiguity is not “insoluble” by a court—defeat the statutory requirement of particular and distinct patent claiming?

Does the presumption of validity dilute the requirement of particular and distinct patent claiming?

**RULE 29.6 STATEMENT**

Nautilus, Inc. has no parent corporation, and no publicly held corporation owns 10% or more of its stock.

**TABLE OF CONTENTS**

	<i>Page</i>
QUESTIONS PRESENTED .....	i
RULE 29.6 STATEMENT .....	ii
TABLE OF CONTENTS.....	iii
TABLE OF APPENDICES .....	v
TABLE OF CITED AUTHORITIES .....	vi
PETITION FOR A WRIT OF CERTIORARI.....	1
OPINIONS BELOW.....	1
JURISDICTION.....	1
STATUTORY PROVISIONS INVOLVED.....	2
INTRODUCTION.....	2
STATEMENT OF THE CASE .....	5
REASONS FOR GRANTING THE PETITION.....	14
I. THE FEDERAL CIRCUIT HAS MISINTERPRETED THE STATUTE .....	14
A. THE FEDERAL CIRCUIT’S VIEW IS INCOMPATIBLE WITH THIS COURT’S INTERPRETATION...	15

*Table of Contents*

	<i>Page</i>
B. THE PRESUMPTION OF VALIDITY DOES NOT DILUTE THE STATUTORY REQUIREMENT FOR DEFINITE CLAIMS .....	18
C. THE FEDERAL CIRCUIT IMPROPERLY ALLOWS VAGUE CLAIMS TO BE CURED BY CLAIM CONSTRUCTION .....	19
D. A SECOND CIRCUIT RULING EXEMPLIFIES THE FEDERAL CIRCUIT'S ERROR .....	20
II. THIS ERROR HAS DAMAGED OUR PATENT SYSTEM .....	21
III. THIS CASE IS THE IDEAL VEHICLE THAT <i>APPLERA</i> WAS NOT .....	23
CONCLUSION .....	26

**TABLE OF APPENDICES**

	<i>Page</i>
APPENDIX A — ORDER OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT, FILED JUNE 28, 2013.....	1a
APPENDIX B — OPINION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT, FILED APRIL 26, 2013.....	3a
APPENDIX C — ORDER OF THE UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF NEW YORK, FILED JUNE 12, 2012 .....	33a
APPENDIX D — JUDGMENT OF THE UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF NEW YORK, FILED FEBRUARY 23, 2012 .....	36a
APPENDIX E — SUMMARY ORDER OF THE UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF NEW YORK, FILED FEBRUARY 13, 2012.....	38a
APPENDIX F — SUMMARY ORDER OF THE UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF NEW YORK, FILED SEPTEMBER 29, 2011 .....	40a
APPENDIX G — TRANSCRIPT OF PROCEEDINGS OF THE UNITED STATES DISTRICT COURT, SOUTHERN DISTRICT OF NEW YORK, DATED FEBRUARY 22, 2012.....	50a

## TABLE OF CITED AUTHORITIES

	<i>Page</i>
<b>CASES</b>	
<i>Applera Corp. v. Enzo Biochem, Inc.</i> , 131 S. Ct. 847 (2010) . . . . .	23, 24
<i>Applera Corp. v. Enzo Biochem, Inc.</i> , 131 S. Ct. 3020 (2011) . . . . .	23
<i>Bilski v. Kappos</i> , 130 S. Ct. 3218 (2010) . . . . .	17
<i>Biosig Instruments, Inc. v. Nautilus, Inc.</i> , 715 F.3d 891 (Fed. Cir. 2013) . . . . .	1
<i>Datamize, LLC v. Plumtree Software, Inc.</i> , 417 F.3d 1342 (Fed. Cir. 2005) . . . . .	3, 16, 24
<i>Enzo Biochem, Inc. v. Applera Corp.</i> , 605 F.3d 1347 (Fed. Cir. 2010) . . . . .	4, 17, 19, 20
<i>Evans v. Eaton</i> , 20 U.S. 356 (1822) . . . . .	15
<i>Ex Parte Miyazaki</i> , 2008 WL 5105055 (B.P.A.I. Nov. 19, 2008) . . . . .	17
<i>Exxon Research &amp; Eng'g Co. v. United States</i> , 265 F.3d 1371 (Fed. Cir. 2001) . . . . .	<i>passim</i>
<i>Festo Corp. v.</i> <i>Shoketsu Kinzoku Kogyo Kabushiki Co.</i> , 535 U.S. 722 (2002) . . . . .	16, 18

*Cited Authorities*

	<i>Page</i>
<i>Gen. Elec. Co. v. Wabash Appliance Corp.</i> , 304 U.S. 364 (1938) . . . . .	15, 21
<i>In re Schreiber</i> , 128 F.3d 1473 (Fed. Cir. 1997) . . . . .	22
<i>KSR Int’l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007) . . . . .	17
<i>Markman v. Westview Instruments, Inc.</i> , 517 U.S. 370 (1996) . . . . .	2
<i>Merrill v. Yeomans</i> , 94 U.S. 568 (1876) . . . . .	3, 15, 17, 18
<i>Microsoft Corp. v. i4i Ltd.</i> , 131 S. Ct. 2238 (2011) . . . . .	5, 19
<i>Motion Picture Patents Co. v.</i> <i>Universal Film Mfg. Co.</i> , 243 U.S. 502 (1917) . . . . .	2
<i>Norton Co. v. Bendix Corp.</i> , 449 F.2d 553 (2d Cir. 1971) . . . . .	20, 21
<i>Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.</i> , 537 F.3d 1357 (Fed. Cir. 2008) . . . . .	3, 19
<i>Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.</i> , 655 F.3d 1364 (Fed. Cir. 2011) . . . . .	19-20



*Cited Authorities*

	<i>Page</i>
<i>United Carbon Co. v. Binney &amp; Smith Co.</i> , 317 U.S. 228 (1942) . . . . .	<i>passim</i>
<i>Universal Oil Prods. Co. v. Globe Oil &amp; Ref'g Co.</i> , 322 U.S. 471 (1944) . . . . .	15

**STATUTES**

28 U.S.C. § 1254 . . . . .	1
28 U.S.C. § 1295 . . . . .	1
28 U.S.C. § 1331 . . . . .	1
28 U.S.C. § 1338 . . . . .	1
35 U.S.C. § 112 . . . . .	2, 3, 19
35 U.S.C. § 154 . . . . .	2
35 U.S.C. § 271 . . . . .	2
35 U.S.C. § 282 . . . . .	2

**OTHER AUTHORITIES**

Christopher A. Cotropia, <i>The Folly of Early Filing in Patent Law</i> , 61 <i>Hastings L.J.</i> 65 (2009) . . . . .	22
--	----

*Cited Authorities*

	<i>Page</i>
Executive Office of the President, <i>Patent Assertion and U.S. Innovation</i> (June 4, 2013) . . . .	.22
Federal Trade Comm’n, <i>The Evolving IP Marketplace: Aligning Patent Notice and Remedies with Competition</i> (2011) . . . . .	22-23
Robert C. Faber, <i>Faber on Mechanics of Patent Claim Drafting</i> 10-3 (6th ed. 2011) . . . . .	4
<i>Supplementary Examination Guidelines for Determining Compliance With 35 U.S.C. 112 and for Treatment of Related Issues in Patent Applications</i> , 76 Fed. Reg. 7162 (2011) . . . . .	17
U.S. Gov’t Accountability Office, <i>Intellectual Property: Assessing Factors That Affect Patent Infringement Litigation Could Help Improve Patent Quality</i> , GAO-13-465 (Aug. 2013) . . . . .	4, 5
White House, <i>FACT SHEET: White House Task Force on High-Tech Patent Issues</i> (June 4, 2013) .	.22

## PETITION FOR A WRIT OF CERTIORARI

Petitioner, Nautilus, Inc. (“Nautilus”) respectfully petitions this Court for a writ of certiorari to review the judgment of the Court of Appeals for the Federal Circuit in this case.

### OPINIONS BELOW

The summary order of the United States District Court for the Southern District of New York, granting summary judgment to Petitioner that the patent claims are invalid for indefiniteness, is unreported, but is reproduced in the appendix to this petition (Pet. App.) at 38a-39a. This order references “the reasons stated on the record” at the summary judgment hearing, the transcript of which is reproduced at Pet. App. 50a-106a. The order denying Respondent’s motion for reconsideration is unreported and reproduced at 33a-35a. The opinion of the Federal Circuit and Judge Schall’s concurring opinion are reported at 715 F.3d 891, and reproduced at Pet. App. 3a-32a. The Federal Circuit’s order denying rehearing en banc is unreported and reproduced at 1a-2a.

### JURISDICTION

The district court had jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a). The court of appeals had jurisdiction based on 28 U.S.C. § 1295(a)(1). The court of appeals entered its judgment April 26, 2013. Pet. App. 3a. A timely petition for rehearing en banc was denied on June 28, 2013. Pet. App. 2a-3a. This Court has jurisdiction pursuant to 28 U.S.C. § 1254(1).

## STATUTORY PROVISIONS INVOLVED

“The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112 ¶ 2.<sup>1</sup>

“A patent shall be presumed valid. . . .” 35 U.S.C. § 282(a).

## INTRODUCTION

A patent claim is “the portion of the patent document that defines the scope of the patentee’s rights.” *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996). “These so mark where the progress claimed by the patent begins and where it ends that they have been aptly likened to the description in a deed, which sets the bounds to the grant which it contains.” *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 510 (1917). Because the patentee is granted “the right to exclude others from making, using, offering for sale, or selling” the invention, 35 U.S.C. § 154(a)(1); *see also* § 271(a), “[i]t has long been understood that a patent must describe the exact scope of an invention,” *Markman*, 517 U.S. at 373. Otherwise, a “zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention.”

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1. As noted by the Federal Circuit, “Paragraph 2 of 35 U.S.C. § 112 was replaced with newly designated § 112(b) when § 4(c) of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, took effect on September 16, 2012. Nevertheless, the pre-AIA version of § 112 applies because the [patent-in-suit] issued prior to that date.” Pet. App. 12a n.8.

*United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 236 (1942).

Accordingly, the Patent Act requires every patent to “conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112 ¶ 2. This is known as the “definiteness” requirement, and this Court has consistently held that it “is met only when [patent claims] clearly distinguish what is claimed from what went before in the art and clearly circumscribe what is foreclosed from future enterprise,” *United Carbon*, 317 U.S. at 236, “leav[ing] no excuse for ambiguous language or vague descriptions.” *Merrill v. Yeomans*, 94 U.S. 568, 573 (1876).

The Federal Circuit holds a different view. It expressly tolerates ambiguous patent claims with multiple reasonable meanings, so long as courts can construe the claim to “inform skilled artisans of the bounds of the claim.” Pet. App. 13a (quoting *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1371 (Fed. Cir. 2008)). In other words, the Federal Circuit has shifted the public-notice function from the patent claim to a court’s construction of the claim. Under this view, a “claim is indefinite only when it is ‘not amenable to construction’ or ‘insolubly ambiguous.’” *Id.* (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005)).

This case illustrates the lengths to which the Federal Circuit has retreated from the statutory definiteness requirement. The majority construed the claim language at issue in a manner no party sought, based on a supposed

test first described 15 years after the patent issued, and despite four judges reaching three different claim constructions.

This tolerance of ambiguous patent claims has had predictable and regrettable consequences. First, it has invited patent drafters to obfuscate the invention. *See Enzo Biochem, Inc. v. Applera Corp.*, 605 F.3d 1347, 1348 & n.2 (Fed. Cir. 2010) (Plager, J., dissenting from denial of reh'g) (noting that “inherently ambiguous” claim drafting is viewed as “a prized talent”); Robert C. Faber, *Faber on Mechanics of Patent Claim Drafting* 10-3 (6th ed. 2011) (admonishing patent drafters to leave claim language open to multiple interpretations, so as to cover even “competitive products which neither the inventor nor the attorney thought of or could even have imagined at the time”). Second, it has forced courts to “spend a substantial amount of judicial resources trying to make sense of unclear, overbroad, and sometimes incoherent claim terms.” *Enzo Biochem.*, 605 F.3d at 1349 (Plager, J., dissenting from denial of reh'g). Third, it has granted patent owners a “zone of uncertainty” into which competitors may enter only at risk of an infringement suit. *See United Carbon*, 317 U.S. at 236.

An August 2013 GAO report to Congress identifies “unclear and overly broad patents” as one of three key factors cited by stakeholders as contributing the recent increase in patent litigation. U.S. Gov't Accountability Office, *Intellectual Property: Assessing Factors That Affect Patent Infringement Litigation Could Help Improve Patent Quality*, GAO-13-465, at 28 (Aug. 2013). “Several diverse stakeholders, including PME[s] [patent monetization entities], operating companies, legal

commentators, and judges we interviewed said that many overly broad or vague patent claims do not sufficiently identify the scope of the patent's coverage." *Id.* at 30.

This case presents the important question of whether patent claims must be clear and definite when issued, or only after being construed by a court. This Court should resolve that question.

This case also presents this related question: does the presumption of patent validity dilute the requirement of particular and distinct patent claiming? The Federal Circuit holds that it does: "By embracing this standard, 'we accord respect to the statutory presumption of patent validity, and we protect the inventive contribution of patentees, even when the drafting of their patents has been less than ideal.'" Pet. App. 22a (quoting *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001)). Members of this Court have indicated otherwise. *See Microsoft Corp. v. i4i Ltd.*, 131 S. Ct. 2238, 2253 (2011) (Breyer, J., concurring) ("Many claims of invalidity rest . . . upon how the law applies to facts as given. . . . Do they show that the patent applicant described his claims properly? § 112. Where . . . patent validity turns on the correct answer to legal questions . . . today's strict standard of proof has no application."). This Court should resolve this question also.

### STATEMENT OF THE CASE

This case illustrates the harm caused when courts tolerate ambiguous patent claims. First, the patent applicant obfuscated his alleged invention, in his original patent and in its reexamination in the Patent Office 14

years later. Second, trial court and appellate court judges have struggled to make sense of the claims, with four judges reaching three different interpretations. Third, the patent owner has exploited this “zone of uncertainty” by repeatedly shifting the supposed meaning of these malleable claims to suit its shifting purposes.

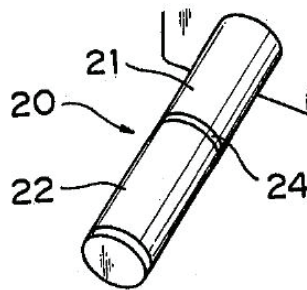
The patent-in-suit issued in 1994 describing a heart rate monitor circuit design that had already been described in another patent issued ten years earlier, to Fujisaki, et al., U.S. Patent No. 4,444,200 (“Fujisaki”). The Fujisaki design measured one’s heart rate using an internal circuit centered on a “differential amplifier.” This differential amplifier allows the circuit to amplify the electrical signals of interest, namely those associated with the user’s heartbeat, relative to other signals not of interest, such as signals associated with other muscle activity. The Fujisaki design connected this differential amplifier to two pairs of grip sensors, one pair on each side of a handle bar, connected to the differential amplifier and to ground. This is described in the Abstract of the 1984 Fujisaki prior-art patent (emphases added):

A heart pulse rate measuring system comprises a casing, a pair of rod-shaped grip sensors extending outwardly from the opposite sides of the casing for sensing a heart pulse signal, and an electric circuit for calculating a heart pulse rate from the sensed heart pulse signal. *Each of the grip sensors is composed of two conductive cylindrical electrodes arranged in an axially aligned relationship and electrically insulated from each other* for obtaining a pulse rate utilizing the potentials at four points in a user’s



body. *The electric circuit includes a differential amplifier, having a ground connection to one of the two electrodes of each sensor and two inputs for the remaining electrodes.* A filter is used to eliminate noise from the output of the differential amplifier, and a computer calculates the heart rate from the output of the filter.

An excerpt of a drawing in Fujisaki depicts one pair of its grip-sensor electrodes, 21 and 22, spaced apart by insulating “spacer 24”:



The patent-in-suit, U.S. Patent No. 5,337,753 (“Lekhtman”), describes the same design as Fujisaki. Mr. Gregory Lekhtman filed his patent application in 1992, eight years after Fujisaki issued. Like Fujisaki, Lekhtman uses a differential amplifier. Like Fujisaki, Lekhtman uses a pair of spaced-apart grip sensors on each opposite side of a grip bar. Like Fujisaki, one half of each pair of sensors is wired to the ground and the other half is wired to the differential amplifier. Like Fujisaki, the output of the differential amplifier is fed into a filter circuit to remove noise. Neither the Examiner nor Mr. Lekhtman cited the prior art Fujisaki patent when Mr. Lekhtman’s patent application was examined and originally granted.

Some 14 years after the Lekhtman patent was issued, however, it was subjected to a Patent Office Reexamination proceeding in which Fujisaki was cited as prior art. Mr. Lekhtman convinced the Patent Office to reapprove his patent despite Fujisaki. He managed this by focusing on alleged small differences in the spacing between the electrodes in each grip-sensor pair—even though both his and Fujisaki’s electrodes were similarly spaced. Specifically, Mr. Lekhtman argued that Fujisaki’s spaced-apart electrodes did not have the “spaced relationship” recited in claim 1 of his patent:

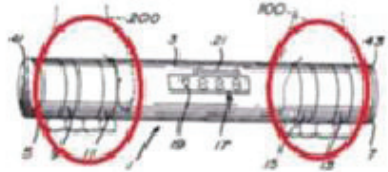
a first live electrode and a first common electrode mounted on said first half *in spaced relationship* with each other;

a second live electrode and a second common electrode mounted on said second half *in spaced relationship* with each other;

Lekhtman at 5:28-33 (emphases added); *see also id.* at 1:53-58.

His patent did not explain the meaning of “spaced relationship.” This silence allowed Mr. Lekhtman to cite this undefined claim language to distinguish other spaced-apart grip sensors (electrodes) as well. Specifically, he told the Patent Office that the electrodes in the first and third designs below (“Lekhtman” and “Galiana”) have the required “spaced relationship,” while the similarly spaced electrodes in the second and fourth designs (“Fujisaki” and “E” Factor) do not.

**Lekhtman  
'753**



**YES**

**Lekhtman  
"E" Factor  
(prior art)**



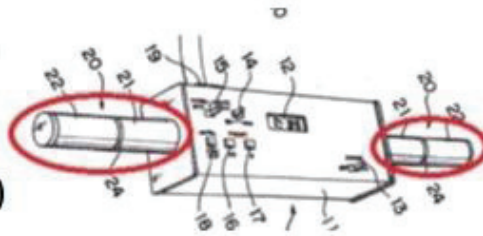
**NO**

**Galiana**



**YES**

**Fujisaki  
(prior art)**



**NO**

As the above pictures show, it is not readily apparent why two of these supposedly have the claimed “spaced relationship” while two do not.

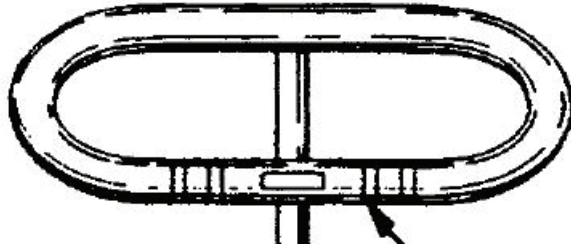
As explained below, this malleable claim language, “spaced relationship,” has undergone multiple metamorphoses.

Patent: Does Not Define “Spaced Relationship”: The Lekhtman patent does not define “spaced relationship.” Of course, the electrodes need to be close enough so one’s hand can grip both halves simultaneously, but not so close that they touch and short the circuit. (Both of these obvious constraints were equally true of Fujisaki, of course.) But, Lekhtman gives no further guidance on this spacing. It gives no example of a particular spacing that is too wide, or too narrow, or just right. Nor does it give any test one might use to determine if a particular spacing qualifies as a “spaced relationship.” Nor does it describe any advantages or disadvantages of making the gap narrower or wider. It does not, e.g., suggest that the width of the spacing affects the performance of the differential amplifier. All the Lekhtman patent says about this spacing is that the electrodes are “spaced from” each other. *See* Lekhtman at 2:47-64.

2009 Lekhtman Declaration: Spaced Further Apart Than An Electrode’s Width: In 2009, Mr. Lekhtman submitted to the Patent Office a 32-page declaration to try to distinguish Fujisaki. He wrote: “In the [Fujisaki] ’200 patent, the space between electrodes is narrower than the width of each electrode, whereas in the [Lekhtman] ’753 patent the space between electrodes is wider than the width of each electrode.” JA241 ¶ 79.<sup>2</sup> Below is a portion of Figure 5 of the Lekhtman patent showing an inter-electrodes spacing slightly wider than an electrode’s width:

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2. The JA cites refer to the Joint Appendix filed with the Federal Circuit in Appeal No. 2012-1289.



Trial Judge: Indefinite: Based on Mr. Lekhtman’s above-quoted representation to the Patent Office, the trial judge tentatively accepted a construction requiring the electrodes’ spacing to be greater than each electrode’s width: “[T]he spaced relationship arises from trial and error placements of the two electrodes on the cylindrical bar. Once placed, they’re in a space[d] relationship. That spaced relationship must be greater than the width of each electrode.” JA1391.

But, the Respondent, Biosig Instruments, Inc. (“Biosig” or “Plaintiff”), objected to the trial court adopting what Mr. Lekhtman had told the Patent Office in the above-quoted declaration statement. (Plaintiff’s reason was apparent. This wider-than-electrode-width interpretation would defeat Plaintiff’s infringement case.) Biosig instead contended that the size, shape, material and spacing of the active electrodes cannot be standardized for all exercise handles. Analyses must be made on a machine-specific basis. *See* JA201. Nothing in the patent suggested anything of the kind. Instead, Plaintiff pointed to other statements in Mr. Lekhtman’s 2009 declaration to the Patent Office, and to its expert’s report regarding alleged testing of a mock-up of Lekhtman’s design (depicted above as “Galiana”) and a purported mock-up of the Fujisaki design.

Based on Plaintiff's arguments, the trial court abandoned its tentative construction, and instead construed "spaced relationship" as follows: "[A] defined relationship between the live electrode and the common electrode on one side of the cylindrical bar and the same or a different defined relationship between the live electrode and the common electrode on the other side of the cylindrical bar." Pet. App. 43a-44a.

But, the trial court then found the claim, so construed, indefinite. The trial judge found that the plaintiff's submissions to the Patent Office during reexamination were internally inconsistent and "gibberish." JA1389. "A spaced relationship did not tell me or anyone what precisely the space should be . . . . Not even any parameters as to what the space should be . . . ." Pet. App. 72a.

Federal Circuit Majority: Functional: The panel majority opinion found the disputed claim language amenable to construction and not insolubly ambiguous, and therefore sufficient under Federal Circuit jurisprudence. Other than noting that the electrodes cannot be touching and need to be gripped simultaneously by a hand, the majority did not give a precise construction of the disputed claim language. Instead, it espoused a new "pertaining to the function" interpretation that no party had urged for claim construction in the District Court:

In summary, the claims provide inherent parameters sufficient for a skilled artisan to understand the bounds of 'spaced relationship.' In addition, a skilled artisan could apply a test and determine the 'spaced relationship' as *pertaining to the function* of substantially

removing EMG signals. Indeed, the test would have included a standard oscilloscope connected to both the inputs and outputs of the differential amplifier to view the signal wave forms and to measure signal characteristics. With this test, configurations could have been determined by analyzing the differential amplifier input and output signals for detecting EMG and ECG signals and observing the substantial removal of EMG signals from ECG signals while simulating an exercise. These parameters constitute the metes and bounds of ‘spaced relationship’ as articulated in the ‘753 patent. Nothing more rigorous is required under § 112, ¶ 2.

Pet. App. 20a (emphasis added).

Thus, the majority opinion construed the claims based primarily on evidence created 15 years after the patent issued, to require a “test” not described in the patent nor in any document contemporaneous to the patent.

Federal Circuit Concurrence: Any Spacing That A Hand Can Bridge: The panel’s third judge agreed that the claim language was not “insolubly ambiguous,” but would have construed the term more broadly. *See* Pet. App. 29a-32a. Judge Schall would construe “spaced relationship” as any “fixed spatial relationship” that allows both electrodes to be held simultaneously, but not touch. *Id.* at 31a. This combined portions of the trial judge’s construction with portions of the majority’s construction. But, the concurring judge faulted the majority for allowing a functional limitation elsewhere in the claim to color its

construction of “spaced relationship,” even though nothing in the claim linked that functional limitation to the spacing of the electrodes. *Id.* at 31a-32a.

## **REASONS FOR GRANTING THE PETITION**

### **I. THE FEDERAL CIRCUIT HAS MISINTERPRETED THE STATUTE**

Rather than determining whether the “claims particularly point[] out and distinctly claim[]” the invention, as required by the statute, the panel followed Federal Circuit precedent requiring only that “the meaning of the claim is discernible, even though . . . the conclusion may be one over which reasonable persons will disagree.” Pet. App. 22a (quoting *Exxon*, 265 F.3d at 1375). More specifically, the Federal Circuit tolerates ambiguous patent claims so long as a court can craft a clear claim construction: “[I]f reasonable efforts at claim construction result in a definition that does not provide sufficient particularity and clarity to inform skilled artisans of the bounds of the claim, the claim is insolubly ambiguous and invalid for indefiniteness.” *Id.* at 30a. “[A] construed claim can be indefinite if the construction remains insolubly ambiguous.” *Id.* at 13a. In other words, the Federal Circuit has shifted the public-notice function from the issued patent claim to a court’s claim construction announced years later or, even, after the patent has expired, as here.

This shift often leads, as it did in this case, to upholding an ambiguous claim despite multiple judges reaching conflicting decisions regarding its scope, and despite those in the art not knowing in advance which of multiple possible constructions a future court will adopt.



### A. THE FEDERAL CIRCUIT'S VIEW IS INCOMPATIBLE WITH THIS COURT'S INTERPRETATION

This Court has required clarity in patent claims for over a century. The patent statute “leave[s] no excuse for ambiguous language or vague descriptions,” *Merrill*, 94 U.S. at 573. Clarity is required to protect the public. *United Carbon*, 317 U.S. at 236 (“The statutory requirement” is designed to prevent a “zone of uncertainty which . . . would discourage invention.”); *Universal Oil Prods. Co. v. Globe Oil & Ref’g Co.*, 322 U.S. 471, 484 (1944) (“The claim is required to be specific for the very purpose of protecting the public against extension of the scope of the patent.”); *Gen. Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 369 (1938) (“The statute seeks to guard against unreasonable advantages to the patentee and disadvantages to others arising from uncertainty as to their rights . . . so that it may be known which features may be safely used or manufactured without a license and which may not.” (internal footnote omitted)); *Evans v. Eaton*, 20 U.S. 356, 434 (1822) (explaining that the public must be informed as to what is claimed as the invention to prevent the patentee from “practicing upon the credulity or the fears of other persons, by pretending that his invention is more than what it really is”).

Under this Court’s case law, it is not too much to ask of an inventor to define the terminology used in a patent application whenever it is open to multiple reasonable interpretations. For example, when the scope of an alleged invention can only be determined through testing, it is not too much to ask that the inventor describe those tests,

precisely, in the patent application, or cite to industry standards or other publications describing those tests.

Indeed, failure to demand such clarity from inventors undermines the delicate balance on which our Patent System depends:

The patent laws “promote the Progress of Science and useful Arts” by rewarding innovation with a temporary monopoly. U.S. Const., Art. I, § 8, cl. 8. The monopoly is a property right; and like any property right, its boundaries should be clear. *This clarity is essential to promote progress, because it enables efficient investment in innovation.* A patent holder should know what he owns, and the public should know what he does not. For this reason, the patent laws require inventors to describe their work in “full, clear, concise, and exact terms,” 35 U. S. C. § 112, as part of the delicate balance the law attempts to maintain between inventors, who rely on the promise of the law to bring the invention forth, and the public, which should be encouraged to pursue innovations, creations, and new ideas beyond the inventor’s exclusive rights.

*Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 730-31 (2002) (emphasis added).

In contrast, under Federal Circuit precedent, “the definiteness of claim terms depends on whether those terms can be given *any reasonable meaning.*” *Datamize*, 417 F.3d at 1347 (emphasis added). This standard invites applicants to obscure the claimed invention, such that

the public is “deprived of rights supposed to belong to it, without being clearly told what it is that limits these rights.” *Merrill*, 94 U.S. at 573. Why define an invention precisely in a patent application if the courts will allow you years later to explain what was meant, with the accused product in front of you? Why define precisely how a desired result is achieved if the courts will allow your claims to cover whatever works to achieve the desired result?

The “insoluble ambiguity” standard represents yet another significant divergence between Supreme Court and Federal Circuit precedent, and this case presents an opportunity to resolve the error. *See, e.g., Bilski v. Kappos*, 130 S. Ct. 3218, 3231 (2010) (“[T]he Court once again declines to impose limitations on the Patent Act that are inconsistent with the Act’s text.”); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 427-28 (2007) (“[T]he Court of Appeals analyzed the issue in a narrow, rigid manner inconsistent with § 103 and our precedents.”).

The current Patent Office rules do not tolerate ambiguity. *See Supplementary Examination Guidelines for Determining Compliance With 35 U.S.C. 112 and for Treatment of Related Issues in Patent Applications*, 76 Fed. Reg. 7162, 7164 (2011) (“[I]f the language of a claim . . . is such that a person of ordinary skill in the relevant art would read it with more than one reasonable interpretation, then a rejection under § 112, ¶ 2 is appropriate.”); *see also Ex Parte Miyazaki*, No. 2007-3300, 2008 WL 5105055 (B.P.A.I. Nov. 19, 2008). It is time for this Court “to support the PTO in requiring that the walls surrounding the claimed invention be made of something other than quicksand.” *Enzo Biochem*, 605 F.3d at 1349 (Plager, J., dissenting from denial of reh’g).

## **B. THE PRESUMPTION OF VALIDITY DOES NOT DILUTE THE STATUTORY REQUIREMENT FOR DEFINITE CLAIMS**

The Federal Circuit has justified its permissive stance by referring to the statutory presumption of validity. “By embracing this standard, ‘we accord respect to the statutory presumption of patent validity, and we protect the inventive contribution of patentees, even when the drafting of their patents has been less than ideal.’” Pet. App. 22a (quoting *Exxon*, 265 F.3d at 1375). The statute and Supreme Court provide no such safety net. *See, e.g., Merrill*, 94 U.S. at 573-74 (“It seems to us that nothing can be more just and fair, both to the patentee and to the public, than that the former should understand, and correctly describe, just what he has invented, and for what he claims a patent.”).

The Federal Circuit panel defended its approach as protecting patentees. But, that is *not* the primary purpose of the particular and distinct claiming requirement. As this Court explained in *Festo*, the public must know what the patent does not cover so that it can pursue innovations, creations, and new ideas beyond the inventor’s exclusive rights. *Festo*, 535 U.S. at 731. The Federal Circuit’s approach defeats this policy by encouraging ambiguous claims so long as they eventually can be clarified in claim construction.

Additionally, particular and distinct claiming is a question of law that does not turn on underlying factual disputes. *Exxon*, 265 F.3d at 1376. The statutory presumption of validity has no application beyond assigning to challengers the burden of pleading and establishing

the defense. It does not dilute Section 112's particular and distinct claiming requirement. *See Microsoft*, 131 S. Ct. at 2253 (Breyer, J., concurring) (“[T]he evidentiary standard of proof applies to questions of fact and not to questions of law. . . . Where the ultimate question of patent validity turns on the correct answer to legal questions . . . today’s strict standard of [clear and convincing] proof has no application.”).

### **C. THE FEDERAL CIRCUIT IMPROPERLY ALLOWS VAGUE CLAIMS TO BE CURED BY CLAIM CONSTRUCTION**

The “insolubly ambiguous” standard analyzes the definiteness of judicially-crafted claim *constructions*, rather than the claims. This is improper. Section 112 requires more than asking “if a person of ordinary skill in the art can come up with a plausible meaning for a disputed claim term.” *Enzo Biochem*, 605 F.3d at 1348 (Plager, J., dissenting from denial of reh’g).

As an initial matter, the purpose of claim construction is to articulate in lay terms the understanding of those skilled in the art. But, the Federal Circuit has turned to claim construction to explain to those skilled in the art what the claims mean. *See* Pet. App. 30a (Claims will be held indefinite “if reasonable efforts at claim construction result in a definition that does not provide sufficient particularity and clarity *to inform skilled artisans of the bounds of the claim.*” (quoting *Star Scientific*, 537 F.3d at 1371) (emphasis added)); *see also id.* at 13a (“[A] construed claim can be indefinite if the construction remains insolubly ambiguous . . . .” (quoting *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1373 (Fed.

Cir. 2011))). In other words, where the statute requires the patent *claims* to particularly point out and distinctly claim the invention, the Federal Circuit instead requires this clarity only of the claim's *construction*.

Analyzing claim constructions, not claims, for particularity and distinctness, means that the public cannot know the scope of ambiguous claims until the courts have definitively construed them. *See Enzo Biochem*, 605 F.3d at 1348 (Plager, J., dissenting from denial of reh'g) (“[I]t is not until three court of appeals judges randomly selected for that purpose pick the ‘right’ interpretation that the public, not to mention the patentee and its competitors, know what the patent actually claims.”). That may not happen after the patent has expired, as here. And rarely will that happen before the public has been forced to make investment decisions that may or may not be impacted by the patent.

#### **D. A SECOND CIRCUIT RULING EXEMPLIFIES THE FEDERAL CIRCUIT’S ERROR**

The Federal Circuit’s retreat from requiring clarity in claims is illustrated by comparing this case to pre-Federal Circuit opinions, such as *Norton Co. v. Bendix Corp.*, 449 F.2d 553 (2d Cir. 1971), which found indefinite similar claim terms. In *Norton*, the Second Circuit invalidated a claim related to a vacuum pump, reciting in part, “a guard ring surrounding the nozzle in *closely spaced* relation to the lip . . . extending in the direction of the jet a *substantial distance* beyond said lip . . . with the result that undesirable constituents of the vapour jet are removed almost completely.” *Id.* at 554. The court noted that “there were several commercial compositions falling

within the peripheral area of uncertainty” created by the italicized limitations, and relied on *United Carbon* in carrying out its “duty to invalidate the claims.” *Id.* at 557. This ambiguity was particularly problematic “where, as here, great emphasis is placed by the plaintiffs themselves on the language used as distinguishing the invention from the prior art.” *Id.* And the plaintiffs’ witnesses themselves testified inconsistently, including the inventor, who declined to identify specific measurable distances, stating instead that “[t]he guard ring has a function *and the description of the guard ring relates to this function.*” *Id.* at 556 (emphasis in original). The court also cited this Court’s opinion in *General Electric*, which cautions against the “vice” of “us[ing] conveniently functional language at the exact point of novelty.” 304 U.S. at 371.

The facts of *Norton* are strikingly similar to this case. As described above, Biosig attempted to distinguish the Fujisaki prior art and E-factor prior art based on the “spaced relationship” term; the named inventor submitted contradictory statements regarding the bounds of the “spaced relationship” to the Patent Office; and Biosig ultimately sought to limit the term based on an allegedly novel result (a substantially zero EMG signal) without any novel structure. The two decisions are irreconcilable.

## **II. THIS ERROR HAS DAMAGED OUR PATENT SYSTEM**

This case is a stark illustration of the problems wrought by the Federal Circuit’s misinterpretation of the statute. The patent issued in 1994 was treated, in effect, as a blank check whose scope could be filled in 15 years later and backdated to 1994. But, the impact of

the “insolubly ambiguous” standard extends far beyond this case. “Unclear patent boundaries create many of the problems of the patent system,” including the expense of unnecessary judicial resources to resolve the ambiguities. Christopher A. Cotropia, *The Folly of Early Filing in Patent Law*, 61 *Hastings L.J.* 65, 118 (2009).

The current Administration has very recently and specifically expressed concern regarding vague and overbroad patents. In June, the Administration, recognizing concerns regarding, among other things, “patents with overly broad claims,” called for new “strategies to improve claim clarity” and targeted training at the PTO regarding “scrutiny of functional claims.” See White House, *FACT SHEET: White House Task Force on High-Tech Patent Issues* (June 4, 2013). A report issued by the White House on the same day emphasized the importance of clarity in patent claims “to enable skilled practitioners in the relevant field to understand” the alleged invention. See Executive Office of the President, *Patent Assertion and U.S. Innovation*, at 7 (June 4, 2013). The report expressed concern regarding patent-litigation abuse involving “patents whose claim boundaries are unclear” as well as “very broad and/or vague claims.” *Id.* at 4, 7-8. The report particularly criticized the prevalence of “functional claiming,” whereby—as the majority found in this case—a feature is claimed for “what it does rather than what it is.” *Id.* at 8 & n.4 (citing *In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997)).

Similarly, the Federal Trade Commission (“FTC”) recently urged courts to “focus on indefiniteness to address functional claiming in general, in order to ensure disclosure of what is within and what is outside of the patent.” Federal Trade Comm’n, *The Evolving IP*



*Marketplace: Aligning Patent Notice and Remedies with Competition* 102 (2011); see also *id.* at 95 & nn.140-43 (recognizing that the Federal Circuit has “shifted focus” by crafting a test for indefiniteness based on whether claims are “amenable to construction, however difficult that task may be” (quoting *Exxon*, 265 F.3d at 1375)). The FTC specifically noted that the Federal Circuit’s insolubly ambiguous standard “accepts substantial ambiguity,” “overstates what third parties making marketplace decisions are likely to understand,” and “provides little notice of scope” when claims have more than one reasonable meaning. *Id.* at 99.

### **III. THIS CASE IS THE IDEAL VEHICLE THAT APPLERA WAS NOT**

This Court has recently indicated a specific interest in the particular and distinct claiming requirement at issue in this case. In *Applera Corp. v. Enzo Biochem, Inc.*, No. 10-426, 131 S. Ct. 847 (Dec. 13, 2010) (Mem.), which presented the question of “[w]hether the Federal Circuit’s standard for definiteness is consistent with the language of § 112,” the Court invited the views of the Solicitor General. See *id.*; Brief for the United States as Amicus Curiae, *Applera*, No. 10-426 (May 17, 2011) (“*Applera* U.S. Amicus Br.”). The government admitted that the Federal Circuit “may on occasion have” departed from the proper standard in certain cases by “conducting a definiteness inquiry that in substance was insufficiently rigorous.” *Applera* U.S. Amicus Br. at 15. But the government nevertheless urged that *Applera* was a poor vehicle for plenary review of that standard. *Id.* at 16; see also *Applera Corp. v. Enzo Biochem, Inc.*, 131 S. Ct. 3020 (2011) (denying certiorari).

None of the vehicle problems identified by the government in *Applera* is present here.

Unlike the “highly technical” questions related to nucleic acid probes that concerned the government in *Applera*, see *Applera* U.S. Amicus Br. at 15-16, this case concerns the spacing between two visible items. The government also opposed certiorari in *Applera* because the Federal Circuit had not invoked the “insolubly ambiguous” standard in the panel opinion. *Id.* at 15. Here, the standard was expressly invoked. See Pet. App. 13a (“A claim is indefinite only when it is ‘not amenable to construction’ or ‘insolubly ambiguous.’” (quoting *Datamize*, 417 F.3d at 1347)). And while the government argued that the Federal Circuit has at times used the “insolubly ambiguous” language as a “shorthand reference” to the correct Supreme Court standard, which requires that a skilled artisan be able to discern the boundaries of the claim, *Applera* U.S. Amicus Br. at 12, 14, the same cannot be said of this case. Here, the panel explicitly stated the conflicting standard under which it reversed the district court: “If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds.” Pet. App. 22a (quoting *Exxon*, 265 F.3d at 1375); see also *id.* (“accord[ing] respect to the statutory presumption of patent validity” (quoting *Exxon*, 265 F.3d at 1375)).

The majority applied this permissive standard to uphold a key but ambiguous claim term despite multiple judges reaching conflicting decisions regarding its scope. The majority relied on a declaration submitted by the named inventor 15 years after the issuance of the patent—

as well as extrinsic evidence generated in the course of litigation—to redefine the “metes and bounds of ‘spaced relationship’” and find it definite. *See* Pet. App. 20a-21a. The majority construed the claim language in light of a supposed test that is not mentioned in the patent or in any document of record in existence within a decade of the patent’s issuance.

Moreover, this case is a poster child for the type of abuse invited by the Federal Circuit standard. In arguing against a narrow claim construction, Biosig convinced the district court to ignore the named inventor’s declaration that “any knowledgeable person in the field” would know that a particular prior art reference fell outside the scope of the claimed “spaced relationship” simply “[u]pon seeing the figures,” JA233, because “the space between electrodes is narrower than the width of each electrode,” JA241. Biosig convinced the trial judge to adopt a broad construction because the declaration was—in his words—“inherently contradictory.” JA1388. Biosig then convinced a majority of the appellate panel to rely on the *same ambiguous declaration* to cure indefiniteness.

The Federal Circuit’s tacit approval of patent owners exploiting ambiguous (but not “insolubly ambiguous”) claim language at the expense of competitors and the public amounts to an endorsement of the very “zone of uncertainty” prohibited by the Supreme Court. *See United Carbon*, 317 U.S. at 236.

Finally, this case also allows the Court to correct the Federal Circuit’s mis-application of the presumption of validity to dilute the particular and distinct claiming requirement.

In sum, this case presents an ideal vehicle for this Court to address the Federal Circuit's ongoing retreat from requiring patent claims to "clearly distinguish what is claimed from what went before in the art and clearly circumscribe what is foreclosed from future enterprise" in contravention of the patent statute and Supreme Court precedent. *United Carbon*, 317 U.S. at 236.

### CONCLUSION

For the foregoing reasons, this petition for writ of certiorari should be granted.

DATED: September 19, 2013

Respectfully submitted,

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## **APPENDIX**

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**APPENDIX A — ORDER OF THE UNITED  
STATES COURT OF APPEALS FOR THE  
FEDERAL CIRCUIT, FILED JUNE 28, 2013**

UNITED STATES COURT OF APPEALS  
FOR THE FEDERAL CIRCUIT

2012-1289

BIOSIG INSTRUMENTS, INC.,

*Plaintiff-Appellant,*

v.

NAUTILUS, INC.,

*Defendant-Appellee.*

Appeal from the United States District Court for the Southern District of New York in case no. 10-CV-7722, Judge Alvin K. Hellerstein.

**ORDER**

A petition for rehearing en banc having been filed by the Appellee, and the matter having first been referred as a petition for rehearing to the panel that heard the appeal, and thereafter the petition for rehearing en banc having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

2a

*Appendix A*

ORDERED that the petition for rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the petition for rehearing en banc be, and the same hereby is, DENIED.

The mandate of the court will issue on July 5, 2013.

FOR THE COURT

/s/ \_\_\_\_\_  
Daniel E. O'Toole  
Clerk

Dated: 6/28/2013

**APPENDIX B — OPINION OF THE UNITED  
STATES COURT OF APPEALS FOR THE  
FEDERAL CIRCUIT, FILED APRIL 26, 2013**

UNITED STATES COURT OF APPEALS  
FOR THE FEDERAL CIRCUIT

2012-1289

BIOSIG INSTRUMENTS, INC.,

*Plaintiff-Appellant,*

v.

NAUTILUS, INC.,

*Defendant-Appellee.*

April 26, 2013, Decided

Appeal from the United States District Court for the  
Southern District of New York in No. 10-CV-7722, Judge  
Alvin K. Hellerstein.

Before NEWMAN, SCHALL, and WALLACH, *Circuit  
Judges.*

Opinion for the court filed by *Circuit Judge* WALLACH.  
Concurring opinion filed by *Circuit Judge* SCHALL.

WALLACH, *Circuit Judge.*



*Appendix B*

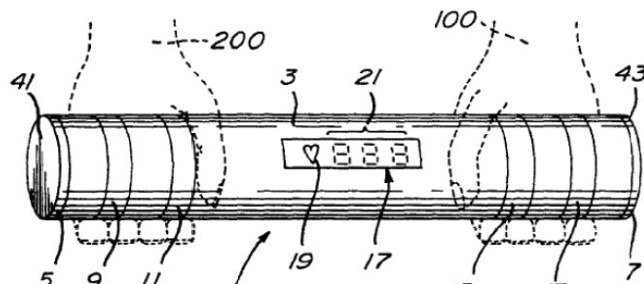
Biosig Instruments, Inc. (“Biosig”) is the assignee of U.S. Patent No. 5,337,753 (“the ‘753 patent”), which is directed to a heart rate monitor associated with an exercise apparatus and/or exercise procedures. Biosig brought a patent infringement action against Nautilus, Inc. (“Nautilus”) in district court alleging that Nautilus infringed claims 1 and 11 of the ‘753 patent. After claim construction, Nautilus filed a motion for summary judgment seeking, in relevant portion, to have the ‘753 patent held invalid for indefiniteness. The district court granted Nautilus’s motion, and Biosig appealed. Because the claims at issue are not invalid for indefiniteness, the district court’s decision is reversed and remanded for further proceedings.

**BACKGROUND****I.**

The ‘753 patent is directed to a heart rate monitor that purports to improve upon the prior art by effectively eliminating noise signals during the process of detecting a user’s heart rate. ‘753 patent col. 1 ll. 5-10. According to the patent, prior art monitors did not eliminate signals given off by skeletal muscles (“electromyogram” or “EMG” signals), which are brought about when users move their arms or squeeze the monitor with their fingers. *Id.* col. 1 ll. 19-22. Because EMG signals are of the same frequency range as electrical signals generated by the heart (“electrocardiograph” or “ECG” signals), EMG signals can mask ECG signals rendering heart rate determination while exercising difficult. *Id.* col. 1 ll. 22-25.

## Appendix B

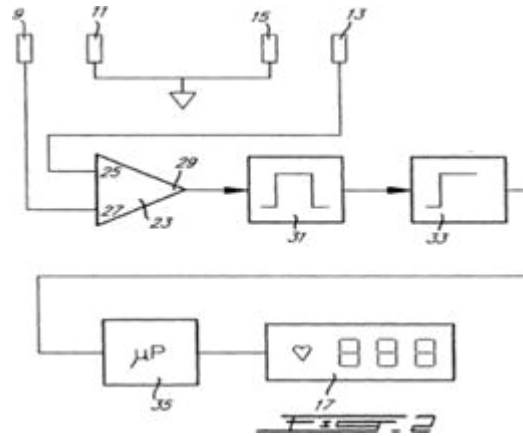
The '753 patent discloses an apparatus preferably mounted on exercise equipment that measures heart rates by, *inter alia*, processing ECG signals from which EMG signals are substantially removed. *Id.* col. 1. ll. 36-41. The claimed heart rate monitor consists of an elongate hollow cylindrical member that houses electronic circuitry as illustrated below:



'753 patent fig. 1. A user's left and right hands—100 and 200—each contact one of the “live” electrodes—9 and 13—and one of the “common” electrodes—11 and 15—on either end of the cylindrical member 3. *Id.* col. 2 ll. 50-64, col. 3 ll. 26-31. The electronic circuitry includes a difference amplifier 23, which is connected to the live electrodes 9 and 13. *Id.* col. 3 ll. 7-10. The common electrodes 11 and 15 are connected to each other and to a point of common potential, for example, a common ground. *Id.* col. 3 ll. 5-7. An illustration of the circuitry is shown below:

6a

Appendix B



'753 patent fig. 2. Inputs 25 and 27 are of opposite polarity. *Id.* col. 3 ll. 10-13. As the EMG signals and other noise signals are of substantially equal amplitude and phase, they cancel each other out in the difference amplifier to provide a substantially zero output of EMG and other noise signals. *Id.* col. 3 ll. 33-43. In contrast, ECG signals, being of opposite phase, will be added and therefore further amplified in the difference amplifier so that the output of the difference amplifier is substantially due to the ECG signals only. *Id.* col. 3 ll. 44-50.

Claim 1 is representative and recites, in relevant part:

1. A heart rate monitor for use by a user in association with exercise apparatus and/or exercise procedures, comprising:

an elongate member;

7a

*Appendix B*

electronic circuitry including a difference amplifier having a first input terminal of a first polarity and a second input terminal of a second polarity opposite to said first polarity;

said elongate member comprising a first half and a second half;

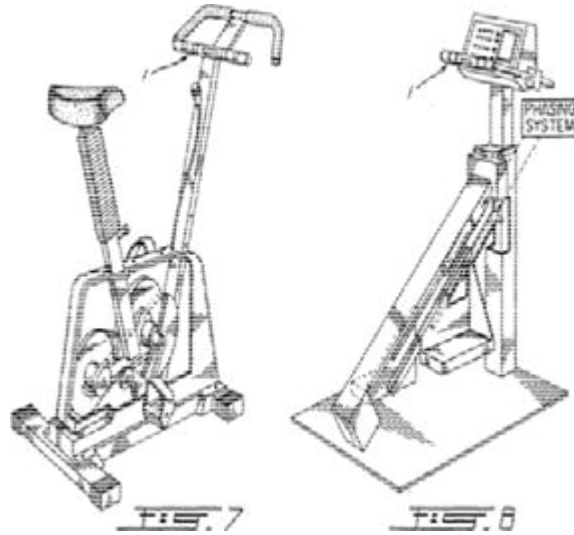
a first live electrode and a first common electrode mounted on said first half in *spaced relationship* with each other;

a second live electrode and a second common electrode mounted on said second half in *spaced relationship* with each other;

said first and second common electrodes being connected to each other and to a point of common potential . . . .

‘753 patent col. 5 ll. 17-36 (emphases added). In addition to the capability of substantially removing EMG signals, claim 1 recites a monitor, a means for measuring time intervals between heart pulses, and a means for calculating the heart rate of a user using the measured time intervals. *See id.* col. 5 l. 37-col. 6 l. 15.

Asserted—dependent claim 11 further specifies that the claimed “elongate member” is “mounted on an exercise apparatus.” *Id.* col. 7 ll. 17-20. Figures 7 and 8 are illustrative of a heart rate monitor mounted on a bicycle and a stair-climbing exercise machine:

*Appendix B*

*Id.* figs. 7-8.

## II.

The dispute between the parties has been ongoing for years, stemming from the late 1990s when Biosig was in discussions with Nautilus's predecessor Stairmaster Company regarding Biosig's patented technology. Despite these discussions, Stairmaster Company, and later Nautilus, began selling exercise equipment that Biosig alleges infringes its patented technology. These accused products consist of heart rate monitors mounted on exercise equipment.

Biosig sued Nautilus for infringing the '753 patent in August 2004 ("2004 Action"). During the pendency of that

*Appendix B*

litigation, Nautilus twice sought *ex parte* reexamination of the '753 patent from the United States Patent and Trademark Office ("PTO"). The first reexamination request was based primarily on U.S. Patent No. 4,444,200 ("Fujisaki").<sup>1</sup> The PTO granted Nautilus's request, and in April 2009, the PTO issued an office action rejecting, *inter alia*, claim 1 as anticipated by Fujisaki and claim 11 as obvious over Fujisaki in view of other prior art references. After Biosig filed its response to this PTO office action, Nautilus requested a second reexamination of the '753 patent, again, citing Fujisaki as the primary reference. The PTO granted Nautilus's second request for reexamination, and the two reexamination proceedings were consolidated in December 2009. The PTO ultimately concluded these reexamination proceedings in June 2010 and confirmed the patentability of the '753 patent without amendment. During the pendency of this reexamination proceeding, the parties voluntarily dismissed without prejudice the claims and counterclaims of the 2004 Action.

Upon conclusion of the reexamination proceeding, Biosig re-instituted a patent infringement action against

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1. Fujisaki relates to a system for measuring heart pulse rate, and more particularly, to "a heart pulse rate measuring system having a pair of grip sensors adapted to be gripped with both hands for sensing heart pulse signals." Fujisaki, col. 1 ll. 5-9. "Each of the grip sensors is composed of two conductive cylindrical electrodes arranged in an axially aligned relationship and electrically insulated from each other." *Id.* col 1 ll. 45-48. "The electric circuit includes a differential amplifier having inputs from the grip sensors for amplifying the difference between the heart pulse signals . . ." *Id.* col. 1 ll. 48-51.

*Appendix B*

Nautilus on October 8, 2010. On August 11, 2011, the district court conducted a *Markman* hearing, and on September 29, 2011, issued its order construing certain disputed claim terms.<sup>2</sup> On November 10, 2011, Nautilus moved under Federal Rule of Civil Procedure 56 seeking summary judgment on two issues: infringement and invalidity for indefiniteness.

On February 22, 2012, the district court held a hearing on Nautilus's motion for summary judgment. As to the issue of infringement, the district court denied Nautilus's motion as premature because the parties had yet to undertake significant discovery. Summ. J. Hr'g Tr.

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2. Even though the district court issued a claim construction order, which included a construction of the disputed term, "spaced relationship," the record reflects the district court nonetheless determined that "space relationship" was ambiguous, and therefore, found Biosig's contentions pertaining to this term unpersuasive. J.A. 1391:15-21 (August 11, 2011 *Markman* Hearing) ("And we are going on to say, the spaced relationship arises from trial and error placements of the two electrodes on the cylindrical bar. Once placed they're in a space relationship. That spaced relationship must be greater than the width of each electrode. *What I've done will confuse the jury and it may set up Mr. Milcetic for a ruling of invalidity. Fair warning.*") (emphasis added); J.A. 2819:16-2820:1 (February 22, 2012 Summary Judgment Hearing) ("THE COURT: *So he said a space[d] relationship can be anything. It could be this or it could be something else.* MR. GERINGER: And, your Honor, at the time, it was Mr. Bonella's colleague, I believe, Mr. Milcetic, but *your Honor warned them that you didn't want them to fall into a trap.* THE COURT: Right. MR. GERINGER: *That construing it in a way that embraces ambiguity could lead to invalidity through vagueness.* THE COURT: And now you're trying to take advantage of that right now.") (emphases added).

*Appendix B*

5:23-6:2, *Biosig Instruments, Inc. v. Nautilus, Inc.*, No. 10-CV-7722 (S.D.N.Y. Feb. 22, 2012), ECF No. 58 (“Summ. J. Hr’g Tr.”). On invalidity, the district court granted Nautilus’s motion, holding that the ‘753 patent’s “spaced relationship” term as recited in claim 1 was indefinite as a matter of law. Summ. J. Hr’g Tr. 51:21-52:1.

After the parties completed summary judgment briefing but before the hearing, Nautilus filed a third request for reexamination of the ‘753 patent on January 25, 2012, and again, Nautilus cited Fujisaki as a primary prior art reference. This time, on February 17, 2012, the PTO denied Nautilus’s request, finding that there were no substantial new questions of patentability raised by the request. Biosig was notified of the PTO’s denial of Nautilus’s third reexamination request after the district court’s summary judgment hearing and decision. In light of this new fact, Biosig moved for reconsideration of the district court’s decision granting Nautilus’s motion for summary judgment of invalidity, which the district court denied on June 12, 2012. Biosig timely appeals. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

**DISCUSSION****I.**

This court reviews the district court’s grant or denial of motions for summary judgment under the law of the regional circuit. *MicroStrategy Inc. v. Bus. Objects, S.A.*, 429 F.3d 1344, 1349 (Fed. Cir. 2005). The Second Circuit reviews *de novo* a district court’s grant of a motion for



*Appendix B*

summary judgment. *Kuebel v. Black & Decker Inc.*, 643 F.3d 352, 358 (2d Cir. 2011). Summary judgment motions may be granted only where “there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” Fed. R. Civ. P. 56(a). In making this determination, a court must “draw all reasonable inferences in favor of the nonmoving party, and it may not make credibility determinations or weigh the evidence.” *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150, 120 S. Ct. 2097, 147 L. Ed. 2d 105 (2000).

## II.

The sole issue presented to this court is whether the district court erred in holding that the asserted claims of the ‘753 patent is invalid for indefiniteness as a matter of law. In particular, the district court held that “spaced relationship” as recited in claim 1 and referring to the spacing between the common and live electrodes was not distinctly and particularly claimed in the patent in violation of 35 U.S.C. § 112, ¶ 2.<sup>3</sup>

Indefiniteness is a legal issue this court reviews without deference. *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1373 (Fed. Cir. 2011) (“*Star Scientific II*”). Section 112, ¶ 2, requires that the specification of a patent “conclude with one or more

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3. Paragraph 2 of 35 U.S.C. § 112 was replaced with newly designated § 112(b) when § 4(c) of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, took effect on September 16, 2012. Nevertheless, the pre-AIA version of § 112 applies because the ‘753 patent issued prior to that date.

*Appendix B*

claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” “Because claims delineate the patentee’s right to exclude, the patent statute requires that the scope of the claims be sufficiently definite to inform the public of the bounds of the protected invention, *i.e.*, what subject matter is covered by the exclusive rights of the patent.” *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008).

A claim is indefinite only when it is “not amenable to construction” or “insolubly ambiguous.” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (internal quotations and citations omitted). “In and of itself, a reduction of the meaning of a claim term into words is not dispositive of whether the term is definite . . . . And if reasonable efforts at claim construction result in a definition that does not provide sufficient particularity and clarity to inform skilled artisans of the bounds of the claim, the claim is insolubly ambiguous and invalid for indefiniteness.” *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1371 (Fed. Cir. 2008) (“*Star Scientific I*”) (citations omitted). “Thus, a construed claim can be indefinite if the construction remains insolubly ambiguous . . . .” *Star Scientific II*, 655 F.3d at 1373; see also *Exxon Research & Eng’g Co. v. United States*, 265 F.3d 1371, 1377-79 (Fed. Cir. 2001) (accepting the district court’s claim construction and separately undertaking an analysis of the claims at issue to determine indefiniteness); *Union Pac. Res. Co. v. Chesapeake Energy Corp.*, 236 F.3d 684, 689-90, 692 (Fed. Cir. 2001) (same); *Minn. Min. and Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1567 (Fed. Cir. 1992) (same).

*Appendix B*

General principles of claim construction apply when determining indefiniteness. *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332-33 (Fed. Cir. 2010). We therefore primarily consider the intrinsic evidence consisting of the claim language, the specification, and the prosecution history. *Id.* In addition, similar to claim construction, courts may consider certain extrinsic evidence in resolving disputes regarding indefiniteness. *Exxon Research & Eng'g Co.*, 265 F.3d at 1376 (citing *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc)); see also *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1119-20 (Fed. Cir. 2002) (recognizing that guidance as to measurement of a term of degree can come from the intrinsic record or from the knowledge of a person of ordinary skill in the art); *Bancorp Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1375-76 (Fed. Cir. 2004) (finding evidence not publicly available at the time of the invention may nonetheless be probative to show that the term was in use and had a discernible meaning to at least some persons practicing in the field). In doing so, the court is not weighing evidence or making factual findings, but rather, looking to extrinsic evidence as part of the normal course of engaging in construction of the patent. *Exxon*, 265 F.3d at 1376 (citing *Cybor*, 138 F.3d at 1454).

When a “word of degree” is used, the court must determine whether the patent provides “some standard for measuring that degree.” *Seattle Box Co., Inc. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984). Similarly, when a claim limitation is defined in “purely functional terms,” a determination of whether

*Appendix B*

the limitation is sufficiently definite is “highly dependent on context (*e.g.*, the disclosure in the specification and the knowledge of a person of ordinary skill in the relevant art . . .).” *Halliburton*, 514 F.3d at 1255.

## III.

The disputed term “spaced relationship” does not suffer from indefiniteness. Because the term was amenable to construction, indefiniteness here would require a showing that a person of ordinary skill would find “spaced relationship” to be insolubly ambiguous—that it fails to provide sufficient clarity delineating the bounds of the claim to one skilled in the art. In this case, a skilled artisan would find such boundaries provided in the intrinsic evidence.

The district court construed “spaced relationship” to mean that “there is a defined relationship between the live electrode and the common electrode on one side of the cylindrical bar and the same or a different defined relationship between the live electrode and the common electrode on the other side of the cylindrical bar.” Summ. J. Hr’g Tr. 10:16-22. Notwithstanding that this disputed term was amenable to construction, the district court determined that the term was indefinite. Specifically, the district court stated that “a spaced relationship did not tell me or anyone what precisely the space should be . . . . Not even any parameters as to what the space should be . . . . Nor whether the spaced relationship on the left side should be the same as the spaced relationship on the right side.” Summ. J. Hr’g Tr. 23:3-11.

*Appendix B*

Turning to the intrinsic evidence, the district court is correct that the specification of the ‘753 patent does not specifically define “spaced relationship” with actual parameters, *e.g.*, that the space between the live and common electrodes is one inch. Nevertheless, the ‘753 patent’s claim language, specification, and the figures illustrating the “spaced relationship” between the live and common electrodes are telling and provide sufficient clarity to skilled artisans as to the bounds of this disputed term. For example, on the one hand, the distance between the live electrode and the common electrode cannot be greater than the width of a user’s hands because claim 1 requires the live and common electrodes to independently detect electrical signals at two distinct points of a hand. On the other hand, it is not feasible that the distance between the live and common electrodes be infinitesimally small, effectively merging the live and common electrodes into a single electrode with one detection point. *See* ‘753 patent col. 3 ll. 26-31 (describing how each hand is placed over the live and common electrodes so that they are “in physical and electrical contact with both electrodes.”). Thus, the ‘753 patent discloses certain inherent parameters of the claimed apparatus, which to a skilled artisan may be sufficient to understand the metes and bounds of “spaced relationship.”

The functionality of the claimed heart rate monitor as recited in claim 1, described in the specification, and which provided the basis for overcoming the PTO’s office action rejections during the reexamination, sheds further light on the meaning of “spaced relationship.” Specifically, claim 1 provides, in part:

*Appendix B*

whereby, a first electromyogram signal will be detected between said first live electrode and said first common electrode, and a second electromyogram signal, of substantially equal magnitude and phase to said first electromyogram signal will be detected between said second live electrode and said second common electrode; so that, when said first electromyogram signal is applied to said first terminal and said second electromyogram signal is applied to said second terminal, the first and second electromyogram signals will be subtracted from each other to produce a substantially zero electromyogram signal at the output of said difference amplifier . . . .

‘753 patent col. 5 ll. 48-61. This “whereby” clause describes the function of substantially removing EMG signals that necessarily follows from the previously recited structure consisting of the elongate member, the live electrode, and the common electrode. *Id.* col. 5 ll. 42-47. Importantly, the EMG signal is detected between the live and common electrodes, which are in “spaced relationship” with each other. Even more significantly, the PTO examiner found this function to be “crucial” as a reason for overcoming the cited prior art and confirming the patentability of the asserted claims upon reexamination. J.A. 139-46. Thus, the recitation of this function in claim 1 is highly relevant in ascertaining the proper bounds of the “spaced relationship” between the live and common electrodes. *See Hoffer v. Microsoft Corp.*, 405 F.3d 1326, 1329 (Fed. Cir. 2005) (per curiam) (“[W]hen the ‘whereby’

*Appendix B*

clause states a condition that is material to patentability, it cannot be ignored in order to change the substance of the invention.”).

The specification also describes, in part, the electrodes’ “spaced relationship” in terms of their corresponding function of detecting distinct electrical signals, whereby EMG signals are substantially removed in the difference amplifier so that the output of the difference amplifier substantially consists only of the ECG signal. *See, e.g.*, ‘753 patent col. 1 ll. 53-58, col. 2 ll. 12-19. According to Biosig, when configuring the claimed heart rate monitor, skilled artisans can determine the “spaced relationship” between live and common electrodes by calculating the point in which EMG signals are substantially removed.

During reexamination, Biosig presented evidence in support of this position in a declaration by the inventor, Mr. Gregory Lekhtman, which was submitted in response to a PTO office action. *See 01 Communique Lab., Inc. v. LogMeIn, Inc.*, 687 F.3d 1292, 1298 (Fed. Cir. 2012) (considering statements made during reexamination as intrinsic evidence for purposes of claim construction). His declaration was based largely on tests he performed to show the effects of electrode configuration on EMG signals measured in the palms of the users’ hands. In particular, he represented that the strength of an EMG signal measurement is proportional to the space between the active and ground electrode and the size of the electrodes. J.A. 194-95. He further declared that it was common knowledge for skilled artisans in 1992 that EMG potentials on each hand would be different, and that the

*Appendix B*

'753 patent requires a configuration of the detectors that produce equal EMG signals from the left and right hands. J.A. 200. This equalization or balancing, according to Mr. Lekhtman, is achieved by detecting EMG signals on the left and right palms, which are delivered to a differential amplifier in the EMG measuring device. Available design variables are then adjusted until the differential output is minimized, *i.e.*, close to zero, and the ECG to EMG ratio is determined to be sufficient for an accurate heart rate determination. J.A. 200-01. Mr. Lekhtman explained that some of these design variables in producing a balanced detection of EMG signals include spacing, size, shape and materials of the electrodes. Moreover, Mr. Lekhtman represented that a common analog oscilloscope available in 1992 would have been used by those skilled in the art to measure the signals and to determine the best ECG/EMG ratio. J.A. 210-11.

For comparison, Mr. Lekhtman tested the circuitry as recited in the '753 patent and the circuitry as recited in Fujisaki, the prior art cited during reexamination. Mr. Lekhtman's test results indicated that an ECG/EMG ratio "in the range of about 3-10 would be manifested at the output of the differential amplifier" of the '753 patent as having substantially zero influence from the EMG signal. J.A. 213; 343. Conversely, an ECG/EMG ratio of about 1 or less, as generated by the circuitry claimed in the Fujisaki patent, was found to be masking the ECG signal and thus requiring further filtering after the differential amplifier. J.A. 213.



*Appendix B*

Mr. Lekhtman also described Dr. Henrietta Galiana's test results of a laboratory mock-up of the claimed apparatus—results prepared in the course of the 2004 Action at the district court against Nautilus. J.A. 204-05; 1029-56. Her test results and corresponding report supported Mr. Lekhtman's statements and demonstrated that two detected EMG signals on opposite hands can indeed have substantially the same amplitude and phase, and that a difference amplifier will then reduce those EMG signals to substantially zero. J.A. 205; 1048-54.

Finally, extrinsic evidence underscores the intrinsic evidence. In particular, Biosig submitted a declaration of yet another expert, Dr. George Yanulis, in support of its opposition to Nautilus's summary judgment motion in the underlying district court litigation, which confirmed Mr. Lekhtman's and Dr. Galiana's test results and reports. J.A. 1670.

In summary, the claims provide inherent parameters sufficient for a skilled artisan to understand the bounds of "spaced relationship." In addition, a skilled artisan could apply a test and determine the "spaced relationship" as pertaining to the function of substantially removing EMG signals. Indeed, the test would have included a standard oscilloscope connected to both the inputs and outputs of the differential amplifier to view the signal wave forms and to measure signal characteristics. With this test, configurations could have been determined by analyzing the differential amplifier input and output signals for detecting EMG and ECG signals and observing the substantial removal of EMG signals from ECG

*Appendix B*

signals while simulating an exercise. These parameters constitute the metes and bounds of “spaced relationship” as articulated in the ‘753 patent. Nothing more rigorous is required under § 112, ¶ 2.

The district court nonetheless held Biosig had not articulated with specificity the dimensions or other parameters characterizing the space between the electrodes: “It should be half inch, one inch, two inches, three inches. What is the space[d] relationship?” Summ. J. Hr’g Tr. 35:7-8. The district court likewise stated that the ‘753 patent failed to disclose the “composition of the handle” and whether the electrodes were “between the two middle fingers, the outer first and fourth finger, the thumb underneath and the fingers on top? Where is the spaced relationship?” Summ. J. Hr’g Tr. 38:16-24. The district court also questioned whether having “small” hands as opposed to “large” hands would affect the “spaced relationship” between the live and common electrodes. Summ. J. Hr’g Tr. 40:2-6. Moreover, the district court found nothing in evidence that provided how a skilled artisan would have determined the appropriate parameters yielding the necessary “spaced relationship” as recited by the ‘753 patent: “[W]hat [the expert] says is that through trial and error, which he doesn’t describe, one can find a spaced relationship. That may be. But there’s no description.” Summ. J. Hr’g Tr. 39:6-8. These inquiries however miss the mark in this instance because they do not support an indefiniteness analysis.

To begin, we have not insisted that claims be plain on their face in order to avoid a determination of invalidity for

*Appendix B*

indefiniteness. *Exxon*, 265 F.3d at 1375. “If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds.” *Id.* In addition, “[p]rovided that the claims are enabled, and no undue experimentation is required, the fact that some experimentation may be necessary to determine the scope of the claims does not render the claims indefinite.” *Id.* at 1379. When relevant values can be obtained, § 112 ¶ 2 is satisfied. *Marley Mouldings Ltd. v. Mikron Indus., Inc.*, 417 F.3d 1356, 1360-61 (Fed. Cir. 2005) (“Although the district court was concerned that the claims encompass a range of volumes and thereby also of weights, § 112 ¶ 2 is satisfied when the relevant values can be ‘calculated or measured.’”) (citation omitted). By embracing this standard, “we accord respect to the statutory presumption of patent validity, and we protect the inventive contribution of patentees, even when the drafting of their patents has been less than ideal.” *Exxon*, 265 F.3d at 1375 (internal citations omitted); see *Morton Int’l, Inc. v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470, 1472 (Fed. Cir. 1993) (citing 35 U.S.C. § 282). Therefore, objections relating to the mere fact that there may be some need for experimentation to determine the scope of the claims carry little weight.

Likewise, the district court’s objections to the claims as written do not support imprecision of the claims. Rather, the objections are based on the premise that the ‘753 patent does not include disclosure sufficiently commensurate with the scope of the claims. These objections, if relevant,

*Appendix B*

provide grounds for invalidity under § 112, ¶ 1 and not § 112, ¶ 2.<sup>4</sup> As this court has explained:

A patent claim to a fishing pole would not be invalid on indefiniteness grounds if it contained a limitation requiring that the pole be “at least three feet long,” even though a 50 foot long fishing pole would not be very practical. By the same token, there is nothing indefinite about the claim language at issue in this case simply because it covers some embodiments that may be inoperable.

*Exxon*, 265 F.3d at 1382; *Personalized Media Commc’ns, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 706 (Fed. Cir. 1998) (rejecting expert testimony stating generally that a “digital detector” was not adequately disclosed in the patent and could not be built by those of ordinary skill as relevant only to the sufficiency of the written description to enable the practice of the invention of the claims); *Miles Labs., Inc., v. Shandon, Inc.*, 997 F.2d 870, 875, (Fed. Cir. 1993) (same). Breadth is not indefiniteness. *SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1340-41 (Fed. Cir. 2005). Hence, inquiries as to the size of the users’ hands, placement

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4. 35 U.S.C. § 112, ¶ 1 generally relates to the sufficiency of the written descriptions of patents, including enablement, and states in relevant part: “The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use the same . . . .”

*Appendix B*

of fingers, and the “composition of the handle” may be relevant, if at all, to issues that relate to enablement under § 112, ¶ 1, not indefiniteness under § 112, ¶ 2, because they are directed to the operability of varying embodiments of the claimed heart rate monitor, not to the precision of the claims at issue. Accordingly, these objections do not address the inherent parameters set forth in the intrinsic evidence.

Still, Nautilus seeks support in *Halliburton*. In *Halliburton*, the invention at issue was a “fragile gel” that was used in drilling. 514 F.3d at 1246-47. This court found that the patent-at-issue did not disclose how the claimed “fragile gel” performed differently than the disclosed prior art, such as “how much more quickly the gels broke when stress was imposed, or how much more quickly the gels reformed when stress was removed.” *Halliburton*, 514 F.3d at 1253. Halliburton’s failure to distinguish the fragileness of the drilling fluids of the invention from the close prior art, according to this court, was fatal because it did not limit on what was invented beyond the prior art. *Id.* For example, the court noted that the fluids of the invention may provide less resistance to shearing (*i.e.*, break more quickly) than the prior art fluids, but the degree of improved speed, the court said, remained ambiguous. *Id.* Thus, this court held that it was unclear whether a skilled artisan would have interpreted this claim as having an upper bound of fragility. *Id.*

*Halliburton* is distinguishable. Here, the claimed apparatus has inherent parameters where the “spaced relationship” cannot be larger than the width of a

*Appendix B*

user's hand. Additionally, it has been shown that skilled artisans can readily ascertain the bounds of the "spaced relationship" through tests using standard equipment. Thus, the "upper bound" that was lacking in *Halliburton* is found here. As a result, *Halliburton* fails to support Nautilus.

Rather, this case is analogous to *Star Scientific II*. There, the disputed term was "controlled environment" as applied to the practice of tobacco curing and "whether a person of ordinary skill would know how to establish a controlled environment to perform the claimed method." *Star Scientific II*, 655 F.3d at 1373-74. This court held that the fact that the patents-at-issue did not give exact numbers measuring humidity, temperature, and airflow in a conventional curing barn was not dispositive. *Id.* at 1374. On the contrary, this court found there was evidence showing that "a person of skill in the art of tobacco curing would possess adequate understanding to manipulate these variables to create a controlled environment." *Id.* Further, because conventional curing varied depending on the conditions for each cure, specific numerical values were found not necessary for one skilled in the art to implement conventional curing. *Id.* Hence, "controlled environment" was held not insolubly ambiguous.

Like *Star Scientific II*, the record shows that the variables here, including the spacing, size, shape, and material affecting the "spaced relationship" between the electrodes, can be determined by those skilled in the art. Thus, "spaced relationship" cannot be said to be insolubly ambiguous.

*Appendix B*

## IV.

Contrary to the district court’s decision and to Nautilus’s contention on appeal, this court’s jurisprudence does not proscribe drafting or defining claims in relation to their functions. *Moore U.S.A., Inc. v. Standard Register Co.*, 229 F.3d 1091, 1111 (Fed. Cir. 2000) (“We note that there is nothing wrong with defining the dimensions of a device in terms of the environment in which it is to be used.”); *see also Vizio, Inc. v. Int’l Trade Comm’n*, 605 F.3d 1330, 1340 (Fed. Cir. 2010) (“[T]he ‘for decoding’ language . . . is properly construed as a limitation, and not merely statement of purpose or intended use for the invention, because ‘decoding’ is the essence or a fundamental characteristic of the claimed invention.”). That is, “claims are not necessarily indefinite for using functional language.” *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008). Indeed, functional language in a means-plus-function format is explicitly authorized by statute. 35 U.S.C. § 112, ¶6. Functional language may also be used to limit the claims without having the means-plus-function format. *Microprocessor Enhancement Corp.*, 520 F.3d at 1375.

Yet, the district court found the evidence consisting of test results and their corresponding references to “substantial removal of EMG signals” conclusory because, according to the court, Biosig failed to show how it conducted its tests that allegedly illustrate a “spaced relationship” between the electrodes and the substantial removal of EMG signals. In particular, the district court found fault with the experts’ references to the function of

*Appendix B*

the claim term only, and it ultimately held that “this is all a description of the desired result and not a description of any invention . . . and, therefore, violates the requirement of specificity in Section 112.” Summ. J. Hr’g Tr. 42:25-43:4.

Courts often refer to the context in which the patented invention is claimed to ascertain its scope. *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005) (“It is therefore entirely proper to consider the functions of an invention in seeking to determine the meaning of particular claim language.”). Hence, to determine the proper meaning of “spaced relationship,” we must refer to “spaced relationship” in the context of the intrinsic evidence, including the claim language, specification, and prosecution history. The district court viewed “spaced relationship” in a vacuum by choosing to turn a blind eye to the functional aspects of claim 1, *e.g.*, how “spaced relationship” contributes to the removal of noise signals, such as EMG signals, and the overall capabilities of the claimed heart rate monitor. However, without context, it would be impossible to ascertain “what the inventors actually invented and intended to envelop with the claim,” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998), and to examine the patent from the perspective of a person skilled in the art, *e.g.*, *Tegal Corp. v. Tokyo Electron Am., Inc.*, 257 F.3d 1331, 1342 (Fed. Cir. 2001). Thus, to the extent the district court failed to consider Biosig’s evidence based on its reasoning that the evidence spoke only to the “function of the claim,” this was error.

Nautilus makes a related contention that the claims at issue are invalid as they impermissibly claim both an



*Appendix B*

apparatus and a method of use. Specifically, Nautilus contends that claim 1 recites a heart rate monitor and a required step that a user holds the monitor. According to Nautilus, it is unclear whether the alleged infringement occurs when one makes a heart rate monitor having the recited structural elements, or whether infringement allegedly occurs when the user actually holds the handle and contacts the electrodes. This contention is unpersuasive.

The '753 patent recites apparatus claims with functional limitations that describe the capability of substantially removing EMG signals. *See, e.g.*, '753 patent col. 5 l. 16-col. 6 l. 15. Indeed, claim 1 of the '753 patent is clearly limited to a heart rate monitor possessing the recited structure that is capable of substantially removing EMG signals. It is not indefinite. Accordingly, this case fails to invoke our decision in *IPXL Holdings, LLC v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005) (holding claims at issue as indefinite because they simultaneously claimed an apparatus and method steps).

**CONCLUSION**

The only issue on this appeal is the summary judgment of indefiniteness. Other aspects of the defense of patent invalidity, although raised in the district court, are not before us, and may be considered on remand. We reverse the district court's invalidity determination and remand for further proceedings.

**REVERSED AND REMANDED**

29a

*Appendix B*

UNITED STATES COURT OF APPEALS  
FOR THE FEDERAL CIRCUIT

012-1289

BIOSIG INSTRUMENTS, INC.,

*Plaintiff-Appellant,*

v.

NAUTILUS, INC.,

*Defendant-Appellee.*

Appeal from the United States District Court for the Southern District of New York in No. 10-CV-7722, Judge Alvin K. Hellerstein.

SCHALL, *Circuit Judge, concurring.*

I join the court's reversal of the judgment on appeal and its remand of the case for further proceedings. I write separately, however, because, while I agree with the court that the district court erred in holding claims 1 and 11 of the '753 patent invalid by reason of indefiniteness, I would rest that ruling on a more limited analysis. I therefore respectfully concur.

In Part II of the Discussion section of its opinion, the court correctly sets forth our law on indefiniteness. In short, a claim is indefinite (1) when it is not amenable to construction or (2) when, even if it can be construed, "the construction remains insolubly ambiguous, meaning it fails

*Appendix B*

to provide sufficient clarity [delineating the metes] and bounds of the claim to one of skill in the art,” *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1373 (Fed. Cir. 2011). *See Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (“Only claims ‘not amenable to construction’ or ‘insolubly ambiguous’ are indefinite.”); *see also Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1371 (Fed. Cir. 2008) (“In and of itself, a reduction of the meaning of a claim term into words is not dispositive of whether the term is definite . . . . And if reasonable efforts at claim construction result in a definition that does not provide sufficient particularity and clarity to inform skilled artisans of the bounds of the claim, the claim is insolubly ambiguous and invalid for indefiniteness.”) (internal citations omitted). As the court concludes, neither of these two grounds for indefiniteness exists in this case.

First, the “spaced relationship” limitation plainly was amenable to construction. The district court construed the two recitations of “in spaced relationship with each other” in claim 1 to mean that “there is a defined relationship between the live electrode and the common electrode on one side of the cylindrical bar and the same or a different defined relationship between the live electrode and the common electrode on the other side of the cylindrical bar.” *See Biosig Instruments, Inc. v. Nautilus, Inc.*, No. 10-cv-7722, slip op. at 3 (S.D.N.Y. Sept. 29, 2011) (Dkt. 32, “Summary Order Memorializing Court’s Patent Claim Term Constructions After a *Markman* Hearing”). Neither Biosig nor Nautilus disputes that the district court did, in fact, construe the “spaced relationship” limitation.

*Appendix B*

Second, the court’s construction provided sufficient clarity to one of skill in the art as to the metes and bounds of the “spaced relationship” limitation. Put most simply, the district court construed that limitation to require “defined relationships,” between the live electrode and the common electrode on each side of the cylindrical bar.<sup>1</sup> What that construction means is that, on each side of the cylindrical bar, there is a fixed spatial relationship between the live electrode and the common electrode. And the court correctly states that the intrinsic evidence relating to the ‘753 patent “discloses certain inherent parameters of the claimed apparatus, which to a skilled artisan may be sufficient to understand the metes and bounds of ‘spaced relationship.’” *See* Majority Op. at 13. In my view, along with the court’s subsequent rejection of Nautilus’s reliance on *Halliburton Energy Services, Inc. v. M-I LLC*, 514 F.3d 1244 (Fed. Cir. 2008); and *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005), that is all that is needed to put this case to rest.

My concern with the balance of the court’s analysis is that it presumes a functional linkage between the “spaced relationship” limitation and the removal of EMG signals. In other words, the analysis proceeds as if the “spaced relationship” limitation itself—rather than other limitations of claim 1—included a functional requirement to remove EMG signals. *See* Majority Op. at 16-17 (“[A] skilled artisan could apply a test and determine the ‘spaced

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1. Although this construction may be seen as broad, as the court notes, “[b]readth is not indefiniteness.” *See* Majority Op. at 19 (citing *SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1340-41 (Fed. Cir. 2005)).

*Appendix B*

relationship’ as pertaining to the function of substantially removing EMG signals.”); *id.* at 13 (“The functionality of the claimed heart rate monitor as recited in claim 1, described in the specification, and which provided the basis for overcoming the PTO’s office action rejections during reexamination, sheds further light on the meaning of ‘spaced relationship.’”). Indeed, the parties to this appeal and the district court seem to presume the same. The language of the “spaced relationship” limitation, however, does not contain a functional requirement:

a first live electrode and a first common electrode mounted on said first half in spaced relationship with each other;

a second live electrode and a second common electrode mounted on said second half in spaced relationship with each other

’753 patent col. 5 ll. 28-33. In addition, as seen above, the district court’s construction of the “spaced relationship” limitation does not include any functional language related to the removal of EMG signals, and Nautilus has not conditionally cross-appealed that construction.

In my view, we should not address a functional limitation included neither in the “spaced relationship” limitation itself nor in the district court’s construction of that limitation. By allowing the functional limitation of EMG removal from elsewhere in claim 1 to color our analysis of the definiteness of the “spaced relationship” limitation, it seems to me we address an issue that is not currently before us.

**APPENDIX C — ORDER OF THE UNITED  
STATES DISTRICT COURT, SOUTHERN  
DISTRICT OF NEW YORK, FILED JUNE 12, 2012**

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

10 Civ. 7722 (AKH)

BIOSIG INSTRUMENTS, INC.,

*Plaintiff,*

-against-

NAUTILUS, INC.,

*Defendant.*

**ORDER**

ALVIN K. HELLERSTEIN, U.S.D.J.:

Plaintiff has moved pursuant to Local Civ. R. 6.3 and Fed. R. Civ. P. 59 for reconsideration of my decision to grant Defendant's Motion for Summary Judgment.

The standard of review for reconsideration is "strict, and reconsideration will generally be denied unless the moving party can point to controlling decisions or data that the court overlooked—matters, in other words, that might reasonably be expected to alter the conclusion reached by the court." *Shrader v. CSX Transp., Inc.*, 70

*Appendix C*

F.3d 255, 257 (2d Cir. 1995) *see* Fed. R. Civ. P. 59, Local Civ. R. 6.3. “[A] motion to reconsider should not be granted where the moving party seeks solely to relitigate an issue already decided.” *Shrader*, 70 F.3d at 257.

Local Civ. R. 6.3 directs a party seeking reconsideration to “set forth concisely the matters or controlling decisions which counsel believes the court has overlooked.” Plaintiff’s motion for reconsideration, however, in large part simply seeks to relitigate that which has been decided, without identifying overlooked matters or controlling decisions. Plaintiff contends that its motion is based on the Patent and Trademark Office’s denial of a request for ex parte reexamination of the ’753 Patent transmitted February 17, 2012 (the “Denial of Reexamination”).<sup>1</sup> I grant Plaintiff’s motion for reconsideration for the limited purpose of considering the Denial of Reexamination.

Upon reconsideration, however, I reaffirm my decision to grant Defendant’s Motion for Summary Judgment. I granted Defendant’s Motion for Summary Judgment because I found that Claim 1 of the ’753 Patent failed to satisfy the definiteness requirement of 35 U.S.C. § 112. Specifically, I found that the claim term “spaced relationship” was impermissibly indefinite. Reviewing the Denial of Reexamination, I find nothing that merits altering this finding. Nothing in the Denial of Reexamination imbues “spaced relationship” with sufficient definiteness.

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1. Plaintiff states that its litigation counsel did not become aware of the Denial of Reexamination until after the Court granted Defendant summary judgment.

35a

*Appendix C*

The Clerk shall mark the motion (Doc. No. 60) terminated.

SO ORDERED.

Dated: June 12, 2012  
New York, New York

/s/ \_\_\_\_\_  
ALVIN K. HELLERSTEIN  
United States District Judge



**APPENDIX D — JUDGMENT OF THE  
UNITED STATES DISTRICT COURT,  
SOUTHERN DISTRICT OF NEW YORK,  
FILED FEBRUARY 23, 2012**

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

10 CIVIL 7722 (AKH)

BIOSIG INSTRUMENTS, INC.,

*Plaintiff;*

-against-

NAUTILUS, INC.,

*Defendant.*

**JUDGMENT**

Defendant having moved for summary judgment, and the matter having come before the Honorable Alvin K. Hellerstein, United States District Judge, and the Court, on February 23, 2012, having rendered its Summary Order granting Defendants motion for summary judgment, dismissing the complaint with prejudice and dismissing Defendants counterclaims on consent without prejudice, it is,

ORDERED, ADJUDGED AND DECREED: That for the reasons stated in the Court's Summary Order

*Appendix D*

dated February 23, 2012, Defendants motion for summary judgment is granted; the complaint is dismissed with prejudice and Defendant's counterclaim are dismissed on consent without prejudice; accordingly, the case is closed.

Dated: New York, New York  
February 23, 2012

RUBY J. KRAJICK  
Clerk of Court

BY:

/s/ \_\_\_\_\_  
Deputy Clerk

**APPENDIX E — SUMMARY ORDER OF THE  
UNITED STATES DISTRICT COURT, SOUTHERN  
DISTRICT OF NEW YORK, FILED  
FEBRUARY 13, 2012**

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

10 Civ. 7722 (AKH)

BIOSIG INSTRUMENTS, INC.,

*Plaintiff,*

- against -

NAUTILUS, INC.,

*Defendant.*

ALVIN K. HELLERSTEIN, U.S.D.J.

**SUMMARY ORDER**

On February 22, 2012, oral argument was heard on Defendant's motion for summary judgment. For the reasons stated on the record, Defendant's motion is granted. Plaintiff's complaint is dismissed with prejudice. Defendant's counterclaims are dismissed on consent without prejudice. The clerk shall enter judgment in favor of Defendant and mark the motion (Doc. No. 39) terminated and the case closed.

39a

*Appendix E*

SO ORDERED.

Dated: February 13, 2012  
New York, New York

/s/ \_\_\_\_\_  
ALVIN K. HELLERSTEIN  
United States District Judge

**APPENDIX F — SUMMARY ORDER OF  
THE UNITED STATES DISTRICT COURT,  
SOUTHERN DISTRICT OF NEW YORK,  
FILED SEPTEMBER 29, 2011**

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

10 Civ. 7722 (AKH)

BIOSIG INSTRUMENTS, INC.,

*Plaintiff,*

-against-

NAUTILUS, INC.,

*Defendant.*

***SUMMARY ORDER MEMORIALIZING COURT'S  
PATENT CLAIM TERM CONSTRUCTIONS AFTER  
A MARKMAN HEARING***

ALVIN K. HELLERSTEIN, U.S.D.J.:

On August 11, 2011, the parties appeared before me for a hearing on the construction of claim terms in the patent-in-suit, U.S. Patent No. 5,337,753 (“’753 Patent”), pursuant to the United States Supreme Court’s decision in *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996). Having considered the parties’ written briefs and heard oral argument, I construe the ’753 Patent’s claim

41a

*Appendix F*

terms as indicated on the record, memorialized in the chart appended to this order.

If the parties wish to file dispositive motions in response to my rulings, such motions shall be filed no later than November 10, 2011; opposition papers shall be filed no later than December 1, 2011; reply papers, if any, shall be filed no later than December 8, 2011.

SO ORDERED.

Dated: September 28, 2011  
New York, New York

/s/ \_\_\_\_\_  
ALVIN K. HELLERSTEIN  
United States District Judge

## Appendix F

**BIOSIG INSTRUMENTS, INC. v. NAUTILUS, INC.  
CHART CONSTRUING DISPUTED CLAIM TERMS**

<b>U.S. PATENT NO. 5,337,753</b>	
<b>CLAIM TERM</b>	<b>COURT'S RULING</b>
[1] "A heart rate monitor for use by a user in association with exercise apparatus and/or exercise procedures, comprising"; [1] "an elongate member";	The phrase does not require any construction;  The term "elongate member" means a cylindrical bar sufficiently long so that a person whose heart rate will be monitored can grip the cylindrical bar on both sides;
[1] "electronic circuitry including a difference amplifier having a first input terminal of a first polarity and a second input terminal of a second polarity opposite to said first polarity";	The phrase means electronic circuitry to cancel similarities and amplify differences between each of two inputs on the cylindrical bar;
[1] "said elongate member comprising a first half and a second half";	The phrase means that said cylindrical bar comprises a first half and a second half;

## Appendix F

<b>U.S. PATENT NO. 5,337,753</b>	
<b>CLAIM TERM</b>	<b>COURT'S RULING</b>
<p>[1] “a first live electrode and a first common electrode mounted on said first half in spaced relationship with each other; a second live electrode and a second common electrode mounted on said second half in spaced relationship with each other; said first and second common electrodes being connected to each other and to a point of common potential”;</p>	<p>The phrase means that each side of the cylindrical bar has two electrodes: one live electrode and one common electrode;</p> <p>The term “electrode” means a conductor through which electricity can flow;</p> <p>The term “live electrode” means an electrode connected to an input of the difference amplifier;</p> <p>The term “common electrodes” refers to two electrodes connected to each other and to a common voltage, such as ground;</p> <p>The term “in spaced relationship with each other” means there is a defined relationship between the live</p>



## Appendix F

<b>U.S. PATENT NO. 5,337,753</b>	
<b>CLAIM TERM</b>	<b>COURT'S RULING</b>
	electrode and the common electrode on one side of the cylindrical bar and the same or a different defined relationship between the live electrode and the common electrode on the other side of the cylindrical bar;
[1] "said first live electrode being connected to said first terminal of said difference amplifier and said second live electrode being connected to said second terminal of said difference amplifier";	The phrase means the two live electrodes are electrically connected to input terminals of the difference amplifier;
[1] "a display device disposed on said elongate member";	The phrase means there is a display arranged on the cylindrical bar for showing the user's heart rate;

## Appendix F

<b>U.S. PATENT NO. 5,337,753</b>	
<b>CLAIM TERM</b>	<b>COURT'S RULING</b>
<p>[1] “wherein, said elongate member is held by said user with one hand of the user on said first half contacting said first live electrode and said first common electrode, and with the other hand of the user on said second half contacting said second live electrode and said second common electrode”;</p>	<p>The phrase means the cylindrical bar is held by the user with her left hand contacting the electrodes on the left side of the cylindrical bar and her right hand contacting the electrodes on the right side of the cylindrical bar;</p>
<p>[1] “whereby, a first electromyogram signal will be detected between said first live electrode and said first common electrode, and a second electromyogram signal, of substantially equal magnitude and phase to said first electromyogram signal will be detected between said second live electrode and said second common electrode”;</p>	<p>The term “electromyogram signal” means an electrical signal produced by muscles other than the heart;</p> <p>Viewing the electromyogram signal as a wave on a coordinate plane, the term “magnitude” refers to the size of the wave;</p> <p>Viewing the electromyogram signal as a wave on a coordinate plane, the term “phase” refers to one repetition, in a series of repetitions, as the</p>

## Appendix F

<b>U.S. PATENT NO. 5,337,753</b>	
<b>CLAIM TERM</b>	<b>COURT'S RULING</b>
<p>[1] “so that, when said first electromyogram signal is applied to said first terminal and said second electromyogram signal is applied to said second terminal, the first and second electromyogram signals will be subtracted from each other to produce a substantially zero electromyogram signal at the output of said difference amplifier”;</p>	<p>wave moves forward through time, starting at or near the x-axis, rising above the x-axis, crossing the x-axis, falling below the x-axis, and then returning to the x-axis to begin a new repetition. If one were to annotate Figure 3 of the '753 Patent, with the letter “A” above the first peak from the left, and with the letter “8” above the second peak from the left, from “A” to “8” would represent the phase;</p> <p>The phrase does not require any construction;</p>

## Appendix F

<b>U.S. PATENT NO. 5,337,753</b>	
<b>CLAIM TERM</b>	<b>COURT'S RULING</b>
<p>[1] “and whereby a first electrocardiograph signal will be detected between said first live electrode and said first common electrode and a second electrocardiograph signal, of substantially equal magnitude but of opposite phase to said first electrocardiograph signal will be detected between said second live electrode and said second common electrode”;</p> <p>[1] “so that, when said first electrocardiograph signal is applied to said first terminal and said second electrocardiograph signal is applied to said second terminal, the first and second electrocardiograph signals will be added to each other to produce a non-zero electrocardiograph signal at the output of said difference amplifier”;</p>	<p>The term “electrocardiograph signal” means an electrical signal produced by the heart;</p> <p>The phrase does not require any construction;</p>

## Appendix F

<b>U.S. PATENT NO. 5,337,753</b>	
<b>CLAIM TERM</b>	<b>COURT'S RULING</b>
[1] “means for measuring time intervals between heart pulses on detected electrocardiograph signal”;	This is a means-plus-function element construed under 35 U.S.C. § 112, ¶ 6; <i>Function:</i> Measuring time intervals between heart pulses on detected electrocardiograph signals; <i>Structure:</i> The structure for this element is a microprocessor programmed with an algorithm for measuring the time intervals between pulses as disclosed in the ’753 Patent at 4:4-12 and Figures 4-1 and 4-2 and equivalents under 35 U.S.C. § 112, ¶ 6;
[1] “means for calculating the heart rate of said user using said measure[d] time intervals”;	This is a means-plus-function element construed under 35 U.S.C. § 112, ¶ 6; <i>Function:</i> Calculating the user’s heart rate using said measured time intervals;

## Appendix F

<b>U.S. PATENT NO. 5,337,753</b>	
<b>CLAIM TERM</b>	<b>COURT'S RULING</b>
	<p><i>Structure:</i> The structure for this element is a microprocessor programmed according to the algorithms in Figures 4-3 to 4-7 and in column 4, lines 13-28, and equivalents under 35 U.S.C. § 112, ¶ 6.</p>
[1] "said means for calculating being connected to said display device";	The phrase means the structure for calculating the user's heart rate is connected to the heart rate display;
[1] "whereby the heart rate of said user is displayed on said display device."	The phrase means the display shows the heart rate calculated for the user;
[11] "A monitor as defined in claim 1 wherein said elongate member is mounted on an exercise apparatus; said electronic circuitry being mounted in said exercise apparatus."	The phrase means that the cylindrical bar with the electrodes is mounted on the exercise machine, and the electronic circuitry, including the difference amplifier, is mounted in the exercise machine.

50a

**APPENDIX G — TRANSCRIPT OF  
PROCEEDINGS OF THE UNITED STATES  
DISTRICT COURT, SOUTHERN DISTRICT OF  
NEW YORK, DATED FEBRUARY 22, 2012**

[1] UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

10 CV 7722 (AKH)

BIOSIG INSTRUMENTS, INC.,

*Plaintiff,*

v.

NAUTILUS, INC.,

*Defendant.*

New York, N.Y.  
February 22, 2012  
2:35 p.m.

Before:  
HON. ALVIN K. HELLERSTEIN,  
District Judge

\* \* \*

[2] (In open court)

THE DEPUTY CLERK: Biosig Instruments, Inc.  
v. Nautilus, Inc.

*Appendix G*

Counsel, please state your appearances for the record.

MR. BONELLA: Michael Bonella from Kessler Topaz for the plaintiff Biosig Instruments, Inc.

And with me is Jenna Pellecchia from my firm; and John Bone, from the firm of Heidell, Pittoni.

THE COURT: Are you going to be arguing, right, Mr. Bonella?

MR. BONELLA: Yes, sir, your Honor.

THE COURT: Thank you.

First row can sit.

MR. BONELLA: Thank you, your Honor.

MR. GERINGER: Your Honor, James Geringer for defendant Nautilus.

I will be arguing.

With me is my co-counsel, Josh Sivin.

THE COURT: Good afternoon, gentlemen.

Please sit down.

I think what I'd like to do first is to set out the context of where we are and then to hear the parties.



*Appendix G*

The plaintiff, Biosig Instruments, Inc., is a corporation incorporated in Canada with headquarters in Quebec. Biosig's business is to design, manufacture, and sell exercise [3] equipment and various electronics and components used with such equipment.

The defendant, Nautilus, Inc., is a corporation incorporated in the State of Washington. It has its headquarters in Vancouver.

Is that Vancouver, Washington or Vancouver, British Columbia?

MR. GERINGER: Washington, your Honor.

THE COURT: Washington.

I did not know Vancouver was a city in the State of Washington.

MR. GERINGER: We call it Vancouver USA.

THE COURT: I see. Now I understand.

I had the experience last week to be a visiting judge in the Ninth Circuit, Pasadena, and sat with Judge Jerome Farris. His headquarters is in Seattle, the Ninth Circuit Court of Appeals. Very pleasant man, engaging many stories of having grown up as an African-American in Birmingham, Alabama of the 1930s. And went on to -- I forget what college, I think it was Columbia. And then he was educated, he said, because he chose the school that was farthest from the east in which to be educated, which

*Appendix G*

turned out to be the University of Washington Law School, and was Order of Coif and Law Review, and decided to practice there. And in ten years, made a fortune of money, and then became a judge, a very fine judge.

[4] Sorry about that digression.

Nautilus uses its name “Nautilus” as a trade name, along with others, in connection with exercise equipment in the United States. The case is brought here within the subject matter jurisdiction of this Court, pursuant to 28 U.S.C., Sections 1331 and 1338(a).

Biosig’s claim arises under the patent laws of the United States, 35 U.S.C., Section 101 and sections thereafter.

In brief summary, Biosig alleges that in the 1990s, it disclosed a technology claimed in Patent 5,337,753, which I’ll call the ’753 patent, to a predecessor-in-interest of Nautilus. Nautilus did not purchase the technology from Biosig; rather, its predecessor simply began manufacture, market, distribute, offer for sale, and sell exercise equipment that Biosig claims infringed upon the ’753 patent.

Nautilus never obtained a license to use the technology claimed in the patent, and Biosig alleges that Nautilus was a willful infringer of the ’753 patent and continued to infringe even after Biosig alleges the reexamination procedures in the United States Patent and Trademark Office confirmed the patent.

*Appendix G*

Let me state a bit of history.

In August 2004, Biosig sued Nautilus in this United States District Court, alleging infringement of the '753 patent. During the pendency of that litigation, Nautilus twice [5] asked the Patent and Trademark Office to reexamine the '753 patent. The office granted both reexamination requests, conducted reexamination procedures twice. And during the pendency of those reexamination procedures, both parties voluntarily dismissed without prejudice the claims and counterclaims pending in this Court, I think before me, though I don't really have a memory of those earlier proceedings.

The Patent and Trademark Office concluded its reexamination proceedings in June of 2010. There were some small changes, but basically the Patent and Trademark Office reaffirmed its grant of the patent.

This lawsuit began in October 2010, and the pleadings were at issue somewhere around January or February 2011, about a year ago.

On August 11, 2011, before any significant discovery proceedings, I conducted a *Markman* hearing. First, as is my practice, I benefited by a tutorial that both sides conducted jointly. That prepared me very significantly for the *Markman* hearings. I held those hearings and construed the patent in an order I issued on September 28, 2011. And then reaffirmed, after a motion for a rehearing by Nautilus, commenting on the file wrapper on October 24, 2011.

*Appendix G*

Nautilus makes this motion under Rule 56, seeking summary judgment on two issues: One is that Nautilus did not infringe. I think this branch of the motion is premature [6] without discovery, and I deny that aspect of the motion as premature.

The second part of the motion, however, has a great deal of cogency to it, which we will examine as we go along. And that is a claim that the patent is invalid because of indefiniteness and failure in that respect to satisfy the requirements of Section 112 of the patent laws.

Section 112 provides that the specification shall contain a written description of the invention and of the manner and process of making and using it in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, where with which is most nearly connected to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly putting out and distinctly claiming the subject matter which the applicant regards as his invention.

Those are the relevant terms of Section 112. And the motion of Nautilus argues that the Biosig patent, in a manner that I will get to, does not conform -- does not satisfy -- the requirements of the specificity.

Patents are presumed valid under 35 U.S.C., Section 282. And the parties seeking to invalidate a patent must

*Appendix G*

submit clear and convincing evidence of invalidity. My [7] requirement is to draw all justifiable inferences in favor of the nonmoving party, that is, in favor of Biosig, on the basis of the credible evidence. The citation for that is *Boston Scientific Corp. v. Johnson & Johnson*, 647 F.3d 1353 (Fed. Cir. 2011).

There are two aspects of indefiniteness.

First there's a failure to differentiate the '753 patent from the prior art; and, second, there's a failure to describe the patent itself, particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Indefiniteness -- or lack of definiteness is probably a better way -- is a question of law. And it is established where an accused infringer shows by clear and convincing evidence that a skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as the expert's knowledge of the relevant art area. That's taken from *Halliburton Energy Services, Inc. v. M-1*, 514 F.3d 1244 at Pages 1249 and 50, (Fed. Cir. 2008).

Absolute clarity is not required. Only claims not amenable to construction or insolubly ambiguous are construed to be indefinite. The citation for that is *Trading Technologies, Inc. v. East B Inc.*, 595 F.3d 1340 at Page 1358, (Fed. Cir. 2010).

[8] Claim specificity or definiteness is analyzed not in a vacuum, but in light of the teachings of the prior art

*Appendix G*

and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art. And that is the holding of *Energizer Holdings, Inc. v. International Trade Commission*, 435 F.3d 1366 at Page 1370, (Fed. Cir. 2006).

There are many other citations that I could discuss, but they are basically redundant of what we have here.

The language I find most apt in relationship to this case is the *Halliburton* case. It's a case where the party enjoyed the patent, obtained the patent for what it called a fragile gel that was used in drilling through mud.

The gel was set to have the property -- was claimed to have the embedded property of becoming liquid when going through whatever it was going through. And when it hit a block, to become a gel and, therefore, prevent the backflow of the fluid. And that was claimed to be the invention.

The problem, the Court found, is that fragility was not defined. And the Court said, and this is to be found at page 1253 of the decision: "By failing to identify the degree of the fragility of its invention, Halliburton's proposed definition would allow the claim to cover not only that which it invented that was superior to the prior art, but also all future improvements to the gel's fragility.

[9] "While patentees are allowed to claim their inventions broadly, they must do so in a way that distinctly identifies the boundaries of their claims. The fluids of the gel invention may provide less resistance to sheer, that

*Appendix G*

is, break more quickly, than the prior art fluids, but the degree of improved speed remains ambiguous.

“Thus, it is unclear whether a person of ordinary skill in the art would have interpreted this claim as having an upper bound of fragility.”

*Halliburton* tried to define the fragility of the gel by using the metaphor of an L-shaped curve, contending that that metaphor distinguished the fragility of the gels claimed in the patent from prior art, and defined how the gels broke when stress was imposed, or how much more quickly the gels would be able to reform when stress was removed. I think I may have described it the opposite way, but it doesn't make any difference for purposes of extracting the rule of law.

The Court held that *Halliburton's* failure to distinguish the fragileness of the drilling fluids of the invention in the close prior art is fatal.

The case cites what I think was an affirmation of a holding of mine, but I'm not sure, so I won't mention it.

In this case, what we have, as I defined it after the *Markman* hearing, is a heart rate monitor for use by a user of exercise equipment.

[10] The patent taught an invention or claimed invention in an electronic circuitry which was able, in effect, to distinguish various noises emitted by the muscular activity of the body with heart rate. And it was

*Appendix G*

based on live electrodes in the portion of the exercise equipment which was grabbed by the two hands.

The invention described a first live electrode, and a first common electrode mounted on a first half of the terminal in -- and here the key words -- a spaced relationship with each other. And then a second live electrode, and a second common electrode mounted on what was called the second half, again, in a “spaced relationship with each other.”

And then the claim went on saying that the first and second common electrodes were to be connected to each other and to a point of common intention.

I ruled that the term “in spaced relationship with each other” means that there is a defined relationship between the live electrode and the common electrode on one side of the cylindrical bar that the user of electrical equipment holds, and the same or a different defined relationship between the live electrode and the common electrode on the other side of the cylindrical bar.

So if one would picture a bicycle handle, each part of the handle being fitted with the live electrode and a common electrode, the spaced relationship is the space between the [11] live and the common electrode. But that term is not defined. And if I have the argument correct -- I think I do, but I'll need confirmation -- the motion by Nautilus argues that without definition of the space and relationship, there is a fatal ambiguity.

Before I go on, let me seek confirmation from Mr. Geringer.



*Appendix G*

MR. GERINGER: That's correct, your Honor.

THE COURT: You can sum it up that easily.

Mr. Bonella, do I have the allegation correct?

MR. BONELLA: I believe you do, your Honor.

THE COURT: Thank you very much.

I appreciate that confirmation from both of you, since, as I admitted when we came together initially, my knowledge of physics was completely taught at the Bronx High School for Science and it didn't go beyond that; so perhaps it's an accolade to grade school.

Biosig produced an expert, George Yanulis, who submitted a declaration expressing the view that the Biosig patent claims are not indefinite, as it is my opinion that the claimed scope is understandable by a person of ordinary skill in the art.

Further, he said, a person of ordinary skill in the art could readily discern the claimed scope of the '753 patent. A person of ordinary skill in the art, having a relevant [12] technical degree, such as a biomedical engineering degree, and a few years' experience in the relevant field of medical devices involving measurements of heart rates, could easily discern Biosig's claims, Mr. Yanulis' claims, the claimed scope, because the EMG -- and that stands again for electro mechanical --

*Appendix G*

MR. BONELLA: Electromyogram, your Honor.

THE COURT: Electromyogram signals. Electrical, we know; myogram is the signals given out by the heart; is that right?

MR. BONELLA: Based on muscle signals from the body, from the heart.

THE COURT: Thank you.

Because the EMG signals have to be substantially removed, and a person with ordinary skill in the art can test for that, just as Dr. Lekhtman did during the reexamination proceedings. His testing showed that Fujisaki -- that's the prior patent -- did not substantially remove the EMG signals. A person of ordinary skill in the art knows how to test to determine whether EMG signals are substantially removed. The '753 patent does not use any terminology that one of ordinary skill in the art would not readily understand.

Let me pause for a minute and ask Mr. Bonella to differentiate the two types of signals that we're looking to distinguish. First, the EMG signal with electrical myocardial [13] signal.

MR. BONELLA: Right, your Honor.

There's the EMG signal, and that's the electromyograph signals that the body gives off from the muscles of the body. And then there's the electrocardiograph signals.

*Appendix G*

Those are the actual signals that you want to measure that are indicative of the heart rate.

So the goal is while a person's exercising, the patent claims a system that has the capability of removing the EMG signals which will mask the ECG signals. And so it removes the EMG signals, so you are left behind the ECG signals which indicate the heart rate.

THE COURT: And for many using exercise equipment, I take it that the ECG signals are intended to stay within a prescribed increase and not go beyond it.

MR. BONELLA: That's correct, your Honor.

THE COURT: So it becomes critical to know what the true heart rate is, and to cancel out, as it were, the signals given from the muscles.

MR. BONELLA: That's correct, your Honor.

THE COURT: All right.

I think that's a sufficient prelude to the motion. I hope I've simplified matters for both of you.

And the moving party will go first, and that is Mr. Geringer.

[14] MR. GERINGER: Thank you, your Honor.

A person skilled in the art, as your Honor mentioned, is the one who needs to understand the specific scope,

*Appendix G*

metes and bounds of the claim. A person skilled in the art needs to be able to tell is a given physical structure inside the scope or outside the scope.

So on the screen and on our board, we've just given three examples. Top one is from the patent; next one is the Fujisaki prior art; the one below is a mock-up that Biosig's expert, Dr. Galiana, did in the first Biosig case. It is also part of the file history because it came into the reexamination.

THE COURT: Let me stop you here.

We need to make a record that will travel to the Court of Appeals. So should we assign a number to this, to this chart?

MR. GERINGER: Yes, your Honor.

Could we bring the Court copies of our presentation? I'm sure that --

THE COURT: You can just keep them.

So this will be what, court exhibit or your exhibit?

MR. GERINGER: Yes, your Honor. And defendants use letters; is that correct?

THE COURT: Defendants should be using letters.

MR. GERINGER: Will be Exhibit A.

*Appendix G*

[15] THE COURT: Exhibit A.

And what do we call it, a comparative depiction of what?

MR. GERINGER: If your Honor would allow, there are nine slides in our deck. If we could call the deck Exhibit A, we would characterize this Page 2 as depictions of three heart rate monitors.

They are labeled by name on Page 4 of Exhibit A, on the left side, indicating that the top drawing is from the patent, the '753. The middle drawing is a crop from a figure of the Fujisaki '200 prior art patent. And the one on the bottom is from the joint appendix, the expert report of Dr. Henrietta Galiana, which was submitted. And this is also a crop of a larger picture which I'll just briefly show the Court. Shows on Page 8 of Exhibit A. And this is from her report in which she built -- she opined that she had built the device of Claim 1.

May I continue, your Honor?

THE COURT: Please.

MR. GERINGER: So a person of skill in the art needs to be able to determine with sufficient clarity what the bounds are so they know what they can build, what they can't.

Fujisaki's heart rate monitor that's shown in the middle has to be outside the scope of the claim. If you look

*Appendix G*

at the file history, it's distinguished; it's allowed over the [16] Fujisaki patent. I think there can be no doubt that a person skilled in the art reading the intrinsic evidence has to be of the mind that the Fujisaki heart rate monitor in the middle is out. Biosig does not contest this; Dr. Yanulis's testimony is --

THE COURT: To put it in different words, the '753 patent must be an invention of what was taught by the Fujisaki patent.

MR. GERINGER: If I could restate, and your Honor can confirm whether or not I'm being accurate, the '753 patent has to identify some novel structure that the Fujisaki prior art did not disclose.

THE COURT: I accept that.

MR. GERINGER: Thank you, your Honor.

Because this is about physical structure. The software stuff, that was the noninfringement argument, and your Honor has denied that as premature. So we're only talking today about physical structure, and can one distinguish the physical attributes of Fujisaki from the patent.

And what I show on Page 5 of Exhibit A is not only those two heart rate monitors now, but also from each source the circuits. The point is that they both have the same physical circuit. There are four electrodes: Two live and two common. The common here are -- when I say connected to ground, that's what "common" meant. And

*Appendix G*

the two connected to the diff [17] amp, those are the live electrodes. And your Honor will recall that the diff amp amplifies differences, cancels what's the same.

THE COURT: "Diff amp" is differential amp?

MR. GERINGER: Correct, your Honor.

THE COURT: Differential what?

MR. GERINGER: Amplifier. So it amplifies differences.

If the heart signal, because it's on the left side of the body, is asymmetric, and so the signals coming in on the left and the right are going to be different, they should be added; those differences should be amplified. If noise was coming in the same through the left and right side, it's the same, it should be cancelled in the diff amp.

But it's the same physical circuit here. And that's not denied. What is posited by Biosig is that a person with skill in the art can distinguish the physical attributes of Fujisaki by testing. That is all that Dr. Yanulis -- should I wait, your Honor?

THE COURT: Yes.

(Pause)

THE COURT: I'm sorry. Go ahead.

*Appendix G*

MR. GERINGER: Thank you, your Honor.

To quote Dr. Yanulis's declaration, he says on Page 13 of his expert declaration submitted by Biosig: "A person of [18] ordinary skill in the art can test for that, just as Dr. Lekhtman did during the reexamination proceedings."

And the "that" that's being tested for is whether EMG signals have been removed.

So what is this test?

That's all that Dr. Yanulis says on this point, he says do what Dr. Lekhtman said in the file history.

What is this test?

Well, first of all, Dr. Lekhtman coined three different kinds of grasping.

THE COURT: Three different kinds of?

MR. GERINGER: Holding. That there's relaxed grasping, in which case he said, Oh, the Fujisaki model he made works just fine; nonrelaxed, it's not defined; and grasping, again, undefined.

So what Dr. Lekhtman's test did was say with these three undesigned kinds of grip, we will test what the EMG is at the other side of the diff amp.

He came up with values, and he gave a range and said it has to be greater than two for all grips.



*Appendix G*

Now, the first question is where is this test found? And it's only in the reexamination file history. It's not in the patent, it's not in the claim construction, it's not in the original file history even. It's also not in any publication that Biosig has cited. Dr. Yanulis cites no publication that [19] quotes his test. So it only appears 17 years after the application was filed.

Your Honor recited some black letter law of indefiniteness. One thing your Honor recited was that it would be measured by from a perspective of a person of skill in the art. The *Howmedica* case and other cases, your Honor, make clear that that is at the time of the application.

THE COURT: What import is the file wrapper then?

MR. GERINGER: The file wrapper can corroborate what meaning the person of skill in the art understood a term to be. And again, the *Howmedica* case -- not cited in my brief, your Honor, I'll give the cite when your Honor is ready -- confirms that. It says this is assessed from the perspective of the person of skill in the art. I might sometimes abbreviate that as the acronym POSA, person of skill in the art.

THE COURT: Don't. Use words.

MR. GERINGER: OK, your Honor, I will.

We patent attorneys often fall into acronyms --

*Appendix G*

THE COURT: Yes, but I'm not.

MR. GERINGER: I will try to avoid that.

So a person of skill in the art must try to understand the claim at the time the application was filed. That's the time of the person of skill in the art's perspective.

THE COURT: I understand it basically that the file wrapper can give context and understanding. But the whole [20] point of a claim in a set of specifications is that someone who wants to find out if he is required to license something before using it or risking exposure when he's using something and consults a patent sees what he has to know. And he doesn't have to go and explore all kinds of other materials in order to find out what is claimed and what is described.

But I'm also given to understand that there is information in the file wrapper that touches upon the issue of infringement.

MR. GERINGER: Your Honor, the file wrapper is part of the intrinsic evidence when put in evidence. That's the *Vitronics* case from the Fed. Circuit.

THE COURT: On a summary judgment motion I have to assume it is in evidence.

MR. GERINGER: Yes, your Honor. We have educed it. And what the person of skill in the art is charged with doing then is looking at the claim and understanding it in

*Appendix G*

the context of the patent specification. They can look at the file history, and should if it's in evidence; but the file history cannot cure indefiniteness.

THE COURT: I'll put it this way: What I understand Dr. Yanulis said is that a person of skill in the art, can, through trial and error, come to a spaced relationship that adequately differentiates the EMG from the ECG signals.

And I would put to you the proposition that you may [21] agree with that if you can do something through trial and error and not because it is described, the patent is indefinite.

MR. GERINGER: I would agree, your Honor, that if that trial and error puts a person of skill in the art in an uncertainty, in a zone of uncertainty, then that's anathema.

THE COURT: Suppose through trial and error, which is what Dr. Yanulis says, a person of skill in the art can ascertain at an appropriate spaced relationship.

MR. GERINGER: Your Honor, I think that the specification had given a clear test, and Dr. Yanulis was applying that test, that it's possible.

THE COURT: But it didn't.

MR. GERINGER: It did not, your Honor.

THE COURT: And so it was pure trial and error.

*Appendix G*

MR. GERINGER: After the fact, 17 years later, yes, your Honor.

THE COURT: If I remember the *Chugai* case, it had to do with a probe that tested for gonorrhoea. I may have the wrong case.

MR. GERINGER: Is this the *Amgen Chugai* case, your Honor?

THE COURT: Yeah. Is that the one?

MR. GERINGER: And the electroferritic gel, your Honor?

THE COURT: Yes.

[22] MR. GERINGER: Yes, your Honor.

THE COURT: Well, the gel is the drilling case, the *Halliburton* case.

The *Chugai* case I'm thinking of

MR. GERINGER: There was an *Amgen Chugai* case in which indefiniteness was held because two different kinds of tests, both accepted in the prior art, would give you different results. And the person of skill in the art was left to guess which test do I use. If I test on one hand, I'm inside plane; if I test with the other test, I'm outside. Since they're both accepted, I'm left to guess which test.

*Appendix G*

THE COURT: Suppose through trial and error you can find an appropriate spaced relationship, but it's not disclosed what test you use or how you go about your trial and error. That's the question I have.

MR. GERINGER: Your Honor, I would say then that the claim just has to stand on its own. If you have the physical structure -- it's an apparatus claim. So if you have the physical structure of that claim, then you're within the scope of that claim.

THE COURT: But how do you know what the physical structure is if you know what is the spaced relationship?

MR. GERINGER: Under your Honor's construction, you were able to construe the term "spaced relationship," and so a person of skill in the art could try to apply that to a device.

[23] THE COURT: But I beg that question because the attorneys didn't not help me and the patent didn't help me.

A spaced relationship did not tell me or anyone what precisely the space should be.

MR. GERINGER: And that's why --

THE COURT: Not even any parameters as to what the space should be.

*Appendix G*

MR. GERINGER: Yes, your Honor.

THE COURT: Nor whether the spaced relationship on the left side should be the same as the spaced relationship on the right side.

MR. GERINGER: Correct, your Honor.

And a very interesting point, because the file history would tell a person of skill in the art contradictory things to that.

Your Honor's construction of spaced relationship really covers any spaced relationship.

THE COURT: That's right.

MR. GERINGER: So the Fujisaki patent which I'm showing now, Page 4 of Exhibit A, that's why we put the questions, is it in, is it out, just in terms of the physical attributes now.

The claim construction, well, sure, there is a spaced relationship on the left, and a spaced relationship on the right. I could also say that -- it would take me a moment to [24] show your Honor a picture, but Biosig also distinguished asymmetric devices in the file history. The spacing on the left was different than the spacing on the right, and that wouldn't give you a balance.

Again, your honor did not -- we argued that at *Markman*, but your Honor did not adopt it. We argued it

*Appendix G*

on reconsideration, your Honor denied us and has stayed with a claim construction spaced relationship that we say confirms that a person of skill in the art is left to guess on a structure like Fujisaki.

That physical structure, whether it's in or out, is just not clear, because the claim construction might look like it reads on it, but it surely must be distinguished on some physical basis. What basis? And all that Biosig has suggested is the test for which we have suggested in rebuttal what test? What test is this? How is this test any different than the Halliburton test, where also they suggested a test.

THE COURT: What does the description of the file wrapper say about the test? How does it describe it?

MR. GERINGER: It says that he built a model of the Fujisaki patent. He had a user, undisclosed user, grip it in what he said were three different ways. And he said he measured the EMG, the muscle other than heart signal, on the other end of the diff amp.

So basically using the figure that I've reproduced on [25] Page 5 of Exhibit A, on the right-hand side I've circled in red the diff amp. And those four boxes above represent the electrodes. So the two live electrodes marked 9 and 13 come down into the diff amp, and there's an output.

What Dr. Lekhtman said he did was built a model of Fujisaki, measured the EMG at that output for three different kinds of grips, and he came up with these numbers, your Honor: 10.5, I believe, 1.15, and .85.

*Appendix G*

THE COURT: So that Fujisaki can be understood as a device that measures differentials produced by holding the handle with different squeeze context, different gasps, while the '753 patent applies the differential from a spaced relationship.

MR. GERINGER: They both do exactly the same physical structure, your Honor.

THE COURT: They might produce the same, but they don't describe the same.

Fujisaki, according to your analysis, depends on grasp strength, while the '753 depends on spacing.

MR. GERINGER: I may have misspoken, your Honor. If I did, I apologize.

But, no, Fujisaki does not say that it depends -- I may have misunderstood.

Yes, your Honor, when Dr. Lekhtman tested his mock-up of the Fujisaki prior art, which he built to some scale he [26] chose, he tested it and said this does not give an adequate heart-to-muscle signal ratio when being grasped actively; only when relaxed.

THE COURT: Who said that, Dr. Lekhtman?

MR. GERINGER: That's what Dr. Lekhtman said about the model he built of Fujisaki.



*Appendix G*

But the Fujisaki patent is a U.S. patent that's been allowed; it's for detecting heart rate. It was not disclosed originally in the '753 patent. When Dr. Galiana submitted a report, she didn't have Fujisaki in front of her. As it turns out, as your Honor can see, it's just very, very similar. And the circuit inside is, in that sense, the same: Four electrodes, two live, two common, leading to a diff amp.

Your Honor, what Dr. Lekhtman purported to distinguish was the result of the model, was the whereby clause in the claim. He said Fujisaki does not produce the right result as I've measured it, and that's a legal area, your Honor. Because whereby clauses -- and we've cited this to the Court in the *In Re: Schreiber* case.

THE COURT: I'm not dealing with the Fujisaki patent. I'm just noting that there are differences which goes against your argument.

Fujisaki depends on the strength of the grasp, how much intensity the exerciser holds onto the handle. And it doesn't measure accurately when held too tightly. You're [27] saying it measures it more accurately when held loosely.

MR. GERINGER: I am not saying that, your Honor, Dr. Lekhtman said that.

THE COURT: All right.

Well, that's the comparison. The '753 does not base itself on the strength of the grasp.

*Appendix G*

MR. GERINGER: That's it, your Honor. That's exactly it. The claim does not --

THE COURT: So it's a different patent.

MR. GERINGER: It's not that it's a different patent, your Honor, it's their attempt to distinguish that patent, distinguish that physical structure.

THE COURT: How does the '753 distinguish itself from the Fujisaki?

MR. GERINGER: On the physical structure, your Honor, for the physical structure we've discussed, it does not.

THE COURT: Well, both test a differential, both amplify the differential to get an accurate reading.

MR. GERINGER: Yes, your Honor.

THE COURT: It doesn't help me with the question whether the phrase "a spaced relationship" is clear or ambiguous for purposes of Section 112.

Spacing has to do with the distance between two points. Grasping has to do with not spacing, but intensity of grip. It's different.

[28] MR. GERINGER: That's right.

*Appendix G*

And the second one is not in the patent anywhere, your Honor. It only comes in after the fact in the reexam. So I would submit --

THE COURT: What do you mean by the second?

MR. GERINGER: You said that there was spacing.

THE COURT: The '753 patent is based on space, the distance between two points. Right?

MR. GERINGER: Yes, your Honor.

But any spacing will do if the claim construction is taken literally.

THE COURT: Any defined space.

MR. GERINGER: Correct.

But Biosig has consistently taken a position, as they must, that, well, no, some spacings don't come inside. The Fujisaki spacing in the middle doesn't qualify. And your Honor might fairly ask, How does my construction of space relationship not read on the Fujisaki device.

THE COURT: So the idea of the strength of the grasp is irrelevant to our discussion.

MR. GERINGER: Should be irrelevant, your Honor. Should not rescue --

*Appendix G*

THE COURT: I misunderstood you then.

So what in the Fujisaki reads on the '753 patent or vice versa? What in the '753 patent reads on Fujisaki?

[29] MR. GERINGER: In the physical structure, your Honor, every element of Claim One will read on Fujisaki. The noninfringement, your Honor, is deferred on us about the software.

THE COURT: It seems to me they're different because of what we are talking about, difference between space and intensity of grasp.

Where is the space coming out of me? Show me that on the diagram again.

MR. GERINGER: Sure, your Honor.

On the drawing, I've also shown up at Page 4, on the top drawing, the '753, the electrodes have been labeled on the left side 9 and 11; on the right side they are 15 and 13. And Fujisaki, on both sides they are labeled 22 and 21. So each of them has two electrodes on each side with a small gap, with a gap in between.

Your Honor may recall that in the file history, the patentee said the spacing in Fujisaki is wrong; it's too narrow. The patents are too wide; they are wider than the narrow gap in between, and that that is unlike the '753. So we argued for that physical distinction, your Honor.

*Appendix G*

But as your Honor has ruled, the file history is ambiguous and, therefore, that distinction did not come into the claim construction; and, therefore, cannot save the patent from indefiniteness, because it does not give the clarity that [30] would have saved it. We argued for clarity; they argued for ambiguity. And, therefore, on the physical dimensions, there is no clear distinction, and a person of skill in the art has to guess.

THE COURT: OK. Go ahead.

MR. GERINGER: Would your Honor like to hear anything further on this *Halliburton*-type argument for indefiniteness from Nautilus?

THE COURT: Listen, whatever you want to tell me.

MR. GERINGER: Well, if your Honor has any questions on Halliburton, I would be happy to --

THE COURT: No.

MR. GERINGER: Otherwise --

THE COURT: What I need to know is how do I deal with Yanulis, who said as a matter of fact I can build a physical replica of the distinction. I know I'd get around it. It took me some trial and error to do it, I can do it.

So what import should I give to that?

*Appendix G*

MR. GERINGER: Three things wrong with Dr. Yanulis' declaration, your Honor, and why it's not an obstacle to summary judgment.

First, indefiniteness is a question of law, and your Honor --

THE COURT: But the cases say that indefiniteness is shown by the failure of clear and convincing evidence to show [31] that a person in the skill of the art can't build what the patent teaches. And Yanulis says he can. So doesn't he overcome that argument?

MR. GERINGER: No, your Honor, because this is not about enablement. We're not saying it's indefinite because you can't ever build it.

THE COURT: I used the wrong term. He can describe it, he can see it, he can understand the spaced relationship; however, he doesn't.

MR. GERINGER: But Dr. Yanulis does several things that are wrong as a matter of law, your Honor.

First, he imports this test into the claim construction, and it's not there. So, in effect, he's seeking to vary the claim construction. He's trying to give it clarity, which you will not find in the claim construction itself.

The claim construction does not define the term "substantially zero EMG signal" as one of this test.

*Appendix G*

THE COURT: What are we talking, Paragraphs 59 and 73?

MR. GERINGER: I believe it was Paragraph 79. And the Lekhtman declaration, your Honor, that said the Fujisaki patent is different because its pads are fat and its gap is narrow. Yes, it gave a physical distinction. We tried to rely upon that, and the claim construction ruling went against us on that point. That was at Joint Appendix 241, your Honor, Paragraph [32] 79.

THE COURT: I have it.

MR. GERINGER: So while that statement -- we argued that that statement was a disclaimer, we lost. We lost on reconsideration. So that cannot be reimported by Dr. Yanulis and no other distinction can be reimported by Dr. Yanulis.

We also argued in the *Markman*, your Honor, that they had argued that you have to have a ECG --

THE COURT: You wanted me to adopt this language specifically into the interpretation of the *Markman*.

MR. GERINGER: Yes, in the space relationship term, your Honor, yes.

THE COURT: And Mr. Bonella opposed that. And I took his view.

MR. GERINGER: Correct, your Honor.

*Appendix G*

THE COURT: So he said a space relationship can be anything. It could be this or it could be something else.

MR. GERINGER: And, your Honor, at the time, it was Mr. Bonella's colleague, I believe, Mr. Milcetic, but your Honor warned them that you didn't want them to fall into a trap.

THE COURT: Right.

MR. GERINGER: That construing it in a way that embraces ambiguity could lead to invalidity through vagueness.

THE COURT: And now you're trying to take advantage of [33] that right now.

MR. GERINGER: Absolutely, your Honor.

I'm saying that, yes, without that physical structure distinction, well now we don't have any distinction for the physical structure.

THE COURT: Correct. OK.

So where do we go from there?

MR. GERINGER: I would suggest, your Honor, that perhaps the *Halliburton* argument could be rebutted by my opposing counsel, and then we could turn to the IPXL theory of invalidity, which is related but different.



*Appendix G*

THE COURT: OK. Let's have Mr. Bonella.

MR. BONELLA: Thank you, your Honor.

I'd like to start by just grounding ourselves where we started with, and that's the ball, which you read. And that is that the patent is presumed to be valid; there's a burden of clear and convincing evidence not that Biosig has, that Nautilus has.

THE COURT: But I don't understand that evidence. It's also called a question of law.

MR. BONELLA: Because a question of law, it's still their burden, OK.

THE COURT: But a law question is different. Law question, you're either right or wrong. A proof question is a quantum of evidence.

[34] So you have Yanulis who says I can do it, or I can understand it, or something. And I don't quite understand.

MR. BONELLA: And that's exactly right, your Honor. Because as your Honor read the law, indefiniteness is addressed to who. And as Mr. Geringer said, it's addressed to the person of ordinary skill in the art.

THE COURT: So all you've got to do is trot out an expert who will express an opinion in a conclusory fashion and a motion can't be granted.

*Appendix G*

MR. BONELLA: I won't say it's conclusory, your Honor. He read the file history, which is extensive, I think it's 1,000 pages; understood the testing --

THE COURT: Show me what in Yanulis's affidavit shows the basis other than trial and error.

MR. BONELLA: Page 13, he told you that he read the file history, understood the testing that Dr. Lekhtman did that's in the file history, and that's extensive testing.

THE COURT: He's the one that did the Fujisaki, right?

MR. BONELLA: He did testing of many devices. He tested Nautilus devices, he tested some of his own devices, he tested some other on the market, and he tested a device similar that was made according to Fujisaki teaching. So he read those testings, understood those testings, and provided an opinion based upon that.

THE COURT: Let's go through it. You'll teach me [35] that. Because I don't really find that. I don't really find a clear basis for what he comes up with.

MR. BONELLA: So I just wanted to started with there. The question, I think, you posed is is there a zone of uncertainty here such that the public doesn't know whether they're in or outside of this claim.

THE COURT: It should be half inch, one inch, two inches, three inches. What is the space relationship?

*Appendix G*

MR. BONELLA: And that's exactly it, your Honor.

If we go to the reasons for allowance of the claim, let's go back to what happened in the patent office.

THE COURT: You know, what you're doing is jumping. You started with Yanulis, and I asked you what's the basis for his opinion. He says I find that a person of ordinary skill in the art could readily discern the claimed scope of the '753 patent claims, including the spaced relationship construction adopted by the Court.

So tell me, how does he come to that view?

MR. BONELLA: I'll tell you exactly how he comes to that view. He comes to that view by reviewing the testing and the back and forth of the patent office.

THE COURT: Show me. What does he say?

MR. BONELLA: If we start with the reason the claim was allowed, and if we look to the reasons of allowance, which we have on the screen --

[36] THE COURT: No, no. I'm in Yanulis. I'm looking where in Yanulis there is support for his finding. That's his opinion. "I find" means my opinion is.

MR. BONELLA: Right.

THE COURT: What's the basis of the opinion?

*Appendix G*

MR. BONELLA: The base of his opinion is the bottom Paragraph 13, where he said the person of ordinary -- he had reviewed the prosecution history, he had reviewed the patent.

And he said: "Person of ordinary skill in the art could discern the claim scope because the EMG signals have to be substantially removed."

That's important language. Because that is exactly why --

THE COURT: That's what's meant by differential amplification. That's how you remove it. You're just repeating circular words.

MR. BONELLA: No, your Honor.

THE COURT: A person of ordinary skill could easily discern the claimed scope, or the claimed scope has to do with a certain spacing, because the EMG signals have to be substantially removed.

Well, that's the function; that's the end gain.

The spaced relationship is the way that it's done. It doesn't tell me what the spacing should be.

It goes on.

[37] And a person of ordinary skill in the art can test for that, just as Dr. Lekhtman did during the reexamination

*Appendix G*

proceedings. But Dr. Lekhtman was testing for grip strength in a different kind of a spacing. And he did test for spacing; the patent was indistinguishable one from the other.

So what I have here are two conclusions supporting a third conclusion, each one resting on different bases. That's no logic. That's a paid expert, a certain type that one shouldn't have in litigation because he comes to be more embarrassing than useful.

MR. BONELLA: Your Honor, that's actually not correct in terms of the testing.

THE COURT: Then you tell me.

MR. BONELLA: The testing that was done was to test whether the spaced relationship of the electrodes on various devices substantially removed the EMG signals so that you would leave behind the ECG signals.

THE COURT: That is function. That's the result. It's not the method.

Don't do that, Mr. Geringer.

MR. GERINGER: I'm sorry, your Honor.

THE COURT: It's the result you taught on me.

You can't give me a description in the form of a result. If you have a description and you follow it, you should get

*Appendix G*

the result. But you can't trot out a result and say [38] that's a description. It's not.

MR. BONELLA: But it's a space relationship in conjunction with the circuitry.

THE COURT: What space relationship?

MR. BONELLA: You put the electrodes on the left side and the right side. You have the live and the common. And the electrode relationship and the balancing depends upon the material, the size, the shape, and the configuration. They have to be in a relationship, all those things considered, that's in the file history.

THE COURT: Is there anything that says that in a certain type of material you have to have a two-inch spread?

MR. BONELLA: It's not limited to that.

THE COURT: A one-inch spread? How do you know? You're grabbing with two hands.

First of all, you don't know if the spacing between the two electrodes in the left hand is supposed to be the same as the right hand. No one tells you that.

Second, no one tells you what the composition of the handle is. Not said.

*Appendix G*

Third, take the left hand. Is the electrode supposed to be between the two middle fingers, the outer first and fourth finger, the thumb underneath and the fingers on top? Where is the spaced relationship?

A spaced relationship means it has to be a certain [39] relationship, but doesn't tell you what the certain relationship is. One inch, an inch and-a-quarter, two inches? One doesn't know. Top, bottom? One doesn't know. Where the palm is, where the fingers are? One doesn't know. And what happens to the other hand?

Now, what Dr. Yanulis says is that through trial and error, which he doesn't describe, one can find a spaced relationship. That may be. But there's no description.

MR. BONELLA: Dr. Yanulis I don't believe testified on trial and error.

But the point, your Honor, you're making, you're saying --

THE COURT: A person of ordinary skill can test for that.

MR. BONELLA: Yes.

THE COURT: Just as Dr. Lekhtman did.

MR. BONELLA: Yes.

THE COURT: What was the test that Dr. Lekhtman used, does he say?

*Appendix G*

MR. BONELLA: The test is, your Honor, you have the electrode configuration; you have it hooked up to circuitry. You test whether you can remove the EMG signals. And that's done by doing -- and the purpose of this invention is to do it while it's active, not while it's passive, while someone is exercising. So the testing is to hold it while you're actively [40] gripped and you're exercising.

THE COURT: So if I have a small hand, come on to that exercise machine, will that differential, the difference in spacing between the live and the common electrode, differ from a large man? Let's say Tyson Chandler is on the machine, who was an enormous spread.

MR. BONELLA: I'm sure he does.

THE COURT: Is it the same?

MR. BONELLA: That person's hand won't matter because the electrodes are configured to remove EMG through the processing. If you have the electrodes --

THE COURT: Everybody's EMG is different.

MR. BONELLA: It's within a certain zone, your Honor. It's not like one person's EMG is going to be so far off from another person's EMG. The whole idea of the invention is the EMG is to be filtered out.

THE COURT: So what does "spaced" mean?

MR. BONELLA: The spaced relationship between the electrodes is one whereby you remove the EMG



*Appendix G*

signals. That's exactly what it is. That's why the testing was done; that's why the patent was allowed. It's very easy to test whether the device can remove the EMG signals or not. It's very easy. The Fujisaki one showed that when you have activity --

THE COURT: So what you mean by "spaced relationship" is that whatever the distance between the live and the common [41] electrode that produces the maximum differential amplification of the EMG signal will work. That's the patent.

MR. BONELLA: I don't know if I can use those words, but the key distinction here, your Honor, was a substantial removal of the EMG signals. That's why the examiner said and the reasons for allowance that the patent was being allowed in the reexamination proceedings. That's what the testing showed.

THE COURT: I don't understand the description.

Let's go back into the file wrapper. You show me where it is.

MR. BONELLA: If you turn to Page JA143.

THE COURT: JA143.

MR. BONELLA: 44 is the examiner's reasons for allowance.

THE COURT: I'm on 143.

*Appendix G*

MR. BONELLA: I'm sorry?

THE COURT: I'm on 143.

MR. BONELLA: OK. So this is in the notice of intent to issue the reexamination certificate. And on 143 at the bottom it says: "Statement of reasons for patentability and/or confirmation. Claims one through 16 are confirmed. The following is an examiner's statements of reasons for confirmation of the claims found patentable in this reexamination proceeding."

On Page JA144 of the joint appendix, it says: [42] Referring to Claim One, the claim is confirmed over the prior art that was explained in the request -- and that includes the Fujisaki patent -- and determined to raise a substantial new question of patentability in the order granting reexamination and over the prior art that was applied and discussed by the examiner --

THE COURT: Slow down. Go ahead.

MR. BONELLA: -- in the present reexamination proceeding. Because the prior art does not explicitly teach a heart rate monitor for use by a user in association with an exercise apparatus and/or exercise procedures whereby a first electromyogram signal -- that's the EMG -- will be detected between said first live electrode and said first common electrode. And a second electromyogram signal, of substantially equal magnitude and phase to said first electromyogram signal, will be detected between said second live electrode and said second common electrode,

*Appendix G*

so that when said first electromyogram signal is applied to the said first terminal, and said second electromyogram signal is applied to said second terminal, the first and second electromyogram signals will be subtracted from each other to produce a substantially zero electromyogram signal at the output of said differential amplifier in combination with the remaining elements or features of the claimed invention.

THE COURT: I rule, Mr. Bonella, that this is all a [43] description of the desired result and not a description of any invention that is calculated it followed to produce that result and, therefore, violates the requirement of specificity in Section 112.

Now, anything else in this file wrapper that you wish me to observe?

MR. BONELLA: I'm sorry, I didn't understand the ruling, your Honor.

THE COURT: You can have it repeated.

Martha, would you repeat it please.

(Record read)

MR. BONELLA: I'm sorry, I'm just not understanding the ruling, your Honor.

Are you saying that -- I mean this was the reason it was --

*Appendix G*

THE COURT: I'm saying what I said. You can have it repeated if you like.

MR. BONELLA: OK.

(Record read)

MR. BONELLA: I just note that the reasons for allowance here are contained within the claimant of itself. And so to say that --

THE COURT: You have to do two things. You have to distinguish yourself from the prior art and you have to show a claim of invention.

[44] MR. BONELLA: Yes.

THE COURT: I find that you do neither.

MR. BONELLA: And I note for the record that -- the Fujisaki record, that Dr. Yanulis pointed out another distinction based upon Fujisaki over the Fujisaki reference.

THE COURT: Where?

MR. BONELLA: Where? In his declaration. If you look at Page 14 of his declaration, sir.

THE COURT: Yes.

MR. BONELLA: He says that --

*Appendix G*

THE COURT: Wait a minute. I'm on Page 14.

MR. BONELLA: OK. It explains that the Fujisaki patent is not disclosed, at least the EMG whereby clause or the means for calculating.

THE COURT: I'm sorry, I missed that. Say it again.

MR. BONELLA: I'm sorry.

THE COURT: Where are you reading from?

MR. BONELLA: The second paragraph on Page 14 of his declaration in the section "Anticipation Issues," sir.

THE COURT: Yes.

"It is my opinion that the patent claims are not anticipated by Fujisaki, et al. I agree with the patent office that the claims are patentable over Fujisaki, et al. As I described above, the Fujisaki patent does not disclose at least the claimed EMG whereby clause or the means for calculating.

[45] Fujisaki discloses using each time interval measured and does not disclose validity checks on the data, much less those claimed in the '753 patent algorithms."

I'll stay with you, Mr. Bonella. You can show me all the reasons that lead to these conclusions.

MR. BONELLA: So he says that they don't disclose the time interval measure. So when you exclude the means

*Appendix G*

of function clauses, one of the structures is an algorithm that has a validity check on the date in the figures. There's a 15 percent change between beats per minute.

THE COURT: But we're not talking about that; we're talking about the spaced relationship.

MR. BONELLA: Right. But there is a --

THE COURT: We're not talking about time.

MR. BONELLA: But there's a distinction between the Fujisaki.

And then he says the EMG whereby clause is not disclosed because -- and he goes on down the paragraph, the next paragraph.

THE COURT: We had the whereby clause in the last paragraph, didn't we, on a previous page?

MR. BONELLA: Right, but he provides some of the explanation here.

THE COURT: Where? I don't understand.

We're not talking about time; we're not talking about [46] how long the point of contact is between the hand -- each hand and the bar. We're talking about spaced relationship. I don't see anything in this paragraph that deals with spaced relationship.

*Appendix G*

MR. BONELLA: He's explaining the distinction is not spaced relationship between Fujisaki and the '753 patent. That is not the distinction. The distinction is completely different.

THE COURT: Mr. Geringer produced a point where there was a spaced relationship, was said to be in the Fujisaki paragraph. We're talking about that, it seems to me relevant. If we're talking about something else, it's not in the motion. The motion focuses on spaced relationship.

MR. BONELLA: The spaced relationship, your Honor, the technology, the spaced relationship is tied to the removal of the EMG. If you have a spaced relationship, it will --

THE COURT: We're repeating ourselves, Mr. Bonella. That's what we just ruled on. It's what I just said before. If there's something different on Page 14 that would lead me to a different conclusion, I don't think so. It references back to the previous page here.

MR. BONELLA: He explains that the detection removal of the EMG signals are a function of the electrode size, shape, spacing, material, and circuitry. Fujisaki --

THE COURT: And that critical element of spacing is [47] what is vague, among other things, but that's the one that's focused on.

Do I have a correct understanding of your motion, Mr. Geringer?

*Appendix G*

MR. GERINGER: Yes, your Honor.

THE COURT: So let's not talk about other things. Spacing is a material element. You don't solve that material element; you break the chain.

MR. BONELLA: The spacing is tied to the removal of EMG. That's what it's about.

THE COURT: Of course that's it. That's the function, the function of the result -- I'm not repeating. I ruled that there's nothing additional that you've just told me.

MR. BONELLA: OK. And, your Honor, also note that the only evidence of record we have though is of the file history and Dr. Yanulis's declaration.

THE COURT: I'll look at anything else in the file history that bears upon this question, but it seems to me that we have it here. You can't prove a point by conclusions. You have to prove a point by reasons, by descriptions. And there is nothing of that nature in Dr. Yanulis's declaration.

Is there anything else I need to hear?

MR. BONELLA: Well, the file history explains that the spaced relationship is a function of the size of the electrodes, the geometry --

[48] THE COURT: Show me.



*Appendix G*

MR. BONELLA: I believe it's JA201, your Honor.

THE COURT: JA201. All right.

MR. BONELLA: You see at the bottom of the paragraph it's talking about --

THE COURT: "The size, shape, material, and spacing of the active electrodes cannot be standardized for all exercise handles. Analyses must be made on a machine-specific basis to find best ECG/EMG ratio for each machine. That is why all the infringers are using different configurations of the EMG balanced electrodes on their equipment."

MR. BONELLA: And you notice that none of the --

THE COURT: Yes, go ahead.

MR. BONELLA: None of the infringers were using a Fujisaki structure, your Honor. None of them have large cylindrical-shaped electrodes on their equipment. None of them.

THE COURT: That doesn't make any difference.

So the statement is the size, shape, material, and spacing.

MR. BONELLA: That's the relationship.

THE COURT: All are material causative functions. I've got the wrong word. All material elements in

*Appendix G*

producing an appropriate ratio of electrocardiogram signals to electromechanical signals. But we don't know the relationship [49] among these. The size; what size? The shape; what shape? The material; what materials? The spacing; what spacing? It's not described.

MR. BONELLA: The other claim in terms of functional relationships, your Honor. And the claim says that the functional relationship is the removal of the EMG. If you have these things in the relationship that will remove the EMG, that is how the invention was explained to the patent office, that's how they found it to be patentable, and that's the relationship.

THE COURT: The purpose of the description clause is to tell a person skilled in the art how a certain desired result is achieved different and better from the way it had been done in the past.

There's nothing in this patent in its specifications or its claims or the file wrapper that fills this function, this requirement, of a specific description. In words of the statute, "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. There is nothing here that satisfies the requirement of full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains and with which it is mostly nearly connected to make and use the same."

Looking at *Halliburton* again, the claim from the patent described that a gel would solve the problem experienced [50] in drilling that would effectively remove

*Appendix G*

drill cuttings from the well bore, cool and lubricate the drill bit, support the drill pipe and drill bit, and provide a hydrostatic head to maintain the integrity of the well bore walls and prevent well blowouts.

That's from the patents, and it's Page 1245 of the opinion of Chief Judge Michel.

And the claim was that a certain gel would do it, a fragile gel. Judge Michel read the statute, quoted the way I did. He cited the Supreme Court decision of *United Carbon Company v. Binney & Smith Co.*, 317 U.S. 228 at Page 236, 1942. In the rule that the statute requirement of particularity and distinctness in claims is met only when the claims clearly distinguish what is claimed and what went before in the art and clearly circumscribed was foreclosed from future enterprise.

Chief Judge Michel expressed his understanding that difficulties in defining claims are not important if the meaning of the claim is discernible, even though the task may be formidable, and a conclusion may be one of which reasonable persons will disagree, would have held the claims sufficiently clear to avoid invalidity on indefiniteness grounds.

Proof of indefiniteness, he says, requires such an exacting standard, because claim construction often poses a difficult task over which expert witnesses, trial courts, and even the judges of this Court, may disagree. Nevertheless, [51] this standard is met where an accused infringer shows by clear and convincing evidence that a

*Appendix G*

skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and prosecution history, as well as her knowledge of the relevant area.

That's at Pages 1249 and 1250.

And I've ruled that the hypothetical skilled artisan has nothing in the specifications or the claim or the file history to teach that expert this proper spacing that should be used effectively to subtract the electromechanical signals a person emits from the electrocardial signals that a person emits.

Just as in the *Halliburton* case, there was no definition of the fragility of the gel. And the fact that Halliburton can articulate a definition supported by the specification reducing it to words, the claim remained indefinite because a person skilled in the art could not translate the definition the Court held into meaningfully precise claim scope. The Court agreed with that. And I've read these portions before and I don't need to read it again.

Accordingly, I grant the motion for summary judgment, holding that the specification, the claims, and the file history do not supply the requirement of a clear written description required by Section 112 of Title 35 of the United States Code.

[52] Now, that will invalidate Claims 1 to 11, Mr. Geringer.

*Appendix G*

What about the rest of the wrist dependent?

MR. GERINGER: Your Honor, only Claims 1 and 11 are asserted.

MR. BONELLA: That's correct, your Honor.

THE COURT: All right.

So I need to go onto the alternative ground, right?

MR. GERINGER: If your Honor wishes; although it is redundant upon the result.

THE COURT: Well, I do wish to.

So that grants the motion.

The complaint is dismissed, and judgment is granted for the defendant.

MR. GERINGER: Thank you, your Honor.

THE COURT: A summary order will follow.

These are my findings and conclusions.

MR. GERINGER: Your Honor, may I bring up a copy of Exhibit A to the clerk?

THE COURT: Yes. Exhibit A now is the entire state of particular depictions that were used in the argument.

*Appendix G*

MR. GERINGER: Yes, your Honor.

THE COURT: OK. So the record will be the motion papers and this Exhibit A.

Mr. Bonella, any problem with that?

[53] MR. BONELLA: No, your Honor.

THE COURT: Is there anything else I need to do today?

MR. BONELLA: Just to be clear for the record, those are his demonstrative exhibits.

THE COURT: Sorry?

MR. BONELLA: Those are his demonstrative slides though, they are not --

THE COURT: I think that's right.

Isn't that so?

MR. GERINGER: That is correct, your Honor.

MR. BONELLA: Just so it's clear, they are not being admitted into evidence or anything.

MR. GERINGER: Correct, your Honor. It is not new evidence.

106a

*Appendix G*

MR. BONELLA: The only issue would be the counterclaims for your Honor.

MR. GERINGER: Which we will discuss in the hallway, but I believe that, your Honor, we would be willing to dismiss those without prejudice.

THE COURT: Counterclaims are dismissed without prejudice.

MR. GERINGER: Thank you, your Honor.

THE COURT: OK. Thank you very much.

\* \* \*