



## **Patent Claim Drafting: Practical Prosecution and Portfolio Strategy Workshop**

**April 6, 2021**

**12:00 p.m. – 1:30 p.m.**

**CT Bar Association**

**Webinar**

**CT Bar Institute, Inc.**

CT: 1.5 CLE Credits (General)

NY: 1.5 CLE Credits (AOP)

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## **LAWYERS' PRINCIPLES OF PROFESSIONALISM**

As a lawyer, I have dedicated myself to making our system of justice work fairly and efficiently for all. I am an officer of this Court and recognize the obligation I have to advance the rule of law and preserve and foster the integrity of the legal system. To this end, I commit myself not only to observe the Connecticut Rules of Professional Conduct, but also conduct myself in accordance with the following Principles of Professionalism when dealing with my clients, opposing parties, fellow counsel, self-represented parties, the Courts, and the general public.

### **Civility:**

Civility and courtesy are the hallmarks of professionalism. As such,

- I will be courteous, polite, respectful, and civil, both in oral and in written communications;
- I will refrain from using litigation or any other legal procedure to harass an opposing party;
- I will not impute improper motives to my adversary unless clearly justified by the facts and essential to resolution of the issue;
- I will treat the representation of a client as the client's transaction or dispute and not as a dispute with my adversary;
- I will respond to all communications timely and respectfully and allow my adversary a reasonable time to respond;
- I will avoid making groundless objections in the discovery process and work cooperatively to resolve those that are asserted with merit;
- I will agree to reasonable requests for extensions of time and for waiver of procedural formalities when the legitimate interests of my client will not be adversely affected;
- I will try to consult with my adversary before scheduling depositions, meetings, or hearings, and I will cooperate with her when schedule changes are requested;
- When scheduled meetings, hearings, or depositions have to be canceled, I will notify my adversary and, if appropriate, the Court (or other tribunal) as early as possible and enlist their involvement in rescheduling; and
- I will not serve motions and pleadings at such time or in such manner as will unfairly limit the other party's opportunity to respond.

### **Honesty:**

Honesty and truthfulness are critical to the integrity of the legal profession – they are core values that must be observed at all times and they go hand in hand with my fiduciary duty. As such,

- I will not knowingly make untrue statements of fact or of law to my client, adversary or the Court;
- I will honor my word;
- I will not maintain or assist in maintaining any cause of action or advancing any position that is false or unlawful;

- I will withdraw voluntarily claims, defenses, or arguments when it becomes apparent that they do not have merit or are superfluous;
- I will not file frivolous motions or advance frivolous positions;
- When engaged in a transaction, I will make sure all involved are aware of changes I make to documents and not conceal changes.

**Competency:**

Having the necessary ability, knowledge, and skill to effectively advise and advocate for a client's interests is critical to the lawyer's function in their community. As such,

- I will keep myself current in the areas in which I practice, and, will associate with, or refer my client to, counsel knowledgeable in another field of practice when necessary;
- I will maintain proficiency in those technological advances that are necessary for me to competently represent my clients.
- I will seek mentoring and guidance throughout my career in order to ensure that I act with diligence and competency.

**Responsibility:**

I recognize that my client's interests and the administration of justice in general are best served when I work responsibly, effectively, and cooperatively with those with whom I interact. As such,

- Before dates for hearings or trials are set, or if that is not feasible, immediately after such dates have been set, I will attempt to verify the availability of key participants and witnesses so that I can promptly notify the Court (or other tribunal) and my adversary of any likely problem;
- I will make every effort to agree with my adversary, as early as possible, on a voluntary exchange of information and on a plan for discovery;
- I will attempt to resolve, by agreement, my objections to matters contained in my opponent's pleadings and discovery requests;
- I will be punctual in attending Court hearings, conferences, meetings, and depositions;
- I will refrain from excessive and abusive discovery, and I will comply with all reasonable discovery requests;
- In civil matters, I will stipulate to facts as to which there is no genuine dispute;
- I will refrain from causing unreasonable delays;
- Where consistent with my client's interests, I will communicate with my adversary in an effort to avoid needless controversial litigation and to resolve litigation that has actually commenced;
- While I must consider my client's decision concerning the objectives of the representation, I nevertheless will counsel my client that a willingness to initiate or engage in settlement discussions is consistent with zealous and effective representation.

### **Mentoring:**

I owe a duty to the legal profession to counsel less experienced lawyers on the practice of the law and these Principles, and to seek mentoring myself. As such:

- I will exemplify through my behavior and teach through my words the importance of collegiality and ethical and civil behavior;
- I will emphasize the importance of providing clients with a high standard of representation through competency and the exercise of sound judgment;
- I will stress the role of our profession as a public service, to building and fostering the rule of law;
- I will welcome requests for guidance and advice.

### **Honor:**

I recognize the honor of the legal profession and will always act in a manner consistent with the respect, courtesy, and weight that it deserves. As such,

- I will be guided by what is best for my client and the interests of justice, not what advances my own financial interests;
- I will be a vigorous and zealous advocate on behalf of my client, but I recognize that, as an officer of the Court, excessive zeal may be detrimental to the interests of a properly functioning system of justice;
- I will remember that, in addition to commitment to my client's cause, my responsibilities as a lawyer include a devotion to the public good;
- I will, as a member of a self-regulating profession, report violations of the Rules of Professional Conduct as required by those rules;
- I will protect the image of the legal profession in my daily activities and in the ways I communicate with the public;
- I will be mindful that the law is a learned profession and that among its desirable goals are devotion to public service, improvement of administration of justice, and the contribution of uncompensated time and civic influence on behalf of those persons who cannot afford adequate legal assistance; and
- I will support and advocate for fair and equal treatment under the law for all persons, regardless of race, color, ancestry, sex, pregnancy, religion, national origin, ethnicity, disability, status as a veteran, age, gender identity, gender expression or marital status, sexual orientation, or creed and will always conduct myself in such a way as to promote equality and justice for all.

Nothing in these Principles shall supersede, supplement, or in any way amend the Rules of Professional Conduct, alter existing standards of conduct against which a lawyer's conduct might be judged, or become a basis for the imposition of any civil, criminal, or professional liability.

# Patent Claim Drafting: Practical Prosecution and Portfolio Strategy Workshop (EIP210406)

## Agenda

- I. 15 minutes – Overview of the Disclosure Requirements of a Patent Application and Recommended Approach to Claim Drafting
- II. 45 minutes – Drafting Exercise
  - a. 20 minutes – Overview of Technology
  - b. 15 minutes – Participants to Draft Claim
  - c. 10 minutes – Discussion of Select Claim(s)
- III. 20 minutes – Identifying Competitor Products and Drafting Claims on their Products
- IV. 10 minutes – Open Q&A

# Faculty Biographies

## **Lisa Moyles**

Member

Moyles IP, LLC

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Lisa is the Founding Member of Moyles IP, LLC in Shelton, CT. Lisa has over 20 years' experience in Intellectual Property (IP) law providing clients with practical, actionable advice including training on various aspects of routine and complex IP matters. Lisa's practice focuses on client counseling in all aspects of IP law. While a mechanical engineer by training, her practice encompasses a wide array of technologies in the mechanical, chemical, and electrical arts.

With her expertise in IP law, she assists clients in protecting their IP rights in a wide range of technologies including medical and dental devices, oil and gas perforation technologies, explosion clad welding, gas and wind turbines, lighting systems, transportation, industrial processes, nonwoven materials—technologies for use in the automotive industry, filtration and personal hygiene, engineering polymers and molded components, flooring coatings, combustion and heat transfer equipment, consumer products including outdoor lifestyle products, specialty packaging, electronics, and business methods.

## **Janelle O'Neill**

Member

Moyles IP, LLC

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Janelle is a Member of Moyles IP, LLC in Shelton, CT. Her practice focuses on a wide range of IP matters, including preparing and prosecuting domestic and international patent applications and counseling clients in the mechanical, biotechnology and chemical arts. In addition, she conducts patentability and freedom-to-operate analysis, and provides advice to clients on IP matters geared to avoid litigation.

**John L. Cordani**

Partner

Robinson and Cole

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John Cordani is a partner of Robinson and Cole, where he is a member of the firm's Business Litigation Group. John focuses his practice on Intellectual Property litigation. He has litigated patent, trade secret, trademark, and antitrust cases through trial and appeal in federal courts across the United States, obtaining successful results in cases involving a diverse array of technology. He is a registered patent attorney with extensive experience before the U.S. Patent & Trademark Office and the U.S. Court of Appeals for the Federal Circuit. John handles all phases of the patent litigation process, including claim construction, summary judgment, trials, and appeals in infringement matters. He has also tried complex commercial litigations, products liability cases, and land use matters through verdict and appeal.

# Patent Claim Drafting: Practical Prosecution and Portfolio Strategy Workshop

April 6, 2021

# Speakers



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# Overview

- AIA 35 U.S.C. §112(a)
- Written Description
- Enablement
- Drawings
- Approach to Claim Drafting
  - Claim Drafting Considerations
  - Drafting Exercise – 15 minutes
  - Claim Review
- Identifying Competitor Products and Drafting Claims on that Product

AIA 35 U.S.C.  
§112(a)

- 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, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention

# Written Description & Enablement

- **Written Description**
  - Use descriptive means as words, structures, figures, diagrams, and formulas to fully set forth the claimed invention. *See Lockwood v. Amer. Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997).
  - Show that the inventor was in possession of the invention that is claimed, such as by the disclosure of drawings. *See Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 68 (1998).
- **Enablement**
  - Allow a person skilled in the art to practice the invention using disclosed embodiments without undue experimentation. *See United States v. Telectronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988).

# Drawings

- A picture is worth a thousand words
- Every claimed feature must be illustrated and annotated in the drawings, if capable of being shown. *See 37 CFR § 1.83*
- Specific views should be used to illustrate
  - A problem solved by the invention
  - The advantage offered or need fulfilled by the invention
  - A new function or how the invention implements that function
- A visual depiction of an invention helps the patent examiner understand what it's all about

# Claim Drafting Considerations

- Definiteness Requirement
  - Claims must particularly point out and distinctly claim the invention
  - The claims must have a clear and definite meaning, construed in light of:
    - Content of the particular disclosure
    - Teachings of the prior art
    - Claim interpretation that would be given by one of ordinary skill in the art at the time the invention was made
    - See *In re Buszard*, 504 F.3d 1364 (Fed. Cir. 2007).

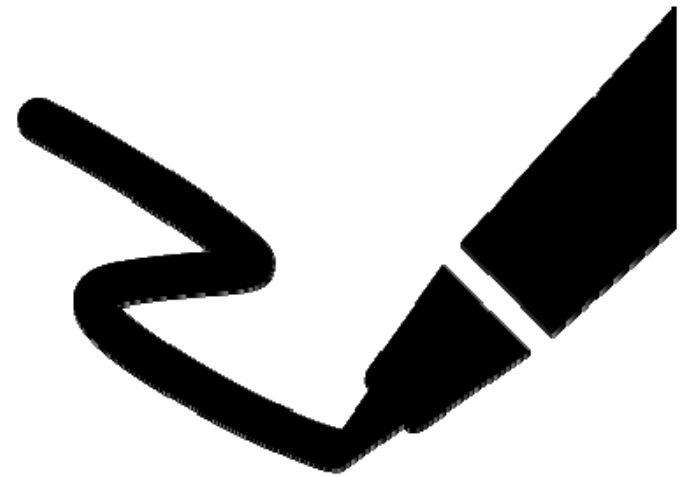
# Claim Drafting Considerations

- Indefiniteness can result from a lack of antecedent basis
  - Example 1: a claim refers to “the arm” without a previous recitation of “an” arm
  - Example 2: a claim refers to “a left arm” and “a right arm” followed by a recitation to “the arm”
  - Example 3: a claim refers to “the arcuate surface” but previous recitation to only “a planar surface”
- Format of a claim
  - Preamble
  - List of features with function / interrelationship

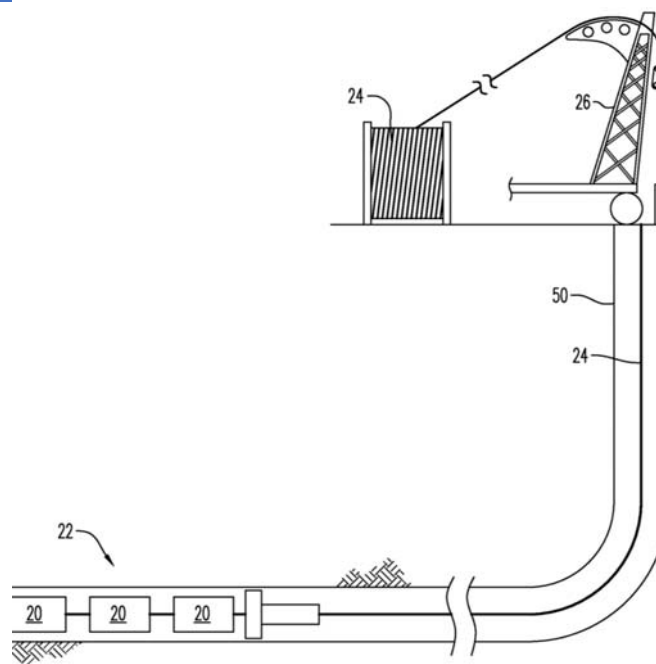
# Approach to Claim Drafting

- Look at figures and form a mental image
  - Consider the essence of the invention
  - What features or combination of features are required to define the essence?
- Reduce your mental picture to words
- Review
  - Is it broad?
  - Is it detailed?
  - Is it precise?
  - Is it bound by the prior art?

# Drafting Exercise

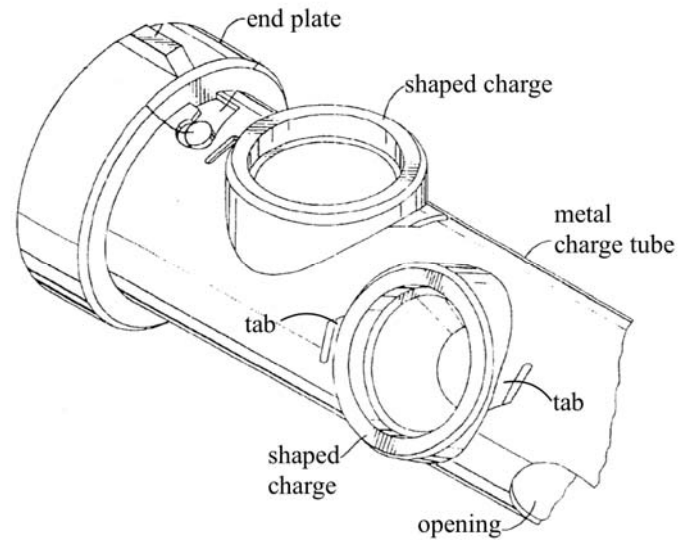


# Wellbore Perforating



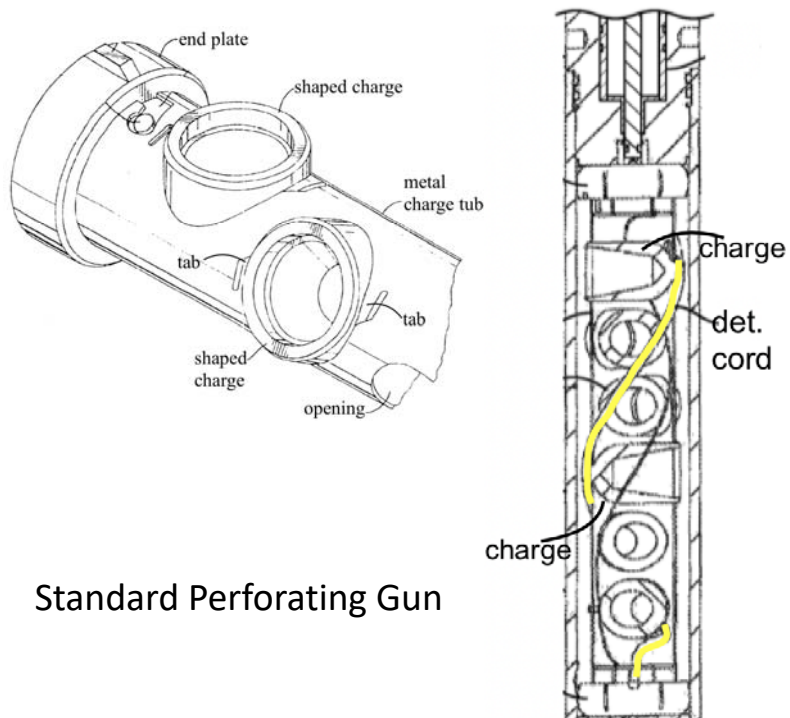
- Oil and gas reserves are accessed using various drilling and completion techniques. The drilling techniques require preparation of a drilling site by forming a wellbore 50.
- Perforating guns 20 are used to punch holes in the underground formation in order to gain access to the oil.
- Large wireline equipment 26 are positioned at the surface S of the wellbore and are used to lower an electric line 24 into the wellbore.
- The electric line is connected to perforating guns 20 and are used to lower and retrieve the perforating guns 20 into and out of the wellbore.

# Wellbore Perforating (cont'd)

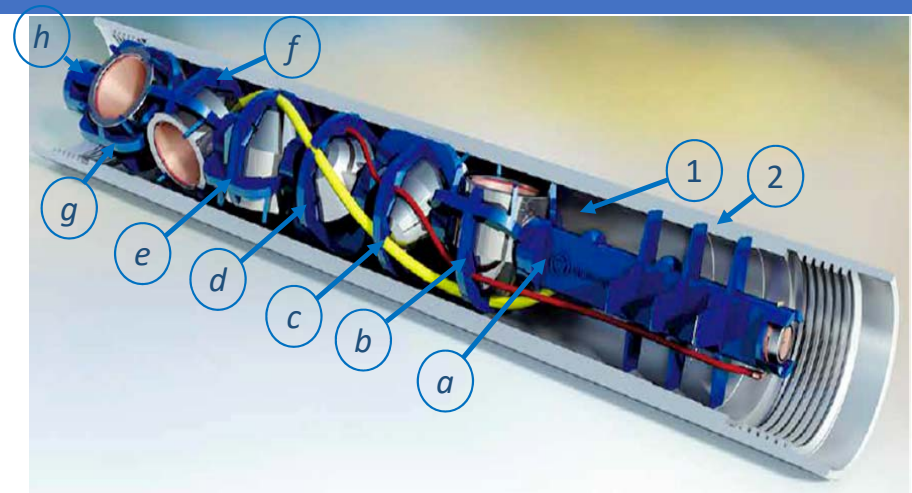


Standard Perforating Gun

# Client's Perforating Gun System



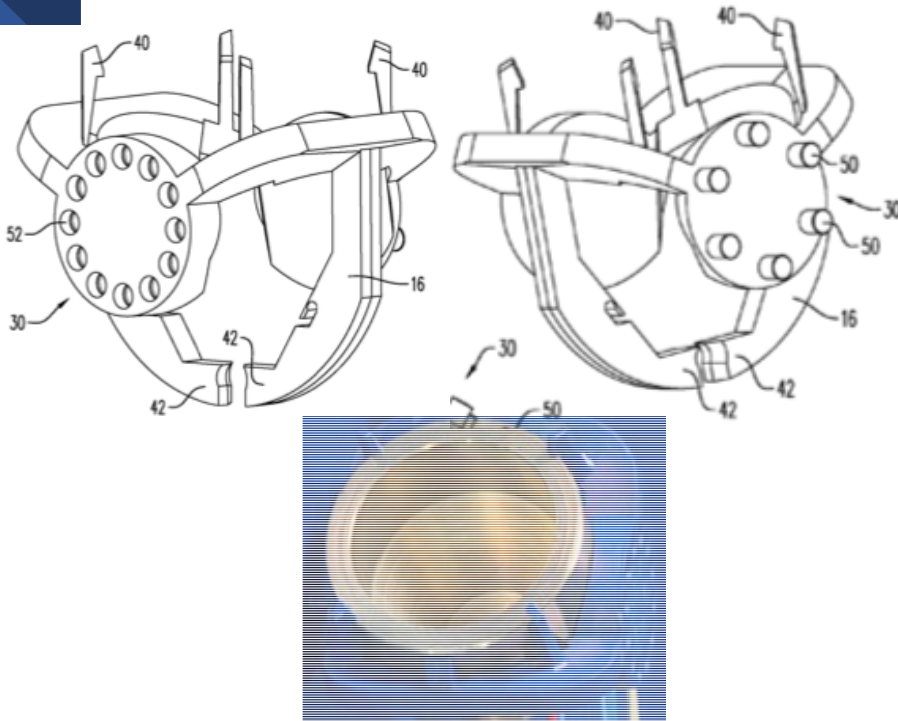
Standard Perforating Gun



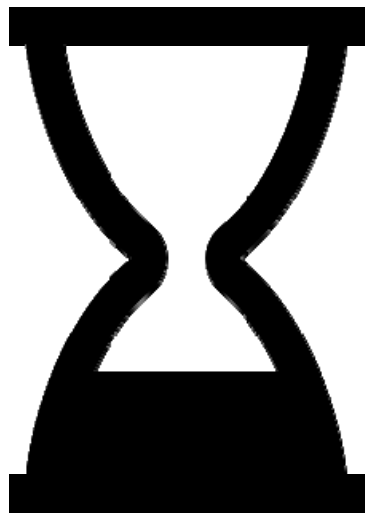
Client's Perforating Gun

- A self-contained, modular perforating assembly (1) of stackable components (a-h) that are assembled, locked within a gun carrier (2), and quality tested in the factory.

# Client's Perforating Gun System – Charge Holder

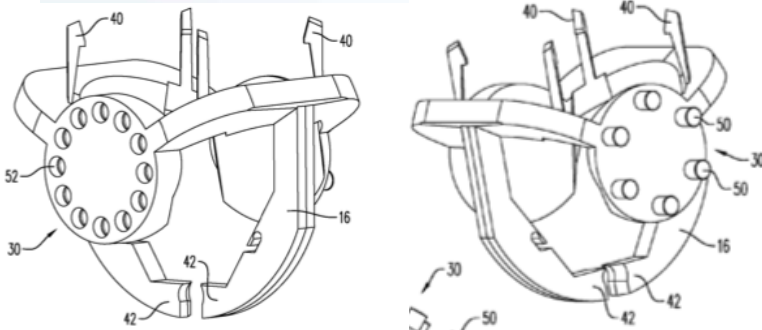
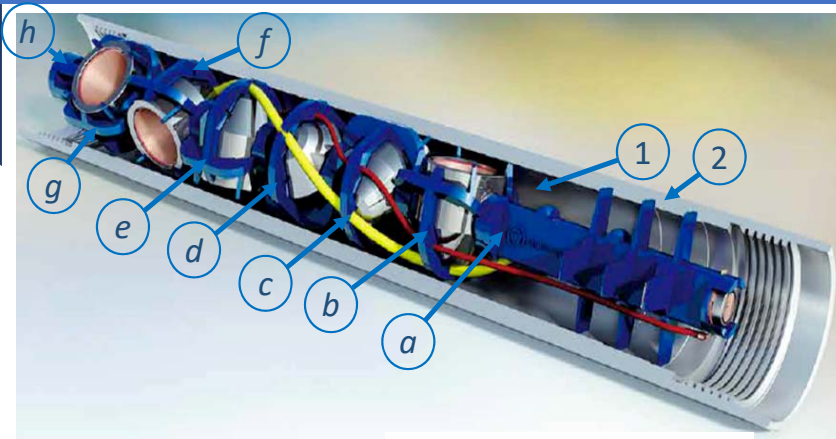


- The charge holder is designed for flexibility, and serves to orient a shaped charge positioned in the charge holder
- Portions 30 of the charge holder includes protrusions 50 on one side and slots 52 on the other side, to connect adjacent charge holders at different orientations / phasings
- Features 40 hold the shaped charge in the shaped charge holder and centralizes it in a perforating gun
- Feature 42 holds the detonating cord in position to detonate the shaped charge



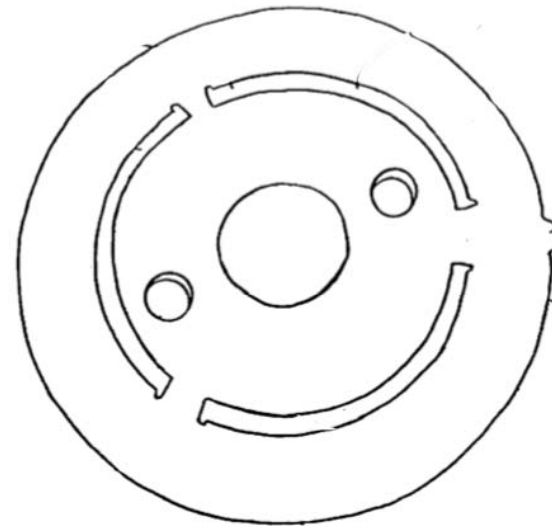
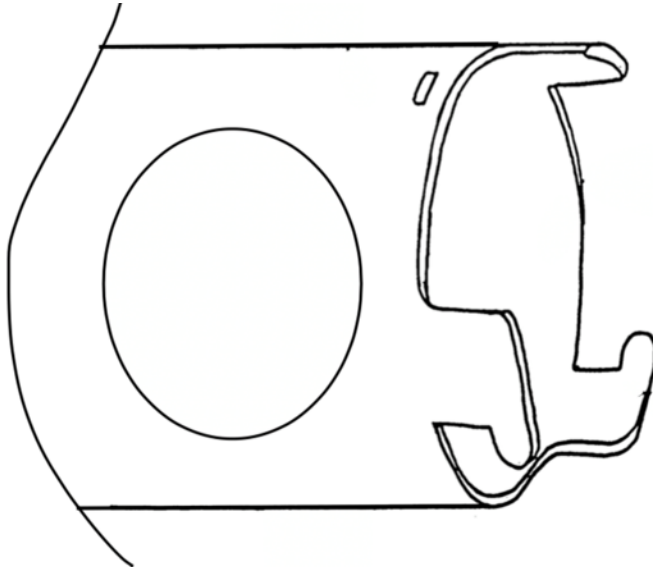
## Drafting Exercise - 15 Mins

# Drawings and Terms List

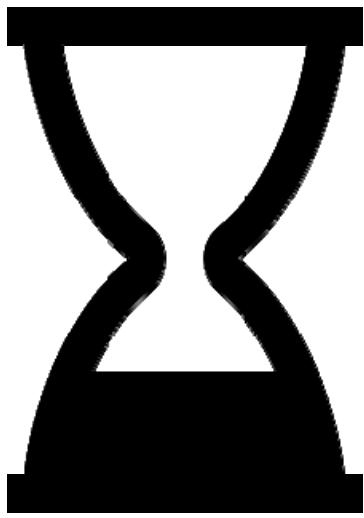


- Modular perforating assembly (1)
- Stackable charge holders (a-h)
- Gun carrier (40)
- Portion (30)
- Protrusion (50)
- Slot (52)
- Feature (40)
- Feature (42)

## Example of Competitive Product



Robinson+Cole



# Claim Review



Robinson+Cole

## Example of Claim

A modular pre-wired perforating assembly comprising:

a first stackable charge holder module comprising: a first charge cradled by the module, a first coupling comprising a plurality of protrusions symmetrically arranged around a central axis of the first coupling, and a first protrusion holding a detonation cord; and

a second stackable charge holder module, coupled to the first stackable charge holder module, and comprising: a second charge cradled by the module, a second coupling comprising a plurality of openings symmetrically arranged around a central axis of the second coupling, and a second protrusion holding the detonation cord;

wherein, the plurality of protrusions of the coupling of the first stackable charge holder module are engaged with at least a plurality of the plurality of openings of the coupling of the second stackable charge holder module at an angle of rotation between the first stackable charge holder module and the second stackable charge holder module.

Robinson+Cole

# Identifying Competitor Products and Drafting Claims on that Product

# Market Research

Market research and competitor analysis is essential for any business. It not only includes gathering detailed information about yearly turnover, marketing strategies, and profitability, but it also comprises of proper research about their intellectual properties and their technology activities.

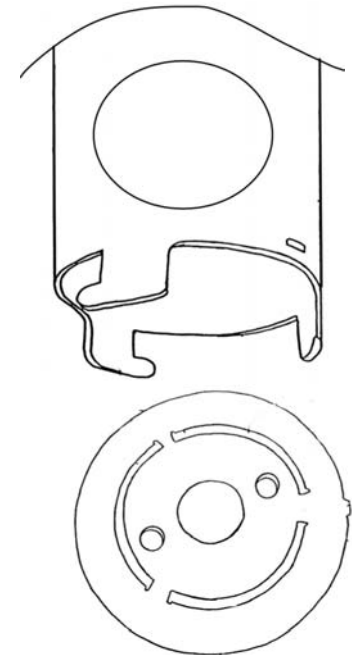
# Example of Competitive Product

A modular pre-wired perforating assembly comprising:

a first stackable charge holder module comprising: a first charge cradled by the module, a first coupling comprising a plurality of protrusions symmetrically arranged around a central axis of the first coupling, and a first protrusion holding a detonation cord; and

a second stackable charge holder module, coupled to the first stackable charge holder module, and comprising: a second charge cradled by the module, a second coupling comprising a plurality of openings symmetrically arranged around a central axis of the second coupling, and a second protrusion holding the detonation cord;

wherein, the plurality of protrusions of the coupling of the first stackable charge holder module are engaged with at least a plurality of the plurality of openings of the coupling of the second stackable charge holder module at an angle of rotation between the first stackable charge holder module and the second stackable charge holder module.



**Robinson+Cole**



§ 112. Specification.

**United States Statutes**

**Title 35. PATENTS**

**Part II. PATENTABILITY OF INVENTIONS AND GRANT OF PATENTS**

**Chapter 11. APPLICATION FOR PATENT**

*Current through P.L. 116-282 (12/31/2020)*

**§ 112. Specification**

- (a) **IN GENERAL.**-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, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.
- (b) **CONCLUSION.**-The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.
- (c) **FORM.**-A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.
- (d) **REFERENCE IN DEPENDENT FORMS.**-Subject to subsection (e), a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.
- (e) **REFERENCE IN MULTIPLE DEPENDENT FORM.**-A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.
- (f) **ELEMENT IN CLAIM FOR A COMBINATION.**-An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

## Cite as (Casemaker) 35 U.S.C. § 112

**Source:** July 19, 1952, ch. 950, 66 Stat. 798; Pub. L. 89-83, §9, July 24, 1965, 79 Stat. 261; Pub. L. 94-131, §7, Nov. 14, 1975, 89 Stat. 691; Pub. L. 112-29, §4(c), Sept. 16, 2011, 125 Stat. 296.

### Notes from the Office of Law Revision Counsel

current through 10/15/2020

**HISTORICAL AND REVISION NOTES**Based on Title 35, U.S.C., 1946 ed., §33 (R.S. 4888, amended (1) Mar. 3, 1915, ch. 94, §1, 38 Stat. 958; (2) May 23, 1930, ch. 312, §2, 46 Stat. 376).The sentence relating to signature of the specification is omitted in view of the general requirement for a signature in section 111.The last sentence is omitted for inclusion in the chapter relating to plant patents.The clause relating to machines is omitted as unnecessary and the requirement for disclosing the best mode of carrying out the invention is stated as generally applicable to all types of invention (derived from Title 35, U.S.C., 1946 ed., §69, first defense).The clause relating to the claim is made a separate paragraph to emphasize the distinction between the description and the claim or definition, and the language is modified.A new paragraph relating to functional claims is added.

### EDITORIAL NOTES

**AMENDMENTS2011-** Pub. L. 112-29 designated first to sixth pars. as subsecs. (a) to (f), respectively, inserted headings, in subsec. (a), substituted "or joint inventor of carrying out the invention" for "of carrying out his invention", in subsec. (b), substituted "inventor or a joint inventor regards as the invention" for "applicant regards as his invention", and, in subsec. (d), substituted "Subject to subsection (e)," for "Subject to the following paragraph,".**1975-** Pub. L. 94-131 substituted provision authorizing the writing of claims, if the nature of the case admits, in dependent or multiple dependent form for prior provision for writing claims in dependent form, required claims in dependent form to contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed, substituted text respecting construction of a claim in dependent form so as to incorporate by reference all the limitations of the claim to which it refers for prior text for construction of a dependent claim to include all the limitations of the claim incorporated by reference into the dependent claim, and inserted paragraph respecting certain requirements for claims in multiple dependent form.**1965-** Pub. L. 89-83 permitted a claim to be written in independent or dependent form, and if in dependent form, required it to be construed to include all the limitations of the claim incorporated by reference into the dependent claim.

### STATUTORY NOTES AND RELATED SUBSIDIARIES

**EFFECTIVE DATE OF 2011 AMENDMENT**Amendment by Pub. L. 112-29 effective upon the expiration of the 1-year period beginning on Sept. 16, 2011, and applicable to any patent application that is filed on or after that effective date, see section 4(e) of Pub. L. 112-29 set out as a note under section 111 of this title.

**EFFECTIVE DATE OF 1975 AMENDMENT**Amendment by Pub. L. 94-131 effective Jan. 24, 1978, and applicable on

and after that date to patent applications filed in the United States and to international applications, where applicable, see section 11 of Pub. L. 94-131 set out as an Effective Date note under section 351 of this title.

**EFFECTIVE DATE OF 1965 AMENDMENT**Amendment by Pub. L. 89-83 effective three months after July 24, 1965, see section 7(a) of Pub. L. 89-83 set out as a note under section 41 of this title.

§ 1.83. Content of drawing.

## **Code of Federal Regulations**

### **Title 37. Patents, Trademarks, and Copyrights**

#### **Chapter I. UNITED STATES PATENT AND TRADEMARK OFFICE, DEPARTMENT OF COMMERCE**

##### **Subchapter A. GENERAL**

##### **Part 1. RULES OF PRACTICE IN PATENT CASES**

##### **Subpart B. NATIONAL PROCESSING PROVISIONS**

##### **THE DRAWINGS**

*Current through December 31, 2020*

##### **§ 1.83. Content of drawing**

- (a) The drawing in a nonprovisional application must show every feature of the invention specified in the claims. However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box). In addition, tables that are included in the specification and sequences that are included in sequence listings should not be duplicated in the drawings.
- (b) When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.
- (c) Where the drawings in a nonprovisional application do not comply with the requirements of paragraphs (a) and (b) of this section, the examiner shall require such additional illustration within a time period of not less than two months from the date of the sending of a notice thereof. Such corrections are subject to the requirements of §1.81(d).

**Cite as (Casemaker) 37 C.F.R. § 1.83**

**History.** 31 FR 12923, Oct. 4, 1966, as amended at 43 FR 4015, Jan. 31, 1978; 60 FR 20226, Apr. 25, 1995; 69 FR



504 F.3d 1364 (Fed. Cir. 2007), 2006-1489, In re Buszard /\*\*/ div.c1 {text-align: center} /\*\*/  
Judge, and PROST, Circuit Judge">

Page 1364

**504 F.3d 1364 (Fed. Cir. 2007)**

**84 U.S.P.Q.2d 1749**

**In re David BUSZARD, Matthew D. Phillips, Richard S. Rose and Stephen B. Falloon.**

**No. 2006-1489.**

**Serial No. 10/429,429.**

**United States Court of Appeals, Federal Circuit.**

**September 27, 2007**

Appealed from: United States Patent and Trademark Office, Board of Patent Appeals and Interferences

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*Thomas A. Ladd*, Baker & Daniels LLP, of Indianapolis, Indiana, argued for appellants.

*Shannon M. Hansen*, Associate Solicitor, Office of the Solicitor, United States Patent and Trademark Office, of Arlington, Virginia, argued for the director of the United States Patent and Trademark Office. With her on the brief were *John M. Whealan*, Solicitor, and *Heather F. Auyang*, Associate Solicitor.

Before NEWMAN, Circuit Judge, FRIEDMAN, Senior Circuit *Judge*, and PROST, Circuit Judge.

Opinion for the court filed by Circuit Judge NEWMAN. Dissenting opinion filed by Circuit Judge PROST.

NEWMAN, Circuit Judge.

Patent applicants David Buszard, Matthew D. Phillips, Richard S. Rose and Stephen B. Falloon (together "Buszard") seek review of the decision of the Board of Patent Appeals and Interferences<sup>[1]</sup> holding all of the claims in the patent application unpatentable on the ground of anticipation, 35 U.S.C. § 102. We reverse the Board's decision as to anticipation and remand for completion of examination.

#### BACKGROUND

Buszard's patent application, Serial No. 10/429,429, is directed to a flame retardant composition that produces a flexible polyurethane foam, and the flexible foamed article made from that composition. Claims 1 and 13 were treated as representative:

1. A flame retardant composition comprising: a dialkyl tetrahalophthalate ester; a phosphorus-containing flame retardant having at least about 5 wt.% phosphorus, and a flexible polyurethane foam reaction mixture. 13. A flexible foamed article made from the flame retardant composition of claim 1.

The Board held that the claims are anticipated by a patent to Eling et al. entitled "Process for making rigid and flexible polyurethane foams." The relevant content of the Eling reference is fairly summarized in Eling's claims 1 and 2:

1. Process for preparing a rigid foam by reacting a polyisocyanate (1), an isocyanate-reactive compound (2), said compound (2) having an average equivalent weight of at most 374 and an

average number of isocyanate-reactive hydrogen atoms of from 2 to 8, an isocyanate-reactive compound (3), said compound (3) having an average equivalent weight of more than 374 and an average number of isocyanate-reactive hydrogen atoms of from 2 to 6 and water in the presence of a catalyst and in the presence of a fire retardant ....

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2. Process for preparing a flexible foam by crushing the rigid foam prepared according to the process according to claim 1.

Thus Eling prepares both a rigid foam and a flexible foam; the rigid foam is produced by the chemical reaction of compounds that form a rigid foam, and Eling's flexible foam is produced by crushing the rigid foam. In contrast, Buszard's flexible foam is produced by the chemical reaction of compounds that directly form a flexible foam, and do not produce a rigid foam.

The Board held Buszard's claims to be anticipated "because the appellants' claimed reaction mixture includes any reaction mixture which produces, at least ultimately, a flexible polyurethane foam." Buszard appeals, arguing that his claims explicitly state the requirement of a "flexible polyurethane foam reaction mixture," and that this claim element is not shown in the Eling reference, thereby negating "anticipation."

#### DISCUSSION

Decisions of the PTO tribunals are reviewed in accordance with the standards of the Administrative Procedure Act. See *Dickinson v. Zurko*, 527 U.S. 150, 165, 119 S.Ct. 1816, 144 L.Ed.2d 143 (1999) (applying the Administrative Procedure Act, 5 U.S.C. § 706, to appeals of PTO rulings). Thus the Board's factual findings are reviewed to determine whether they are unsupported by substantial evidence, and the Board's legal conclusions are reviewed for correctness in law. See *In re Gartside*, 203 F.3d 1305, 1312 (Fed. Cir. 2000).

"A rejection for anticipation under section 102 requires that each and every limitation of the claimed invention be disclosed in a single prior art reference." *In re Paulsen*, 30 F.3d 1475, 1478-79 (Fed. Cir. 1994); see *Karsten Manufacturing Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001) ("Invalidity on the ground of 'anticipation' requires lack of novelty of the invention as claimed.... that is, all of the elements and limitations of the claim must be shown in a single prior reference, arranged as in the claim.").

Buszard argues that the Eling reference shows only a rigid polyurethane foam which when mechanically crushed loses its rigidity because it is in small particles. Buszard states that the Eling rigid foam product is chemically different from a flexible polyurethane foam that is directly produced by polymerization, without crushing, and that this difference is readily understood by a person of ordinary skill in the field of polyurethane foams. Thus Buszard states that the flexible foam mixture required by his claims is different in kind from the rigid foam mixture described by Eling, whether or not Eling's product is subsequently crushed into small particles.

The PTO states that Buszard's claims, when given their broadest interpretation, read on the Eling product and thus are anticipated by Eling. Buszard states that this interpretation is devoid of support, even when viewed in accordance with the protocols of patent examination. During examination, the patent application claims may be given their broadest interpretation consistent with the specification, in order to facilitate sharpening and clarifying the claims at the application

stage. *In re Yamamoto*, 740 F.2d 1569, 1571 (Fed. Cir. 1984) ("The PTO broadly interprets claims during examination of a patent application since the applicant may 'amend his claims to obtain protection commensurate with his actual contribution to the art.' ") (citation omitted). Thus the patent examiner and the applicant, in the

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give and take of rejection and response, work toward defining the metes and bounds of the invention to be patented. See *In re Zletz*, 893 F.2d 319, 321-22 (Fed. Cir. 1989) (the broadest reasonable construction of claims during examination serves to target ambiguities in claims at the time when the claims are readily amended). As explained in *Zletz*: "An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process." *Id.* at 322. Buszard argues that the Board's construction of the claims to read on and thus be anticipated by Eling's crushed solid foam is not reasonable.

The Board interpreted the claim term "flexible polyurethane foam reaction mixture" to mean "any reaction mixture which produces, at least ultimately, a flexible polyurethane foam." Buszard states that persons experienced in the field of polyurethane foams know that a flexible polyurethane foam reaction mixture is different from a rigid polyurethane foam reaction mixture, and that this process limitation cannot be found in Eling, no matter how broadly that reference is read. The PTO Solicitor agreed, at the argument of this appeal, that the flexibility or rigidity of foamed polyurethane depends on the composition of the reaction mixture, which controls the degree of chemical cross-linking and thus the flexibility of the polymer. The Solicitor agreed that a person of ordinary skill in the field of polyurethane foams knows that a flexible foam and a rigid foam have different chemical structures and are produced from different chemical reactants. Nonetheless, the Solicitor argued that the rejection should be sustained simply because the examiner is entitled to give claims their broadest reasonable interpretation during examination. Buszard responded that the examiner's interpretation is not reasonable, as a matter of well-known chemistry, for flexible foam reaction mixtures are different from rigid foam reaction mixtures, and one does not encompass the other.

The Solicitor proposed at oral argument that when a rigid foam is mechanically crushed, the chemical bonds are broken and the product is the same as the flexible product of a flexible foam reaction mixture. There was no rejection on this ground, there is no evidence or argument to this effect in the record, this theory was not mentioned by any examiner or in the Board's opinion, and it appears to be contrary to science. This theory was proposed without support or citation, and without opportunity for Buszard to refute it. It is not sufficiently creditable to warrant further consideration.

Buszard's specification and claims specifically state the requirement of a flexible polyurethane foam reaction mixture. No matter how broadly "flexible foam reaction mixture" is construed, it is not a rigid foam reaction mixture. The Eling reference describes only a rigid foam reaction mixture that produces a rigid product. Only by mechanically crushing the rigid product into small particles is it rendered flexible, as a rock can be mechanically crushed to produce particles of sand. This description cannot reasonably be construed to describe, and thus to "anticipate," the

flexible foam product of a flexible foam reaction mixture. We agree with Buszard that it is not a reasonable claim interpretation to equate "flexible" with "rigid," or to equate a crushed rigid polyurethane foam with a flexible polyurethane foam.

The decision of the Board is reversed, and the case is remanded for appropriate further proceedings.

*REVERSED and REMANDED*

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PROST, *Circuit Judge*, dissenting.

Consistent with our case law, the United States Patent and Trademark Office ("PTO"), Board of Patent Appeals and Interferences ("Board") gave the claim term "flexible polyurethane foam reaction mixture" its broadest reasonable interpretation, construing it to include "any reaction mixture which produces, at least ultimately, a flexible polyurethane foam." Under this construction, substantial evidence supports the Board's finding of anticipation. Because the majority fails to apply the rule that the Board is entitled to give claim language its broadest reasonable interpretation, I respectfully dissent.

I

As the majority opinion acknowledges, the Board does not engage in the same claim construction process during patent prosecution as a district court would in an infringement suit. Instead, the Board gives claim language its broadest reasonable interpretation consistent with the specification. *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004); *In re Morris*, 127 F.3d 1048, 1053-54 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989); *In re Yamamoto*, 740 F.2d 1569, 1571-72 (Fed. Cir. 1984). This is because, unlike in an infringement suit, the applicant has a chance to amend the claims to more precisely convey his intended meaning. *Yamamoto*, 740 F.2d at 1571; *see also Zletz*, 893 F.2d at 322 ("An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.").

In other words, unlike a district court in an infringement suit, there is no need for the Board (or this court) to engage in a complicated, in-depth claim construction analysis during patent prosecution. In infringement suits, courts take on the difficult task of analyzing the claim terms to ascertain the meaning the terms would have to a person of ordinary skill in the art as of the filing date of the patent application. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc). Courts examine the claims, the specification, the prosecution history, and possibly extrinsic evidence--all in an effort "to determine what 'the applicant regards as his invention.'" *Id.* at 1312, 1314-19 (quoting 35 U.S.C. § 112 ¶ 2). In contrast, one need not engage in a guessing game during patent prosecution. If a claim term is ambiguous or confusing, the applicant can (and should) clarify it. Or, if an applicant wants a claim term to have a specific meaning, the applicant can either amend the claim to expressly convey the applicant's intended meaning or provide an express definition for the claim term in the specification. *See Yamamoto*, 740 F.2d at 1571-72 (noting that an applicant can overcome a rejection by amending the claim language); *Morris*, 127 F.3d at 1054 (noting that the PTO must take into account definitions contained in the specification

when interpreting claim language).

Accordingly, if the PTO rejects a claim because a broad construction renders the claim invalid as anticipated, the applicant can, for example, amend the claim to narrow its scope and, thus, overcome the rejection. In this way, interpreting claim language broadly during prosecution "serves the public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified." *Yamamoto*, 740 F.2d at 1571; see also *id.* ("The PTO broadly interprets claims during examination of a patent application since the applicant may 'amend his claims to obtain protection commensurate with his actual contribution to the art.' ").

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Because the Board is entitled to give claim language its broadest reasonable interpretation, our precedent requires that our review of the Board's interpretation be limited to determining whether it was reasonable. *In re Crish*, 393 F.3d 1253, 1256 (Fed. Cir. 2004); *In re Bigio*, 381 F.3d 1320, 1324 (Fed. Cir. 2004); *In re Hyatt*, 211 F.3d 1367, 1372-73 (Fed. Cir. 2000); *Morris*, 127 F.3d at 1055. Although the majority opinion pays lip service to this precedent, it does not apply it in this case.

II

In this case, the only disputed issue is whether the Eling reference discloses a "flexible polyurethane foam reaction mixture" as required by Buszard's pending claims. The Board construed this term to include "any reaction mixture which produces, at least ultimately, a flexible polyurethane foam." *In re Buszard*, No. 2006-1120, 2006 WL 1665669, at \*2 (Bd. Pat. App. & Int. Apr. 20, 2006). This construction encompasses mixtures that produce polyurethane foams that are made flexible upon crushing, such as the mixture disclosed in the Eling reference. Accordingly, the Board concluded that Buszard's representative claims were anticipated by the Eling reference. *Id.*

Because the Board must give claim language its broadest reasonable interpretation, I would affirm the Board's construction of "flexible polyurethane foam reaction mixture." Of course, had Buszard's specification provided a definition of the term "flexible polyurethane foam reaction mixture," the Board would have been required to give that term the definition recited in the specification. See *Morris*, 127 F.3d at 1054. But Buszard's specification does not define this term. And the Board's interpretation, while broad, is not unreasonable. As explained by the Board, a broad construction is consistent with Buszard's specification:

For example, the specification discloses in the last full sentence on page 7 that "[t]he flexible polyurethane foam compositions . . . according to the present invention include all well known, industrial compositions" (emphasis added). Use of the term "all" supports the proposition that the aforementioned industrial compositions include the compositions of Eling. Additionally, in the sentence bridging pages 7 and 8 of the specification, [Buszard] disclose[s] that "flexible polyurethane foam compositions can be made according to the present invention by reacting an isocyanate with a polyol in the presence of a foam-forming agent and a blend of tetrahalophthalate esters and phosphorus-containing flame retardant additives." Because these enumerated ingredients correspond fully to those taught by Eling, the claim interpretation [of "flexible polyurethane foam reaction mixture"] discussed earlier is consistent with this disclosure of [Buszard's] specification.

*Buszard*, 2006 WL 1665669, at \*2.

On appeal, Buszard alleges--and the majority appears to agree--that the term "flexible polyurethane foam reaction mixture" has a specific meaning to one of ordinary skill in the art. But neither Buszard's specification nor his briefs provide a definition. Indeed, he boldly asserts in his reply brief that he "suffer[s] no duty to define an art recognized term."

I disagree. For one thing, "[i]t is the applicant[s] burden to precisely define the invention, not the PTO's." *Morris*, 127 F.3d at 1056; see also 35 U.S.C. § 112 ¶ 2 ("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."). Moreover, although Buszard asserts  
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that the term "flexible polyurethane foam reaction mixture" has a well-defined meaning to someone skilled in the art, not only has Buszard failed to provide any evidence to back up this assertion, his briefs also fail to tell us what that meaning is. The only enlightenment Buszard provides regarding the meaning of "flexible polyurethane foam reaction mixture" is a single page from the *Kirk-Othmer Encyclopedia of Chemical Technology*, which generally describes the differences between "flexible foam" and "rigid foam." Nowhere in the record, however, is there any evidence regarding how a person of ordinary skill in the art would interpret the phrase "flexible polyurethane foam reaction mixture."

In oral argument, Buszard, for the first time, argued that the term "flexible polyurethane foam reaction mixture" should be interpreted to mean a mixture of ingredients that produces flexible foam upon polymerization, without a crushing step. Yet Buszard's claims do not specifically exclude a crushing step.<sup>[1]</sup> Nor are his claims limited to chemical reactants that would produce flexible foam without a crushing step.

Buszard nevertheless urges us to engage in the same claim construction process that courts employ in an infringement suit. According to Buszard, we should interpret the disputed claim term narrowly in light of his specification, which describes mixtures of ingredients that produce flexible foam without a crushing step. Buszard also points out that the flexible foams described in his specification are consistent with the general description of "flexible foam" in the *Kirk-Othmer Encyclopedia of Chemical Technology*.

But whether Buszard can provide descriptions of flexible foam that he believes are consistent with his desired interpretation is beside the point. "Absent an express definition in [his] specification, the fact that [Buszard] can point to definitions or usages that conform to [his] interpretation does not make the PTO's definition unreasonable when the PTO can point to other sources that support its interpretation." *Morris*, 127 F.3d at 1056. And in this case, the Board identified passages in Buszard's specification that support a broad interpretation. I would, therefore, affirm.

### III

The majority concludes that Buszard's claims are not anticipated because flexible foam made from a mixture of ingredients that produces flexible foam upon polymerization (i.e., without a crushing step) is different from flexible foam made by first producing rigid foam and then crushing it. That may be true,<sup>[2]</sup> but it is irrelevant. The relevant question is whether Buszard's claim

language can reasonably be interpreted to include the mixture disclosed in the Eling reference, which is capable of producing a flexible polyurethane foam. It can.

Because a patent has not yet issued, Buszard has the ability to correct any ambiguities in his claim language. If Buszard seeks a specific claim interpretation, he

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should amend his claim so it conveys his intended meaning.

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Notes:

[1] *In re Buszard*, No. 2006-1120, 2006 WL 1665669 (Bd. Pat. App. & Int. Apr. 20, 2006).

[1] Indeed, as the Board noted, "an artisan would consider the flexible polyurethane foam disclosed by [Buszard] as resulting from certain steps (e.g., adding, mixing, heating, etc.), and [Buszard] point[s] to nothing in [his] claims which would have excluded from these steps the crushing step of Eling." *Buszard*, 2006 WL 1665669, at \*2.

[2] It is noteworthy that, before the Board, Buszard "[did] not even present argument, much less evidence," that his flexible foam product differed from the flexible foam product disclosed in the Eling reference. *Buszard*, 2006 WL 1665669, at \*1.

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107 F.3d 1565 (Fed. Cir. 1997), 96-1168, Lockwood v. American Airlines, Inc. /\*\*/ div.c1 {text-align: center} /\*\*/

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**107 F.3d 1565 (Fed. Cir. 1997)**

**41 U.S.P.Q.2d 1961**

**Lawrence B. LOCKWOOD, Plaintiff-Appellant,**

**v.**

**AMERICAN AIRLINES, INC., Defendant-Appellee.**

**No. 96-1168.**

**United States Court of Appeals, Federal Circuit**

**March 4, 1997**

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[Copyrighted Material Omitted]

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Robert M. Taylor, Jr., Lyon & Lyon, Costa Mesa, CA, argued, for plaintiff-appellant.

Don W. Martens, Knobbe, Martens, Olson & Bear, Newport Beach, CA, argued, for defendant-appellee. With him on the brief were Joseph R. Re and Paul A. Stewart.

Before MAYER, LOURIE and RADER, C.J.

LOURIE, Circuit Judge.

Lawrence B. Lockwood appeals from the final judgment of the United States District Court for the Southern District of California, Lockwood v. American Airlines, Inc., No. 91-1640E (CM) (S.D.Cal. Dec. 19, 1995), granting summary judgment in favor of American Airlines, Inc. In that summary judgment, the court held that (1) U.S. Patent Re. 32,115, U.S. Patent 4,567,359, and U.S. Patent 5,309,355 were not infringed by American's SABREvision reservation system, and that (2) the '355 patent and the asserted claims of the '359 patent were invalid

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under 35 U.S.C. § 102 and 35 U.S.C. § 103, respectively. Lockwood v. American Airlines, Inc., 834 F.Supp. 1246, 28 USPQ2d 1114 (S.D.Cal.1993), req. for reconsideration denied, 847 F.Supp. 777 (S.D.Cal.1994) (holding the '115 and '359 patents not infringed); Lockwood v. American Airlines, Inc., 877 F.Supp. 500, 34 USPQ2d 1290 (S.D.Cal.1994) (holding the asserted claims of the '355 patent invalid and not infringed); Lockwood v. American Airlines, Inc., 37 USPQ2d 1534, 1995 WL 822659 (S.D.Cal.1995) (holding the '359 patent invalid). Because the district court correctly determined that there were no genuine issues of material fact in dispute and that American was entitled to judgment as a matter of law, we affirm.

#### BACKGROUND

The pertinent facts are not in dispute. Lockwood owns the '115, '355, and '359 patents, all of which relate to automated interactive sales terminals that provide sales presentations to customers and allow the customers to order goods and services. Lockwood sued American asserting that American's SABREvision airline reservation system infringed all three patents. SABREvision is used by travel agents to access schedule and fare information, to book itineraries, and to retrieve photographs of places of interest, including hotels, restaurants, and cruises, for

display to consumers. It improves upon American's SABRE reservation system, which originated in the 1960s and which cannot display photographs.

The '115 patent, reissued in 1986, relates to a self-service sales terminal that presents audio-visual travelogs to customers. Claim 11, the only asserted claim, reads in pertinent part:

A substantially self-contained apparatus dimensioned to be easily transported and installed at a commercial location comprising:

an audio-visual means for selectively dispensing information from a plurality of data sources;  
customer operated means for selecting information to be dispensed on said audio-visual means, including means for sequentially and interactively displaying alternate selections of information on said audio-visual means in response to customer's commands;

...

at least one electromechanical means for accepting payment for said item from the customer;

....

The district court held that American's SABREvision did not infringe the '115 patent because it lacked four limitations of the asserted claim. Specifically, the court found that SABREvision was not a "substantially self-contained apparatus dimensioned to be easily transported" and that it lacked the claimed "audio-visual means," "customer operated means," and "means for collecting payment."

The '359 patent discloses a system of multiple interactive self-service terminals that provide audio-visual sales presentations and dispense goods and services from multiple institutions. Claim 1, the only independent claim, reads in pertinent part:

A system for automatically dispensing information, goods, and services for a plurality of institutions in a particular industry, comprising:

...

at least one customer sales and information terminal ...

...

said sales and information terminal including:

audio-visual means for interaction with a customer, comprising:

means for storing a sequence of audio and video information to be selectively transmitted to a customer;

means for transmitting a selected sequence of said stored information to the customer;

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customer operated input means for gathering information from a customer....

The district court held that SABREvision did not infringe the '359 patent because it lacked the "audio-visual means" and "customer operated input means." The court also held the '359 patent invalid because it would have been obvious in light of the original SABRE system in combination with the self-service terminal disclosed in U.S. Patent 4,359,631, which issued in 1982 and was subsequently reissued as the '115 patent.

Finally, the '355 patent, which issued in 1994, discloses a system for augmenting the sales and marketing capabilities of travel agents, in conjunction with airline reservation systems, by allowing travel agents to compose individual customized sales presentations for their clients.

Claim 1, the only independent claim, reads in pertinent part:

A system for automatically dispensing information, goods or services for a plurality of institutions in a particular industry, comprising:

a central data processing center including means for storing service, price rate information or sales information for each institution;

at least one merchandising apparatus ...

...

said merchandising apparatus including:

a means for composing and displaying individualized sales presentations according to determinants entered into said apparatus and based on a customer's profile and requests ...

storage means holding a plurality of randomly accessible segments of data;

...

means for selectively combining said determinants to address and retrieve at least one of said segments....

The district court held that SABREvision did not infringe the '355 patent because, inter alia, it did not compose "individualized sales presentations" or "selectively combine" customer information to retrieve its photographs. The court further held the '355 patent invalid under 35 U.S.C. § 102(b) on the ground that its claims were anticipated by the '359 patent. The '355 patent issued from a chain of applications originating with the application that issued as the '359 patent. The district court held that the '355 patent is not entitled to the filing date of the original parent application and thus concluded that the '359 patent is anticipating prior art. Lockwood now appeals to this court arguing that the district court erred in its construction of the claims of all three patents and contending that summary judgment in favor of American on each issue is precluded because genuine issues of material fact remain in dispute.

## DISCUSSION

We review a district court's grant of summary judgment de novo. *Conroy v. Reebok Int'l, Ltd.*, 14 F.3d 1570, 1575, 29 USPQ2d 1373, 1377 (Fed.Cir.1994). Summary judgment is appropriate when no genuine issue as to any material fact exists and the moving party is entitled to judgment as a matter of law. Fed.R.Civ.P. 56(c). Thus, summary judgment may be granted when no "reasonable jury could return a verdict for the nonmoving party." See *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248, 106 S.Ct. 2505, 2510, 91 L.Ed.2d 202 (1986); *Conroy*, 14 F.3d at 1575, 29 USPQ2d at 1377 ("The moving party ... may discharge its burden by showing the district court that there is an absence of evidence to support the nonmoving party's case."). In determining whether there is a genuine issue of material fact, we view the evidence in the light most favorable to the party opposing the motion with doubts resolved in favor of the opponent. *Transmatic, Inc. v. Gulton Indus., Inc.*, 53 F.3d 1270, 1274, 35 USPQ2d 1035, 1038 (Fed.Cir.1995).

### A. Validity

The district court held that the asserted claims of the '359 patent would have

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been obvious in light of the prior art '631 patent and the original SABRE system. A determination of obviousness under 35 U.S.C. § 103 is a legal conclusion involving factual inquiries. *Uniroyal*,

Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1050, 5 USPQ2d 1434, 1438 (Fed.Cir.1988).

Lockwood argues that the subject matter of the '359 claims would not have been obvious and that the district court impermissibly drew adverse factual inferences in concluding that the patent was invalid. Lockwood first argues that the district court erred in concluding that the SABRE system qualified as prior art.

American submitted an affidavit averring that the SABRE system was introduced to the public in 1962, had over one thousand connected sales desks by 1965, and was connected to the reservation systems for most of the other airlines by 1970. Lockwood does not dispute these facts, but argues that because "critical aspects" of the SABRE system were not accessible to the public, it could not have been prior art. American's expert conceded that the essential algorithms of the SABRE software were proprietary and confidential and that those aspects of the system that were readily apparent to the public would not have been sufficient to enable one skilled in the art to duplicate the system. However, American responds that the public need not have access to the "inner workings" of a device for it to be considered "in public use" or "used by others" within the meaning of the statute.

We agree with American that those aspects of the original SABRE system relied on by the district court are prior art to the '359 patent. The district court held that SABRE, which made and confirmed reservations with multiple institutions (e.g., airlines, hotels, and car rental agencies), combined with the terminal of the '631 patent rendered the asserted claims of the '359 patent obvious. The terminal of the '631 patent admittedly lacked this "multiple institution" feature. It is undisputed, however, that the public was aware that SABRE possessed this capability and that the public had been using SABRE to make travel reservations from independent travel agencies prior to Lockwood's date of invention.

If a device was "known or used by others" in this country before the date of invention or if it was "in public use" in this country more than one year before the date of application, it qualifies as prior art. See 35 U.S.C. § 102(a) and (b) (1994). Lockwood attempts to preclude summary judgment by pointing to record testimony that one skilled in the art would not be able to build and practice the claimed invention without access to the secret aspects of SABRE. However, it is the claims that define a patented invention. See *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571, 7 USPQ2d 1057, 1064 (Fed.Cir.1988). As we have concluded earlier in this opinion, American's public use of the high-level aspects of the SABRE system was enough to place the claimed features of the '359 patent in the public's possession. See *In re Epstein*, 32 F.3d 1559, 1567-68, 31 USPQ2d 1817, 1823 (Fed.Cir.1994) ("Beyond this 'in public use or on sale' finding, there is no requirement for an enablement-type inquiry."). Lockwood cannot negate this by evidence showing that other, unclaimed aspects of the SABRE system were not publicly available. Moreover, the '359 patent itself does not disclose the level of detail that Lockwood would have us require of the prior art. For these reasons, Lockwood fails to show a genuine issue of material fact precluding summary judgment.

Lockwood further argues that even if the SABRE system is effective prior art, the combination of that system and the '631 patent would not have yielded the invention of the '359 patent. The terminal in the claims of the '359 patent includes a number of means-plus-function limitations,

subject to 35 U.S.C. § 112, p 6, including "means for gathering information from a customer" and "means for storing a sequence of audio and video information to be selectively transmitted to a customer." Means-plus-function clauses are construed "as limited to the corresponding structure[s] disclosed in the specification and equivalents thereof." In re

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Donaldson Co., 16 F.3d 1189, 1195, 29 USPQ2d 1845, 1850 (Fed.Cir.1994) (in banc); see 35 U.S.C. § 112, p 6 (1994). Lockwood argues that the structures disclosed in the '359 patent differ substantially from the terminal disclosed in the '631 patent and that, at the very least, his expert's declaration raised genuine issues of material fact sufficient to preclude summary judgment.

We do not agree. We believe that American has met its burden, even in light of the presumption of patent validity, to show that the means limitations relating to the terminal in the claims of the '359 patent appear in the '631 specification. Lockwood has failed to respond by setting forth specific facts that would raise a genuine issue for trial. Specifically, Lockwood has not alleged that the '631 disclosure lacks the structures disclosed in the '359 patent specification or their equivalents. As the district court noted, Lockwood's expert, Dr. Tuthill, relied on structures that are not mentioned in either the '631 or the '359 patents. For example, Tuthill states that the claimed invention differs from the '631 patent because the terminal described in the '631 patent uses a "backward-chaining" system to solve problems while the '359 patent uses a "forward-chaining" system. Yet neither the '359 nor the '631 patents mentions backward- or forward-chaining. Nor does the '359 specification describe any hardware or software structure as being limited to any particular problem-solving technique. In addition, Lockwood argues that the hardware and software disclosed in the two patents are not equivalent to each other. However, the '359 patent claims the hardware and software in broad terms, and the patents both describe similar computer controlled self-service terminals employing video disk players that store and retrieve audio-visual information. For example, with regard to the "means for controlling said storage and transmitting means," Lockwood's expert avers that the "structure described in the '359 patent which corresponds to this means is the processor unit and the application program which the processor executes." Yet, the only software descriptions in the '359 patent consist of high level exemplary functional flowcharts. Lockwood's arguments and his expert's statements are thus conclusory. They fail to identify which structures in the '359 patent are thought to be missing from the '631 patent disclosure. Accordingly, we agree with the district court that Lockwood's and his expert's declarations have not adequately responded to American's motion by raising genuine issues of material fact, and we therefore conclude that the district court properly held the asserted claims of the '359 patent to have been obvious as a matter of law.

Lockwood also argues that the district court erred in holding the '355 patent invalid as anticipated by the '359 patent. The '359 patent issued in 1986 from the first application in a chain of five applications which ultimately issued as the '359 patent. It is undisputed that the '359 patent discloses the invention ultimately claimed in the '355 patent. Because the third, fourth, and fifth applications were filed more than one year after the '359 patent issued, the validity of the '355 patent turns on whether it is entitled to the filing date of the second application, the relevant subject matter of which is undisputedly entitled to the benefit of the original application.

In order to gain the benefit of the filing date of an earlier application under 35 U.S.C. § 120, each application in the chain leading back to the earlier application must comply with the written description requirement of 35 U.S.C. § 112. In re Hogan, 559 F.2d 595, 609, 194 USPQ 527, 540 (CCPA 1977). The district court held that two of the three intervening applications failed to maintain the continuity of disclosure and thus concluded that the '355 patent was not entitled to the necessary earlier filing date.

Lockwood argues that the district court erred by looking solely at the applications themselves. We do not agree. It is the disclosures of the applications that count. Entitlement to a filing date does not extend to subject matter which is not disclosed, but

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would be obvious over what is expressly disclosed. It extends only to that which is disclosed. While the meaning of terms, phrases, or diagrams in a disclosure is to be explained or interpreted from the vantage point of one skilled in the art, all the limitations must appear in the specification. The question is not whether a claimed invention is an obvious variant of that which is disclosed in the specification. Rather, a prior application itself must describe an invention, and do so in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought. See *Martin v. Mayer*, 823 F.2d 500, 504, 3 USPQ2d 1333, 1337 (Fed.Cir.1987) (stating that it is "not a question of whether one skilled in the art might be able to construct the patentee's device from the teachings of the disclosure.... Rather, it is a question whether the application necessarily discloses that particular device.") (quoting *Jepson v. Coleman*, 50 C.C.P.A. 1051, 314 F.2d 533, 536, 136 USPQ 647, 649-50 (1963)). Lockwood argues that all that is necessary to satisfy the description requirement is to show that one is "in possession" of the invention. Lockwood accurately states the test, see *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed.Cir.1991), but fails to state how it is satisfied. One shows that one is "in possession" of the invention by describing the invention, with all its claimed limitations, not that which makes it obvious. *Id.* ("[T]he applicant must also convey to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed.") (emphasis in original). One does that by such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention. Although the exact terms need not be used in haec verba, see *Eiselstein v. Frank*, 52 F.3d 1035, 1038, 34 USPQ2d 1467, 1470 (Fed.Cir.1995) ("[T]he prior application need not describe the claimed subject matter in exactly the same terms as used in the claims ...."), the specification must contain an equivalent description of the claimed subject matter. A description which renders obvious the invention for which an earlier filing date is sought is not sufficient.

Lockwood further argues that his expert's declaration was sufficient to raise a genuine issue of material fact regarding what the intervening applications disclosed to one skilled in the art. However, as American argues, one intervening application failed to disclose a computer system connected to multiple vendors and another, while disclosing a central computer with a video disk player, failed to disclose individual merchandising apparatus that contained video disk players or other equivalent storage means. Lockwood's expert averred that the disclosed terminal in the

former application "can be connected" to multiple vendors and that, although the latter application only "discusses the use of a television set and a keypad at a consumer's home," it would have been apparent to one skilled in the art that "Lockwood also envisioned the use of a terminal" containing a video disk player. That does not solve Lockwood's problem. Lockwood claimed a distinct invention from that disclosed in the specification. It is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to modifications that the inventor might have envisioned, but failed to disclose. Each application in the chain must describe the claimed features. It is undisputed that one of the intervening applications does not describe an individual terminal containing a video disk player. Therefore, the declaration by Lockwood's expert does not raise a genuine issue of material fact. The district court correctly held that the '355 patent was invalid as anticipated by the '359 patent.

#### B. Infringement

Determining whether a patent claim has been infringed requires a two-step analysis: "First, the claim must be properly construed to determine its scope and meaning.

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Second, the claim as properly construed must be compared to the accused device or process." Carroll Touch, Inc. v. Electro Mechanical Sys., Inc., 15 F.3d 1573, 1576, 27 USPQ2d 1836, 1839 (Fed.Cir.1993). Claim construction is to be determined by the court. Markman v. Westview Instruments, Inc., --- U.S. ----, ----, 116 S.Ct. 1384, 1387, 134 L.Ed.2d 577, 38 USPQ2d 1461, 1463 (1996) ("We hold that the construction of a patent, including terms of art within its claim, is exclusively within the province of the court."). In construing the claims, the court looks to the claims, the specification, the prosecution history, and, if necessary, extrinsic evidence. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582, 39 USPQ2d 1573, 1576 (Fed.Cir.1996). Application of the properly construed claim to the accused device is a question of fact.

Lockwood argues that the district court misconstrued all four elements of the '115 patent claims cited by the district court. First, Lockwood contends that, properly construed, the term "self-contained" means an "apparatus or collection of components which includes the materials necessary for the apparatus to function on its own" and that the language "easily transported" includes a collection of components of comparable size and weight to those disclosed.

American argues that Lockwood's interpretation of these terms is flatly inconsistent with his interpretation before the Patent and Trademark Office (PTO). We agree. The limitation "self-contained apparatus dimensioned to be easily transported" was added after the PTO rejected Lockwood's claims as obvious in light of a business transaction computer system disclosed in U.S. Patent 3,705,384. In response to the rejection, Lockwood distinguished the prior art system, which was composed of multiple cabinets that filled a room, stating, "[a]pplicant's device, on the other hand, is a free-standing self contained unit which can be moved from location to location." During the prosecution of the patent, Lockwood thus differentiated his device from the prior art because of its compact physical dimensions, not because of its ability to "function on its own." In fact, the interpretation of the words "self-contained" that Lockwood now advances is insufficient to distinguish his invention from the prior art because the prior art patent also discloses a system that

can function independently. Lockwood cannot now argue for an interpretation inconsistent with this earlier representation. "Claims may not be construed one way in order to obtain their allowance and in a different way against accused infringers." *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576, 34 USPQ2d 1673, 1677 (Fed.Cir.), cert. denied, --- U.S. ----, 116 S.Ct. 515, 133 L.Ed.2d 424 (1995); see *Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1562, 19 USPQ2d 1500, 1504 (Fed.Cir.1991).

Second, Lockwood asserts that the term "audio-visual" refers to either video presentations or audio presentations, but not necessarily to both. We disagree. The '115 patent specification states that the unit displays travel documentaries and that a "high-quality audio-visual travelog can utilize practically all the human senses to motivate and influence a customer." During prosecution, Lockwood argued:

Although certain alpha numeric data are presented in the [prior art] reference, and such as in airport terminals which display schedules, etc., these are to be distinguished from applicant's device which actually presents brief travelogues and other movie-quality audio visual presentations to sell a product.

Although Lockwood correctly notes that the disclosed terminal displays an initial selection menu that does not produce any sound, this menu is not referred to as an "audio-visual" presentation. Rather, the selection menu is merely a method used for choosing an "audio-visual" presentation. Examination of the claims, specification, and prosecution history leads us to conclude that the district court correctly interpreted this term as requiring a device that produces both audio and video. It is undisputed that the SABREvision system cannot produce audio presentations.

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Third, Lockwood argues that the word "customer" should be construed to mean "someone with whom you do business" and therefore that American's "customers" are the travel agents that use SABREvision. American counters that the patent itself explicitly excludes travel agents from the definition of "customer." We agree. The specification states that the purpose of the invention is to replace travel agents so that the customer can purchase travel-related goods and services directly. It is "a new device capable of performing the promotion and sales of services such as those commonly dispensed by travel agencies, in a fully automated fashion and from easily accessible locations." Given the patent specification's use of the term "customer," it is clear that the accused device lacks this essential limitation. SABREvision is not used by, nor is it designed to be used by, the customers who are purchasing the goods and services. Lockwood does not genuinely dispute American's contention that SABREvision uses a command structure that requires experience to operate, nor does he argue that SABREvision is suitable for self-service operation by the consumers of the travel related goods and services.

Finally, Lockwood argues that a genuine issue of fact was raised regarding whether SABREvision has a structure equivalent to the disclosed structures relating to the claimed "means for accepting payment." With SABREvision, a travel agent enters credit card information through the keyboard, which does not contain a magnetic card reader as disclosed in the patent. American argues that, as a matter of law, a keyboard which requires manual labor is not equivalent to a card

reader. Lockwood replies that the card reader also requires manual labor; the user must pass the card through the reader. Even if SABREvision's keyboard were arguably structurally equivalent to the card reader disclosed in the specification, we disagree that this would raise a genuine issue of material fact. We have already determined that the district court correctly concluded that at least three limitations in claim 11 are not found in the accused device. Any error with regard to the presence or absence of additional limitations would be harmless. Thus, any dispute relating to those limitations is immaterial. Accordingly, we conclude that the district court did not err in holding that as a matter of law SABREvision does not literally infringe claim 11.

Lockwood also argues that the district court erred in concluding on summary judgment that there was no infringement under the doctrine of equivalents. Lockwood first argues that the district court impermissibly imposed an equitable threshold before applying the doctrine. Because the court proceeded to apply the doctrine notwithstanding its statements regarding equitable factors, see *Hebert v. Lisle Corp.*, 99 F.3d 1109, 1117, 40 USPQ2d 1611, 1616 (Fed.Cir.1996) ("As discussed in *Hilton Davis [Chemical Co. v. Warner-Jenkinson Co.]*, 62 F.3d [1512] at 1521, 35 USPQ2d [1641] at 1647-48 [(Fed.Cir.1995)], infringement by technologic equivalents, like literal infringement, does not have an equitable threshold."), this error was harmless. After analyzing the prosecution history, the court correctly concluded that prosecution history estoppel precludes a finding of infringement under the doctrine of equivalents.

Prosecution history estoppel precludes a patentee from obtaining in an infringement suit protection for subject matter which it relinquished during prosecution in order to obtain allowance of the claims. *Zenith Lab., Inc. v. Bristol-Myers Squibb Co.*, 19 F.3d 1418, 1424, 30 USPQ2d 1285, 1290 (Fed.Cir.1994). "Whenever prosecution history estoppel is invoked as a limitation to infringement under the doctrine of equivalents, 'a close examination must be made as to, not only what was surrendered, but also the reason for such a surrender.' " *Insta-Foam Prods., Inc. v. Universal Foam Sys., Inc.*, 906 F.2d 698, 703, 15 USPQ2d 1295, 1298 (Fed.Cir.1990) (quoting *Bayer Aktiengesellschaft v. Duphar Int'l Research B.V.*, 738 Page 1575 F.2d 1237, 1243, 222 USPQ 649, 653 (Fed.Cir.1984)).

During prosecution, Lockwood stressed the "audio-visual means" limitation to overcome a rejection over the prior art. As noted by the district court, Lockwood distinguished his invention from another prior art patent which used an alpha-numeric display, stating that it "does not feature any means to promote the goods or services by audio or audio-visual means." Lockwood did not draw a distinction between alpha-numeric displays and graphical displays. Rather, he drew a distinction between purely visual displays and those that contained audio as well. Thus, Lockwood is estopped from asserting that the SABREvision display, which does not produce audio or audio-visual presentations, is equivalent to his audio-visual means.

Lockwood makes similar arguments challenging the district court's construction of the terms "customer" and "audio-visual" in the '359 patent. We find these arguments equally unpersuasive. The claims of the '359 patent explicitly state that the audio-visual means comprises means for "transmitting a selected sequence of said stored information to a customer" and that the stored information is "a sequence of audio and video information." Clearly, the claims require that both

video and audio information be presented to the customer.

In addition, the '359 patent specification states that an object of the invention is to dispense "services to the general public on a self-service basis from remote terminals." An additional object of the invention is to provide services "by means of [a] simulated personal interview with a factitious agent created by audio-visual devices from prerecorded sound, images and synthesized data." The terminal is programmed to "audiovisually elicit from the customer the information necessary to provide an insurance quotation," thereby saving time and money because "the companies do not have to provide so many sales personnel to deal with such multitude of queries on a one-to-one basis." Although "[r]eferences to a preferred embodiment, such as those often present in a specification, are not claim limitations," *Laitram Corp. v. Cambridge Wire Cloth Co.*, 863 F.2d 855, 865, 9 USPQ2d 1289, 1299 (Fed.Cir.1988), "[w]e look to the specification for assistance in construing a claim." *Carroll Touch, Inc. v. Electro Mechanical Sys., Inc.*, 15 F.3d 1573, 1577, 27 USPQ2d 1836, 1840 (Fed.Cir.1993). As with the '115 patent, this specification clearly indicates that the term "customer" refers to the prospective purchaser of the services and excludes the sales agent whom the invention is intended to replace. Accordingly, the district court correctly held as a matter of law that SABREvision does not infringe the '359 patent.

Likewise, the district court correctly concluded that prosecution history estoppel precludes a finding of infringement under the doctrine of equivalents. During prosecution, Lockwood explicitly distinguished the prior art, stating, "[t]his system is thus not simply a self-service sales center linked to a central computer, as is known in the prior art, but completely replaces the sales person's role in soliciting the necessary information from the customer." (emphasis added). Lockwood argues that there can be no estoppel because the statement was not made in response to a rejection over the prior art. We disagree. Lockwood made this statement before any claims in the '359 patent were allowed. To the extent that prior art self-service sales centers employed sales personnel, Lockwood distinguished his invention on the basis that it did not require any sales personnel to collect customer information. The court properly determined that Lockwood surrendered coverage by drawing this distinction between his invention and the prior art. See *Ekchian v. Home Depot, Inc.*, 104 F.3d 1299, 1304, 41 USPQ2d 1364, 1368 (Fed.Cir.1997) ("[S]ince, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover, he is by implication surrendering such protection."). Therefore, Lockwood is estopped from asserting that SABREvision, which requires travel agents to collect customer information, contains an equivalent to the claimed "customer operated input means."

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Lockwood also challenges the district court's conclusion that SABREvision lacks "automated merchandising apparatus" including "a means for composing and displaying individualized sales presentations" and "means for selectively combining" as claimed in the '355 patent. Lockwood argues that his expert's affidavit raised a genuine issue of material fact by demonstrating the equivalency between the SABREvision structure and the structure disclosed in the '355 patent specification. Lockwood does not dispute that a travel agent, when operating SABREvision, must manually select and view one photograph at a time from a generated list. The court held that this type of operation is not "composing" a sales presentation within the literal meaning of the claims.

The functionality of SABREvision is undisputed. Because SABREvision does not perform the functions required by the properly construed claims, e.g., it does not "compose" an "individualized sales presentation" within the meaning of the claims, there is no need to compare the structure of the accused device to the structure disclosed in the patent. *Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1042, 25 USPQ2d 1451, 1454 (Fed.Cir.1993) ("The accused device must ... perform the identical function as specified in the claims"). Thus, no doctrine of equivalents issue having been raised, the district court correctly held as a matter of law that SABREvision does not infringe the claims of the '355 patent.

#### CONCLUSION

The district court correctly concluded that the '359 patent was invalid as obvious and that the '355 patent was invalid as anticipated by the '359 patent. In addition, the district court correctly concluded that there were no genuine disputes over any issues of material fact and correctly concluded that American Airlines' SABREvision reservation system did not infringe any of the patents in suit as a matter of law. Accordingly, the judgment of the district court in favor of American Airlines is affirmed.

AFFIRMED.

**525 U.S. 55 (1998)**

**119 S.Ct. 304, 142 L.Ed.2d 261, 48 U.S.P.Q.2d 1641**

**PFAFF**

**v.**

**WELLS ELECTRONICS, INC.**

**No. 97-1130**

**United States Supreme Court**

**November 10, 1998**

Argued October 6, 1998

CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL  
CIRCUIT

Syllabus

Under § 102(b) of the Patent Act of 1952, no one can patent an "invention" that has been "on sale" more than one year before filing a patent application. In early 1981, petitioner Pfaff designed a new computer chip socket and sent detailed engineering drawings of the socket to a manufacturer. He also showed a sketch of his concept to representatives of Texas Instruments, which placed an order for the new sockets prior to April 8, 1981. In accord with his normal practice, Pfaff did not make and test a prototype before offering to sell the socket in commercial quantities. He filled the order in July 1981, and thus the evidence indicates that he first reduced his invention to practice that summer. He applied for a patent on April 19, 1982, making April 19, 1981, the critical date for § 102(b)'s on-sale bar. After the patent issued, he lost an infringement action he filed against respondent, Wells Electronics, Inc. Subsequently, he brought this suit, alleging that a modified version of Wells' socket infringed six of his patent's claims. The District Court held, *inter alia*, that three of the claims were infringed, rejecting Wells' § 102(b) defense on the ground that Pfaff had filed the patent application less than a year after reducing the invention to practice. In reversing, the Court of Appeals concluded, among other things, that § 102(b)'s 1-year period began to run when the invention was offered for sale commercially, not when it was reduced to practice.

*Held:*

Pfaff's patent is invalid because the invention had been on sale for more than one year in this country before he filed his patent application. Pp. 60-69.

(a) The primary meaning of "invention" in the Patent Act unquestionably refers to the inventor's conception rather than to a physical embodiment of that idea. The statute contains no express "reduction to practice" requirement, see §§ 100, 101, 102(g), and it is well settled that an invention may be patented before it is reduced to practice. In *The Telephone Cases*, 126 U.S. 1, 535-536, this Court upheld a patent issued to Alexander Graham Bell even though he had filed his application before constructing a working telephone. Applying the reasoning of *The Telephone Cases* to the facts of this case, it is evident that Pfaff could have obtained a patent when he accepted Texas Instruments' order, for at that time he provided the manufacturer with a description

and drawings of "sufficient clearness and precision to enable those skilled in the matter" to produce the device, *id.*, at 536. Pp. 60-63.

(b) Pfaff's nontextual argument that longstanding precedent, buttressed by the interest in providing inventors with a clear standard identifying the onset of the 1-year period, justifies a special interpretation of "invention" in § 102(b) is rejected. While reduction to practice provides sufficient evidence that an invention is complete, the facts of *The Telephone Cases* and this case show that such proof is not necessary in every case. Pp. 63-66.

(c) The on-sale bar applies when two conditions are satisfied before the critical date. First, the product must be the subject of a commercial offer for sale. Here, the acceptance of the purchase order prior to April 8, 1981, makes it clear that such an offer had been made, and there is no question that the sale was commercial. Second, the invention must be ready for patenting. That condition may be satisfied in at least two ways: by proof of reduction to practice before the critical date; or by proof that prior to the critical date the inventor had prepared drawings or other descriptions of the invention that were sufficiently specific to enable a person skilled in the art to practice the invention. This condition is satisfied here because the drawings sent to the manufacturer before the critical date fully disclosed the invention. Pp. 67-69.

124 F.3d 1429, affirmed.

Stevens, J., delivered the opinion for a unanimous Court.

*Jerry R. Selinger* argued the cause for petitioner. With him on the briefs were *Susan E. Powley* and *Jack A. Kanz*.

*C. Randall Bain* argued the cause for respondent. With him on the brief were *Alan H. Blankenheimer*, *Patricia A. Hubbard*, *C. Mark Kittredge*, and *James D. Hall*.

*Jeffrey P. Minear* argued the cause for the United States as *amicus curiae* urging affirmance. With him on the brief were *Solicitor General Waxman*, *Assistant Attorneys General Hunger* and *Klein*, *Deputy Solicitor General Wallace*, *William Kanter*, *Alfred Mollin*, *David Siedman*, *Mark S. Popofsky*, *Nancy J. Linck*, and *Albin F. Drost*.<sup>[\*]</sup>

Justice Stevens delivered the opinion of the Court.

Section 102(b) of the Patent Act of 1952 provides that no person is entitled to patent an "invention" that has been "on sale" more than one year before filing a patent application.<sup>[1]</sup> We granted certiorari to determine whether the commercial marketing of a newly invented product may mark the beginning of the 1-year period even though the invention has not yet been reduced to practice.<sup>[2]</sup>

I

On April 19, 1982, petitioner, Wayne Pfaff, filed an application for a patent on a computer chip socket. Therefore, April 19, 1981, constitutes the critical date for purposes of the on-sale bar of 35 U.S.C. § 102(b); if the 1-year period

began to run before that date, Pfaff lost his right to patent his invention.

Pfaff commenced work on the socket in November 1980, when representatives of Texas

Instruments asked him to develop a new device for mounting and removing semiconductor chip carriers. In response to this request, he prepared detailed engineering drawings that described the design, the dimensions, and the materials to be used in making the socket. Pfaff sent those drawings to a manufacturer in February or March 1981.

Prior to March 17, 1981, Pfaff showed a sketch of his concept to representatives of Texas Instruments. On April 8, 1981, they provided Pfaff with a written confirmation of a previously placed oral purchase order for 30,100 of his new sockets for a total price of \$91,155. In accord with his normal practice, Pfaff did not make and test a prototype of the new device before offering to sell it in commercial quantities.<sup>[3]</sup>

The manufacturer took several months to develop the customized tooling necessary to produce the device, and Pfaff did not fill the order until July 1981. The evidence therefore indicates that Pfaff first reduced his invention to practice in the summer of 1981. The socket achieved substantial commercial

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success before Patent No. 4,491,377 ('377 patent) issued to Pfaff on January 1, 1985.<sup>[4]</sup>

After the patent issued, petitioner brought an infringement action against respondent, Wells Electronics, Inc., the manufacturer of a competing socket. Wells prevailed on the basis of a finding of no infringement.<sup>[5]</sup> When respondent began to market a modified device, petitioner brought this suit, alleging that the modifications infringed six of the claims in the '377 patent.

After a full evidentiary hearing before a Special Master,<sup>[6]</sup> the District Court held that two of those claims (1 and 6) were invalid because they had been anticipated in the prior art. Nevertheless, the court concluded that four other claims (7, 10, 11, and 19) were valid and three (7, 10, and 11) were infringed by various models of respondent's sockets. App. to Pet. for Cert. 21a-22a. Adopting the Special Master's findings, the District Court rejected respondent's § 102(b) defense because Pfaff had filed the application for the '377 patent less than a year after reducing the invention to practice.

The Court of Appeals reversed, finding all six claims invalid. 124 F.3d 1429 (CA Fed. 1997). Four of the claims (1, 6, 7, and 10) described the socket that Pfaff had sold to Texas Instruments prior to April 8, 1981. Because that device had been offered for sale on a commercial basis more than one

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year before the patent application was filed on April 19, 1982, the court concluded that those claims were invalid under § 102(b). That conclusion rested on the court's view that as long as the invention was "substantially complete at the time of sale," the 1-year period began to run, even though the invention had not yet been reduced to practice. *Id.*, at 1434. The other two claims (11 and 19) described a feature that had not been included in Pfaff's initial design, but the Court of Appeals concluded as a matter of law that the additional feature was not itself patentable because it was an obvious addition to the prior art.<sup>[7]</sup> Given the court's § 102(b) holding, the prior art included Pfaff's first four claims.

Because other courts have held or assumed that an invention cannot be "on sale" within the meaning of § 102(b) unless and until it has been reduced to practice, see, e. g., *Timely Products*

*Corp. v. Arron*, 523 F.2d 288, 299-302 (CA2 1975); *Dart Industries, Inc. v. E. I. Du Pont de Nemours & Co.*, 489 F.2d 1359, 1365, n. 11 (CA7 1973), cert. denied, 417 U.S. 933 (1974), and because the text of § 102(b) makes no reference to "substantial completion" of an invention, we granted certiorari. 523 U.S. 1003 (1998).

## II

The primary meaning of the word "invention" in the Patent Act unquestionably refers to the inventor's conception rather than to a physical embodiment of that idea. The statute does not contain any express requirement that an invention must be reduced to practice before it can be patented.

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Neither the statutory definition of the term in § 100<sup>[8]</sup> nor the basic conditions for obtaining a patent set forth in § 101<sup>[9]</sup> make any mention of "reduction to practice." The statute's only specific reference to that term is found in § 102(g), which sets forth the standard for resolving priority contests between two competing claimants to a patent. That subsection provides:

"In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other." Thus, assuming diligence on the part of the applicant, it is normally the first inventor to conceive, rather than the first to reduce to practice, who establishes the right to the patent.

It is well settled that an invention may be patented before it is reduced to practice. In 1888, this Court upheld a patent issued to Alexander Graham Bell even though he had filed his application before constructing a working telephone. Chief Justice Waite's reasoning in that case merits quoting at length:

"It is quite true that when Bell applied for his patent he had never actually transmitted telegraphically spoken words so that they could be distinctly heard and understood at the receiving end of his line, but in his specification he did describe accurately and with admirable clearness his process, that is to say, the exact

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electrical condition that must be created to accomplish his purpose, and he also described, with sufficient precision to enable one of ordinary skill in such matters to make it, a form of apparatus which, if used in the way pointed out, would produce the required effect, receive the words, and carry them to and deliver them at the appointed place. The particular instrument which he had, and which he used in his experiments, did not, under the circumstances in which it was tried, reproduce the words spoken, so that they could be clearly understood, but the proof is abundant and of the most convincing character, that other instruments, carefully constructed and made exactly in accordance with the specification, without any additions whatever, have operated and will operate successfully. A good mechanic of proper skill in matters of the kind can take the patent and, by following the specification strictly, can, without more, construct an apparatus which, when used in the way pointed out, will do all that it is claimed the method or process will do. . . .

"The law does not require that a discoverer or inventor, in order to get a patent for a process, must have succeeded in bringing his art to the highest degree of perfection. It is enough if he

describes his method with sufficient clearness and precision to enable those skilled in the matter to understand what the process is, and if he points out some practicable way of putting it into operation." *The Telephone Cases*, 126 U.S. 1, 535-536(1888).<sup>[10]</sup>

When we apply the reasoning of *The Telephone Cases* to the facts of the case before us today, it is evident that Pfaff

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could have obtained a patent on his novel socket when he accepted the purchase order from Texas Instruments for 30,100 units. At that time he provided the manufacturer with a description and drawings that had "sufficient clearness and precision to enable those skilled in the matter" to produce the device. *Id.*, at 536. The parties agree that the sockets manufactured to fill that order embody Pfaff's conception as set forth in claims 1, 6, 7, and 10 of the '377 patent. We can find no basis in the text of § 102(b) or in the facts of this case for concluding that Pfaff's invention was not "on sale" within the meaning of the statute until after it had been reduced to practice.

III

Pfaff nevertheless argues that longstanding precedent, buttressed by the strong interest in providing inventors with a clear standard identifying the onset of the 1-year period, justifies a special interpretation of the word "invention" as used in § 102(b). We are persuaded that this nontextual argument should be rejected.

As we have often explained, most recently in *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 151 (1989), the patent system represents a carefully crafted bargain that encourages both the creation and the public disclosure of new and useful advances in technology, in return for an exclusive monopoly for a limited period of time. The balance between the interest in motivating innovation and enlightenment by rewarding invention with patent protection on the one hand, and the interest in avoiding monopolies that unnecessarily stifle competition on the other, has been a feature of the federal patent laws since their inception. As this Court explained in 1871:

"Letters patent are not to be regarded as monopolies. . . but as public franchises granted to the inventors of new and useful improvements for the purpose of securing to them, as such inventors, for the limited term therein

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mentioned, the exclusive right and liberty to make and use and vend to others to be used their own inventions, as tending to promote the progress of science and the useful arts, and as matter of compensation to the inventors for their labor, toil, and expense in making the inventions, and reducing the same to practice for the public benefit, as contemplated by the Constitution and sanctioned by the laws of Congress." *Seymour v. Osborne*, 11 Wall. 516, 533-534.

Consistent with these ends, § 102 of the Patent Act serves as a limiting provision, both excluding ideas that are in the public domain from patent protection and confining the duration of the monopoly to the statutory term. See, e. g., *Frantz Mfg. Co. v. Phenix Mfg. Co.*, 457 F.2d 314, 320 (CA7 1972).

We originally held that an inventor loses his right to a patent if he puts his invention into public use before filing a patent application. "His voluntary act or acquiescence in the public sale

and use is an abandonment of his right." *Pennock v. Dialogue*, 2 Pet. 1, 24 (1829) (Story, J.). A similar reluctance to allow an inventor to remove existing knowledge from public use undergirds the on-sale bar.

Nevertheless, an inventor who seeks to perfect his discovery may conduct extensive testing without losing his right to obtain a patent for his invention even if such testing occurs in the public eye. The law has long recognized the distinction between inventions put to experimental use and products sold commercially. In 1878, we explained why patentability may turn on an inventor's use of his product.

"It is sometimes said that an inventor acquires an undue advantage over the public by delaying to take out a patent, inasmuch as he thereby preserves the monopoly to himself for a longer period than is allowed by the policy of the law; but this cannot be said with justice when the

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delay is occasioned by a *bona fide* effort to bring his invention to perfection, or to ascertain whether it will answer the purpose intended. His monopoly only continues for the allotted period, in any event; and it is the interest of the public, as well as himself, that the invention should be perfect and properly tested, before a patent is granted for it. *Any attempt to use it for a profit, and not by way of experiment, for a longer period than two years before the application, would deprive the inventor of his right to a patent.*" *Elizabeth v. Pavement Co.*, 97 U.S. 126, 137 (emphasis added).

The patent laws therefore seek both to protect the public's right to retain knowledge already in the public domain and the inventor's right to control whether and when he may patent his invention. The Patent Act of 1836, 5 Stat. 117, was the first statute that expressly included an on-sale bar to the issuance of a patent. Like the earlier holding in *Pennock*, that provision precluded patentability if the invention had been placed on sale at any time before the patent application was filed. In 1839, Congress ameliorated that requirement by enacting a 2-year grace period in which the inventor could file an application. 5 Stat. 353.

In *Andrews v. Hovey*, 123 U.S. 267, 274 (1887), we noted that the purpose of that amendment was "to fix a period of limitation which should be certain"; it required the inventor to make sure that a patent application was filed "within two years from the completion of his invention," *ibid.* In 1939, Congress reduced the grace period from two years to one year. 53 Stat. 1212.

Petitioner correctly argues that these provisions identify an interest in providing inventors with a definite standard for determining when a patent application must be filed. A rule that makes the timeliness of an application depend on the date when an invention is "substantially complete" seriously

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undermines the interest in certainty.<sup>[11]</sup> Moreover, such a rule finds no support in the text of the statute. Thus, petitioner's argument calls into question the standard applied by the Court of Appeals, but it does not persuade us that it is necessary to engraft a reduction to practice element into the meaning of the term "invention" as used in § 102(b).

The word "invention" must refer to a concept that is complete, rather than merely one that is

"substantially complete." It is true that reduction to practice ordinarily provides the best evidence that an invention is complete. But just because reduction to practice is sufficient evidence of completion, it does not follow that proof of reduction to practice is necessary in every case. Indeed, both the facts of *The Telephone Cases* and the facts of this case demonstrate that one can prove that an invention is complete and ready for patenting before it has actually been reduced to practice.<sup>[12]</sup>

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We conclude, therefore, that the on-sale bar applies when two conditions are satisfied before the critical date.

First, the product must be the subject of a commercial offer for sale. An inventor can both understand and control the timing of the first commercial marketing of his invention. The experimental use doctrine, for example, has not generated concerns about indefiniteness,<sup>[13]</sup> and we perceive no reason why unmanageable uncertainty should attend a rule that measures the application of the on-sale bar of § 102(b) against the date when an invention that is ready for patenting is first marketed commercially. In this case the acceptance of the purchase order prior to April 8, 1981, makes it clear that such an offer had been made, and there is no question that the sale was commercial rather than experimental in character.

Second, the invention must be ready for patenting. That condition may be satisfied in at least two ways: by proof of reduction to practice before the critical date; or by proof that prior to the critical date the inventor had prepared drawings or other descriptions of the invention that were sufficiently specific to enable a person skilled in the art to

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practice the invention.<sup>[14]</sup> In this case the second condition of the on-sale bar is satisfied because the drawings Pfaff sent to the manufacturer before the critical date fully disclosed the invention.

The evidence in this case thus fulfills the two essential conditions of the on-sale bar. As succinctly stated by Learned Hand:

"[I]t is a condition upon an inventor's right to a patent that he shall not exploit his discovery competitively after it is ready for patenting; he must content himself with either secrecy, or legal monopoly." *Metallizing Engineering Co. v. Kenyon Bearing & Auto Parts Co.*, 153 F.2d 516, 520 (CA2 1946).

The judgment of the Court of Appeals finds support not only in the text of the statute but also in the basic policies underlying the statutory scheme, including § 102(b). When Pfaff accepted the purchase order for his new sockets prior to April 8, 1981, his invention was ready for patenting. The fact that the manufacturer was able to produce the socket using his detailed drawings and specifications demonstrates this fact. Furthermore, those sockets contained all the elements of the invention claimed in the '377 patent. Therefore, Pfaff's '377 patent is invalid because the invention had

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been on sale for more than one year in this country before he filed his patent application.

Accordingly, the judgment of the Court of Appeals is affirmed.

*It is so ordered.*

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Notes:

[\*] Briefs of *amici curiae* urging reversal were filed for Global Gaming Technology, Inc., by *Joseph M. Vanek*; for the American Intellectual Property Law Association by *Robert H. Fischer, Gary L. Griswold, Robert L. Baechtold, and J. Michael Jakes*; for the Federal Circuit Bar Association by *George E. Hutchinson, Denise W. DeFranco, and James F. McKeown*.

Briefs of *amici curiae* urging affirmance were filed for View Engineering, Inc., by *Ernie L. Brooks and Frank A. Angileri*; for the Dallas-Fort Worth Intellectual Property Law Association by *D. Scott Hemingway and Louis Touton*; for the Mas-Hamilton Group by *David E. Schmit*, and for the Patent, Trademark & Copyright Section of the Bar Association of the District of Columbia by *Bruce T. Wieder*.

[1] "A person shall be entitled to a patent unless

"(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or . . . ." 35 U.S.C. § 102.

[2] "A process is reduced to practice when it is successfully performed. A machine is reduced to practice when it is assembled, adjusted and used. A manufacture is reduced to practice when it is completely manufactured. A composition of matter is reduced to practice when it is completely composed." *Corona Cord Tire Co. v. Dovan Chemical Corp.*, 276 U.S. 358, 383 (1928).

[3] At his deposition, respondent's counsel engaged in the following colloquy with Pfaff:

"Q. Now, at this time [late 1980 or early 1981] did we [*sic*] have any prototypes developed or anything of that nature, working embodiment?

"A. No.

"Q. It was in a drawing. Is that correct?

"A. Strictly in a drawing. Went from the drawing to the hard tooling. That's the way I do my business.

"Q. 'Boom-boom'?

"A. You got it.

"Q. You are satisfied, obviously, when you come up with some drawings that it is going to go 'it works'?

"A. I know what I'm doing, yes, most of the time." App. 96-97.

[4] Initial sales of the patented device were:

1981.....	\$ 350,000
1982.....	\$ 937,000
1983.....	\$2,800,000
1984.....	\$3,430,000

App. to Pet. for Cert. 223a.

[5] *Pfaff v. Wells Electronics, Inc.*, 9 USPQ 2d 1366 (ND Ind. 1988). The court found that the Wells device did not literally infringe on Pfaff's '377 patent based on the physical location of the sockets' conductive pins.

[6] Initially the District Court entered summary judgment in favor of respondent, but the Court of

Appeals reversed and remanded for trial because issues of fact were in dispute. See 5 F.3d 514 (CA Fed. 1993).

[7] Title 35 U.S.C. § 103 provides: "A patent may not be obtained though the invention is not identically disclosed or described . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."

[8] Title 35 U.S.C. § 100, "Definitions," states:

"When used in this title unless the context otherwise indicates "(a) The term 'invention' means invention or discovery . . . ."

[9] Section 101, "Inventions patentable," provides: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

[10] This Court has also held a patent invalid because the invention had previously been disclosed in a prior patent application, although that application did not claim the invention and the first invention apparently had not been reduced to practice. *Alexander Milburn Co. v. Davis-Bournonville Co.*, 270 U.S. 390, 401-402 (1926).

[11] The Federal Circuit has developed a multifactor, "totality of the circumstances" test to determine the trigger for the on-sale bar. See, e. g., *Micro Chemical, Inc. v. Great Plains Chemical Co.*, 103 F.3d 1538, 1544(1997) (stating that, in determining whether an invention is on sale for purposes of § 102(b), " 'all of the circumstances surrounding the sale or offer to sell, including the stage of development of the invention and the nature of the invention, must be considered and weighed against the policies underlying section 102(b)' "); see also *UMC Electronics Co. v. United States*, 816 F.2d 647, 656 (1987) (stating the on-sale bar "does not lend itself to formulation into a set of precise requirements"). As the Federal Circuit itself has noted, this test "has been criticized as unnecessarily vague." *Seal-Flex, Inc. v. Athletic Track & Court Construction*, 98 F.3d 1318, 1323, n. 2 (1996).

[12] Several of this Court's early decisions stating that an invention is not complete until it has been reduced to practice are best understood as indicating that the invention's reduction to practice demonstrated that the concept was no longer in an experimental phase. See, e. g., *Seymour v. Osborne*, 11 Wall. 516, 552 (1871) ("Crude and imperfect experiments are not sufficient to confer a right to a patent; but in order to constitute an invention, the party must have proceeded so far as to have reduced his idea to practice, and embodied it in some distinct form"); *Clark Thread Co. v. Willimantic Linen Co.*, 140 U.S. 481, 489 (1891) (describing how inventor continued to alter his thread winding machine until July 1858, when "he put it in visible form in the shape of a machine. . . . It is evident that the invention was not completed until the construction of the machine"); *Corona Cord Tire Co. v. Dovan Chemical Corp.*, 276 U.S. , at 382-383 (stating that an invention did not need to be subsequently commercialized to constitute prior art after the inventor had finished his experimentation. "It was the fact that it would work with great activity as an accelerator that was the discovery, and that was all, and the necessary reduction to use is

shown by instances making clear that it did so work, and was a completed discovery").

[13] See, e. g., Rooklidge & Jensen, Common Sense, Simplicity and Experimental Use Negation of the Public Use and On Sale Bars to Patentability, 29 John Marshall L. Rev. 1, 29 (1995) (stating that "whether a particular activity is experimental is often clear").

[14] The Solicitor General has argued that the rule governing the on-sale bar should be phrased somewhat differently. In his opinion, "if the sale or offer in question embodies the invention for which a patent is later sought, a sale or offer to sell that is primarily for commercial purposes and that occurs more than one year before the application renders the invention unpatentable. *Seal-Flex, Inc. v. Athletic Track and Court Constr.*, 98 F.3d 1318, 1325 (Fed. Cir. 1996) (Bryson, J., concurring in part and concurring in the result)." Brief for United States as *Amicus Curiae* 10-11 (internal quotation marks omitted). It is true that evidence satisfying this test might be sufficient to prove that the invention was ready for patenting at the time of the sale if it is clear that no aspect of the invention was developed after the critical date. However, the possibility of additional development after the offer for sale in these circumstances counsels against adoption of the rule proposed by the Solicitor General.

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**857 F.2d 778 (Fed. Cir. 1988)**

**8 U.S.P.Q.2d 1217**

**UNITED STATES of America, Plaintiff/Appellant,**

**and**

**Zimmer, Inc., Involuntary Plaintiff/Counterclaim-Defendant,**

**v.**

**TELECTRONICS, INC. and BGS Medical, Inc.,**

**Defendants/Counterclaim-Plaintiffs/Cross-Appellants.**

**Appeal Nos. 87-1445, 87-1446.**

**United States Court of Appeals, Federal Circuit**

**September 22, 1988**

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John Fargo, Dept. of Justice, Washington, D.C., argued for plaintiff/appellant. Richard K. Willard, Asst. Atty. Gen., Vito J. DiPietro, Director, Commercial Litigation Branch, Dept. of Justice, Washington, D.C., on the brief for plaintiff/appellant.

Michael I. Rackman, Gottlieb, Rackman & Reisman, P.C., New York City, argued for defendants/counterclaim-plaintiffs/cross-appellants. With him on the brief were Barry A. Cooper and Jeffrey M. Kaden. Also on the brief was William C. Nealon, Suffield, Conn., of counsel.

Before NEWMAN, ARCHER and MAYER, Circuit Judges.

ARCHER, Circuit Judge.

The United States of America (government) appeals the judgment of the United States District Court for the District of Colorado in *United States v. Teletronics, Inc.*, 658 F.Supp. 579, 3 USPQ2d 1571 (D.Colo.1987), holding that Teletronics, Inc. and BGS Medical, Inc. (Teletronics) do not infringe U.S. Patent No. 3,842,841 ('841). Teletronics cross-appeals the determinations that the '841 patent is not invalid under 35 U.S.C. Sec. 112 (1982) and that Teletronics is not entitled to attorney fees under 35 U.S.C. Sec. 285 (1982).<sup>[1]</sup> We reverse the district court's holding that the '841 patent is not infringed by Teletronics. The determinations that the patent is not invalid under section 112 and that Teletronics is not entitled to attorney fees are affirmed.

Background

The '841 patent issued to Carl T. Brighton, et al. and was assigned to the United States. The patent resulted from work under contract between the Office of Naval Research and the University of Pennsylvania, where the inventors were employed. 658 F.Supp. at 581, 3 USPQ2d at 1571. The '841 patent is directed to a bone growth stimulator device for speeding the healing of fractures and other bone defects. The accused devices of Teletronics are marketed under the name OSTEOSTIM and include Model 2000 and earlier models S-12, HS-12 and XM-12. Zimmer, Inc. (Zimmer), a licensee of the government under the '841 patent, also markets a bone growth stimulator which the district court found to be "quite similar to the preferred embodiment of the invention shown in the patent." 658 F.Supp. at 581, 3 USPQ2d at 1571.

Normally bone fractures heal naturally as a result of the body's own reparative process. Approximately five percent of the time, however, natural healing does not occur and bone grafting is conventionally employed to attempt to stimulate further reparative growth. 658 F.Supp. at 581-82, 3 USPQ2d at 1572.

Bone growth stimulators are particularly useful in the treatment of fractures normally requiring grafting. The success rate is at least as great as with grafting and the procedure results in less discomfort to the patient. 658 F.Supp. at 582, 3 USPQ2d at 1572. Bone growth stimulators expedite the healing of a fracture or bone defect by passing a low level constant direct current to the site of the fracture via a cathode placed internally at the site of the fracture. *Id.* The placement of the circuit-completing anode is at issue in this case.

The claim of the '841 patent at issue reads:

1. A system for expediting the healing of bone fractures and bone defects in a living being comprising:

constant current source means for providing a constant value of current despite changes in load;

means for connecting said constant current means to the living being, such connection acting to produce current flow into said fracture or defect,

said connecting means including further means for application internally of said living being at the fracture or defect site,

said constant current being a selected value within a predetermined microampere range so as to promote bone formation at the fracture or bone defect site and avoid fibrous tissue formation in other areas of the living being.

In describing the operation of the patented invention and the accused devices, the district court stated that

[w]hen using the product of either party, the cathode (negative terminal) is placed in the defect site. The Zimmer cathode is made of stainless steel, the material described in the patent. The OSTEOSTIM cathode is made of titanium. The major difference between the products of the parties pertains to the anode (positive terminal). As disclosed in the patent drawing and accompanying description, and as marketed by Zimmer, the anode is placed on the skin of the patient. So is the power pack (current source) itself. The only internal element [in Zimmer] is the cathode--a pin which is inserted through the skin into the defect site. This technique avoids the need for surgery; after several months of treatment, the cathode pin is simply pulled out. The OSTEOSTIM device, on the other hand, is completely implanted, an embodiment which while not shown in the patent drawing is nevertheless described. The power pack and the anode of the OSTEOSTIM are placed in soft tissue near the bone. The original OSTEOSTIM S-12 had a power pack from which two wires extended, the wires terminating respectively at a titanium cathode for placement in the defect site, and a platinum anode for placement in the soft tissue. In all of the later models, including the OSTEOSTIM-2000, the anode wire was omitted. The anode is the case itself--titanium with a patch of platinum.

658 F.Supp. at 582, 3 USPQ2d at 1572.

Because the Telectronics devices have an implanted anode, the district court stated that "the critical question in the case is whether the language of claim 1 (and with it, the dependent claims) is limited to a skin anode." 658 F.Supp. at 583, 3 USPQ at 1573. Telectronics contended before the district court that "an internal anode could not come within the literal language of claim 1 because fibrous tissue formation inevitably results from such an implant." Id. In finding no literal infringement, the district court held with respect to the accused device that fibrous tissue formation could not be avoided in the dictionary sense of "keep away from" or "stay clear of".

The claim limitation directed to the avoidance of fibrous tissue means what it plainly says. Accordingly, there is no literal infringement because in the context

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of the patent, even minimal fibrous tissue formation is not its avoidance. Id.

The district court also held that the '841 patent was not infringed under the doctrine of equivalents on the basis that the prosecution history established that the patentees, in responding to rejections by the examiner, repeatedly represented that the invention was limited to a surface or skin anode. After examining the prosecution history in detail, the district court stated: "[i]t is clear from the file history that what convinced the Examiner to allow the claims over the prior art was the argument that a skin anode was used in the invention." 658 F.Supp. at 587, 3 USPQ2d at 1576.

On appeal, the government contends that the district court in its literal infringement analysis erred as a matter of law in its claim interpretation. According to the government, the claim limitation read as a whole requires the constant current supply to be controlled in a manner to minimize the amount of fibrous tissue formed. Telectronics counters that the district court properly interpreted the claim phrase "avoid fibrous tissue formation" and the prosecution history to find that the claim is limited to the use of a skin anode.

## OPINION

### I. Claim Interpretation

A. Analysis of literal infringement involves two inquiries: first the claims must be properly construed to determine their scope and then it must be determined whether the properly interpreted claims encompass the accused structure. *ZMI Corp. v. Cardiac Resuscitator Corp.*, 844 F.2d 1576, 1578, 6 USPQ2d 1557, 1559 (Fed.Cir.1988). Claim construction is reviewed as a matter of law. However, interpretation of a claim may depend on evidentiary material about which there is a factual dispute, requiring resolution of factual issues as a basis for interpretation of the claim. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1054, 5 USPQ2d 1434, 1441 (Fed.Cir.1988). In interpreting claims resort should be made to the claims at issue, the specification, and the prosecution history. *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 867, 228 USPQ 90, 93 (Fed.Cir.1985). The question of literal infringement is a factual inquiry and is reviewed on a clearly erroneous standard. *Loctite Corp.*, 781 F.2d at 866, 228 USPQ at 93.

B. The district court interpreted the phrase "avoid fibrous tissue formation" as precluding the use of an implanted anode, and thus limiting the claim to a surface or skin anode. To the court, the word "avoid" based on its dictionary definition meant that there could be no fibrous tissue. Because an implanted anode inevitably resulted in some fibrous tissue, the court determined that

this placement of the anode was not covered by the claim language.

The government argues that the district court erred in its interpretation because the phrase at issue was not read in context. It contends that the claim language read as a whole only requires that there be avoidance or minimization of fibrous tissue formation by controlling or selecting the current. Thus, any fibrous tissue that may result from the implantation of the anode is immaterial.

We agree that the district court erred in its interpretation of the limitation of claim 1 and in its conclusion that such language is determinative of the anode placement. In the claim, constant current is a "selected value ... so as to promote bone formation ... and avoid fibrous tissue formation in other areas." Nothing in this language relates to fibrous tissue that may be formed from implantation of an anode. The plain meaning of the disputed language is only that current-related fibrous tissue formation is to be avoided.

In considering other sources for interpretation of claims, we note that the specification supports the plain meaning of the clause at issue. See *Autogiro Co. of America v. United States*, 384 F.2d 391, 397, 181 Ct.Cl. 55, 62, 155 USPQ 697, 702-03 (1967) ("[P]atent law allows the inventor to be his own lexicographer.... [t]he specification aids in ascertaining the scope and meaning of the language employed in the claims inasmuch as words must be used in the same way in both the claims and the

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specification.") The specification makes no mention of whether a skin anode or an implanted anode may cause or deter the formation of fibrous tissue. There is, however, a discussion of the increase or decrease in fibrous tissue that is formed with varying currents. Further, we find nothing in the prosecution history that would indicate that fibrous tissue resulting from implantation of an electrode was at issue or was intended to be covered by the claim language.

The claim language relied on by the district court is, therefore, not determinative of anode placement and does not require that claim 1 be limited to a surface or skin anode.

C. Claim 1 recites a "means for connecting said constant current means to the living being, such connection acting to produce current flow into said fracture or defect." Since this recitation is in the "means plus function" format permitted by 35 U.S.C. Sec. 112, p 6, it must be interpreted to cover the structure disclosed in the specification and the equivalents thereof. See *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1575, 225 USPQ 236, 239 (Fed.Cir.1985).

"In construing a 'means plus function' claim, as also other types of claims, a number of factors may be considered, including the language of the claim, the patent specification, the prosecution history of the patent, other claims in the patent, and expert testimony [citations omitted]. Once such factors are weighed, the scope of the 'means' claim may be determined." *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 975, 226 USPQ 5, 8 (Fed.Cir.1985); see also *Moeller v. Ionetics, Inc.*, 794 F.2d 653, 656, 229 USPQ 992, 994 (Fed.Cir.1986) (resort to extrinsic evidence, such as the prosecution history, is necessary to interpret disputed claims); *SSIH Equip. S.A. v. U.S. Int'l Trade Comm'n*, 718 F.2d 365, 376, 218 USPQ 678, 688 (Fed.Cir.1983) (the prosecution history is always relevant to proper claim interpretation). "[T]he prosecution history (or file wrapper) limits the interpretation of claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution in order to obtain claim allowance." *Standard Oil Co.*

v. American Cyanamid Co., 774 F.2d 448, 452, 227 USPQ 293, 296 (Fed.Cir.1985); see also McGill Inc. v. John Zink Co., 736 F.2d 666, 673, 221 USPQ 944, 949 (Fed.Cir.), cert. denied, 469 U.S. 1037, 105 S.Ct. 514, 83 L.Ed.2d 404 (1984).

The district court found that both implanted and surface anodes are disclosed in the specification of the '841 patent. The specification provides: "[a]lthough the cathode must be placed in the fracture ... the anode, though described as preferably being placed on the remote side of the site from the cathode, may be placed anywhere so long as it completes a circuit with the cathode." Elsewhere the specification provides that "[i]f the anode is to be implanted, it ... is bared of its cover." Thus, unless other relevant claim interpretation factors clearly require a different construction, the plain language of claim 1 and the specification cover an implanted anode as well as a skin or surface anode.

In its claim construction and literal infringement analysis, the district court did not consider the prosecution history but concluded for the reasons indicated in I.A., supra, that a surface anode was required. The prosecution history, however, was extensively discussed in the court's consideration of the doctrine of equivalents.

Prior to allowance, the applicants communicated with the examiner six times. These communications are referred to as "A" through "F" in the district court's opinion and herein. The district court concluded that because of the prosecution history appellant is "prevented from construing its claims to include an internal anode." 658 F.Supp. at 587, 3 USPQ2d at 1577. We disagree.

The district court first relied on Amendments B and C. In the former, applicants inserted the limitation "only one of said connecting means applied to the skin surface of the living being" for the purpose of attempting to overcome a prior art rejection. This amendment was accompanied by remarks to the same effect. In Amendment C, this limitation was argued to be a distinguishing feature of the invention.

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Applicants' attempts to distinguish over the prior art in this fashion were unsuccessful, and the claims were later amended to remove this recitation. The arguments emphasizing the use of a skin electrode, which were made at the time the application claims explicitly contained such a limitation, cannot furnish a basis for restricting issued claim 1, which lacks any such limitation. See *Smith v. Snow*, 294 U.S. 1, 16, 55 S.Ct. 279, 285, 79 L.Ed. 721 (1935) ("It is of no moment that in the course of the proceedings in the Patent Office the rejection of narrow claims was followed by the allowance of the broader Claim 1."); *Kistler Instrumente AG v. United States*, 628 F.2d 1303, 1308, 224 Ct.Cl. 370, 211 USPQ 920 (1980) (aff'g and adopting 203 USPQ 511, 516) (courts are not permitted to read "back into the claims limitations which were originally there and were removed during prosecution of the application through the Patent Office.")

In Amendment D a claim which ultimately issued as independent claim 1 was submitted for the first time. In holding claim 1 should be limited to a skin anode, the district court relied on Amendments E and F which contained arguments relative to a skin anode and which were held by the district court to be in support of the claims that finally issued.<sup>[2]</sup> From Amendment F the district court quoted the following language:

Applicants take strong exception to [the examiner's] analysis of the [Friedenberg-Kohanim article]. Nowhere in this article is there either stated or suggested that one of the electrodes need simply be applied to the surface and the other introduced into the fracture site.

These remarks were submitted to correct the examiner's characterization of a prior art reference (an article written by one of the co-inventors of the patented invention). The examiner's characterization of the reference was made in rejecting claims, at least some of which included an explicit recitation of a surface anode. Thus, these remarks are of little significance.

The district court also noted the following argument in Amendment F:

Applicants throughout the prosecution of this case have repeatedly attempted to convey to the Examiner the important differences between their technique where only one of the electrodes need pierce the skin and enter the fracture site and the other prior art arrangements where two electrodes have to pierce the skin and then fit into prescribed locations formed in the bone structure under study. (Emphasis added.)

The quoted language does not mean that one electrode must remain on the surface of the skin. Rather, as applicants argue, it means that both of their electrodes do not have to be placed in the bone structure itself. The district court erred in construing the phrase "only one of the electrodes need pierce the skin" to mean that the other electrode must remain on the surface. This phrase, when read in conjunction with the words that follow--"and enter the fracture site"--only serves to distinguish prior art where both electrodes were placed in the bone structure.<sup>[3]</sup> The entire emphasis of the prior art article was that the electrodes were placed in the bone for the purpose of attempting to lengthen the bone. The article was not concerned with the healing of fractures or bone defects. In the healing of fractures, it is not necessary (or desirable) to place both electrodes in the bone.

D. "There is presumed to be a difference in meaning and scope when different words or phrases are used in separate claims. To the extent that the absence of

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such difference in meaning and scope would make a claim superfluous, the doctrine of claim differentiation states the presumption that the difference between claims is significant." *Tandon Corp. v. United States Int'l Trade Comm'n*, 831 F.2d 1017, 1023, 4 USPQ2d 1283, 1288 (Fed.Cir.1987). "Where some claims are broad and others narrow, the narrow claim limitations cannot be read into the broad whether to avoid invalidity or to escape infringement." *Uniroyal, Inc.*, 837 F.2d at 1054-55, 5 USPQ2d at 1441 (quoting *D.M.I., Inc. v. Deere & Co.*, 755 F.2d at 1574, 225 USPQ at 239).

In this case the district court erroneously construed claim 1 so that its limitations are the same as dependent claim 2. Claim 2 reads in its entirety: "The system as defined in claim 1 wherein said connecting means includes means for external application to the skin surface, the internal means being a cathodic electrode, the external means being an anodic electrode." The doctrine of claim differentiation, therefore, counsels against limiting claim 1 to the use of a skin anode. See *D.M.I., Inc.*, 755 F.2d at 1574, 225 USPQ at 239.

E. On the basis of the above analysis, we conclude that the district court erred as a matter of law in its interpretation of claim 1 of the '841 patent. *Fromson v. Advance Offset Plate, Inc.*, 720

F.2d 1565, 1569, 219 USPQ 1137, 1140 (Fed.Cir.1983).

The ordinary and accustomed meaning of claim 1 is that the current should be applied so as to avoid the formation of fibrous tissue. In support of this means plus function claim, the specification of the '841 patent disclosed both an implanted and a surface anode structure. The other claims, the specification and the prosecution history do not require a narrower construction. Thus, the district court erred in limiting claim 1 to the use of a skin anode.

## II. Literal Infringement

The question of literal infringement is a factual inquiry. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d at 1054, 5 USPQ2d at 1441. Literal infringement requires that every limitation of the patent claim must be found in the accused device. *Mannesmann Demag Corp. v. Engineered Metal Prods. Co.*, 793 F.2d 1279, 1282, 230 USPQ 45, 46 (Fed.Cir.1986). In this case, the findings of the district court establish literal infringement and, thus, there is no need to remand for a determination of the factual question of infringement under properly interpreted claims.

The district court stated in its opinion that:

The defendant's denial of infringement in this case is based solely on the defendants' anode and case being used internally. Accordingly the critical question in the case is whether the language of claim 1 (and with it the dependent claims) is limited to a skin anode.

As we have held in *I.*, supra, the properly construed claims encompass both a skin anode and an implanted anode. The district court erroneously limited the claims of the '841 patent to a surface anode. Accordingly, on the position of Telectronics as stated by the district court, literal infringement is established.

The government also challenges the district court's finding of no infringement under the doctrine of equivalents. Because the accused devices literally infringe, a doctrine of equivalents inquiry is unnecessary. See *ZMI Corp. v. Cardiac Resuscitator Corp.*, 844 F.2d at 1581, 6 USPQ2d at 1562 ("When literal infringement is not found, the equitable doctrine of equivalents comes into play.").

## III. Invalidity

The district court held: "[i]f claim 1 were to be given the broad meaning which plaintiff asserts, then the patent would be invalid for a failure to comply with the specification requirements of 35 U.S.C. Sec. 112." 658 F.Supp. at 589, 3 USPQ2d at 1577-78. According to the district court a dose response study must be performed for materials other than stainless steel to determine the optimal electrical current to be supplied and this would involve "an undue amount of experimentation." *Id.*

In its cross-appeal Telectronics argues that the patent is invalid for non-enablement  
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regardless of how the claims are interpreted because the disclosure does not bear a reasonable relationship to the scope of the claims.

Enablement is a legal determination which is reviewed as a matter of law. *Raytheon Co. v. Roper Co.*, 724 F.2d 951, 951-60, 220 USPQ 592, 599 (Fed.Cir.1983). To be enabling under section 112, the patent must contain a description sufficient to enable one skilled in the art to make and use the claimed invention. *Id.* A patent may be enabling even though some

experimentation is necessary; the amount of experimentation, however, must not be unduly extensive. *Atlas Powder Co. v. E.I. du Pont De Nemours & Co.*, 750 F.2d 1569, 1576, 224 USPQ 409, 413 (Fed.Cir.1984). A patent is presumed valid, and the burden of proving invalidity, whether under section 112 or otherwise, rests with the challenger. Invalidity must be proven by facts supported by clear and convincing evidence. *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1573-74, 227 USPQ 177, 178 (Fed.Cir.1985) ("A party asserting invalidity based on 35 U.S.C. Sec. 112 bears no less a burden ... than any other patent challenger.") Thus, although not mentioned by the district court, it is Telectronics' burden to show by facts supported by clear and convincing evidence that the patent was not enabling.

We note first that Telectronics admits that "[t]he patent does disclose how to successfully practice the invention--if stainless steel electrodes and a current in the range of 5-20 microamperes is [sic] used." (Emphasis in original.) Lack of enablement is asserted on the basis that "the claims are not limited to the specific metal/current combination."

The district court thought that to determine the optimal electrical current for materials other than stainless steel a dose response study would be required and that this would involve an "undue amount of experimentation." The district court said "the patent does not tell a person reasonably skilled in the art how to make and use this invention because it fails to teach how to select a level of current to promote bone formation and avoid fibrous tissue ... formation from such current" for electrodes made of materials other than stainless steel. 658 F.Supp. at 589, 3 USPQ2d at 1578. It noted that "the patent does not contain an adequate description of the methodology for a dose response study for any cathode material other than stainless steel" and that "only those who were expert in the field and actually working with bone, doing electrical stimulation experiments ... would know how to conduct" such a study. Moreover, the district court thought that the time and expense of such a study also indicated undue experimentation would be required.

We are convinced that these findings and conclusions are insufficient to constitute clear and convincing proof of invalidity. First, it is undisputed that the patent disclosures are enabling with respect to stainless steel electrodes, with the range of current for such electrode set out in the specification. The specification shows this range of current was obtained by a dose response test. Next, according to the district court "those who were expert in the field and actually working with bone, doing electrical stimulation experiments ... would know how to conduct a dose response study to determine the appropriate current to be used with other materials as electrodes." *Id.* The appropriate levels of current for other electrodes to promote bone growth and avoid fibrous tissue could, therefore, be determined. Finally, the emphasis by the district court on the time and cost of such studies is misplaced. While these factors may be taken into account, in the circumstances of this case we are unpersuaded that standing alone they show the experimentation to be excessive. The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed.Cir.1986), cert. denied, --- U.S. ----, 107 S.Ct. 1606, 94 L.Ed.2d 792 (1987).

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Since one embodiment is admittedly disclosed in the specification, along with the general manner in which its current range was ascertained, we are convinced that other permutations of the invention could be practiced by those skilled in the art without undue experimentation. See *SRI Int'l v. Matsushita Elec. Corp. of America*, 775 F.2d 1107, 1121, 227 USPQ 577, 586 (Fed.Cir.1985) (the law does not require an applicant to describe in his specification every conceivable embodiment of the invention); *Hybritech Inc.*, 802 F.2d at 1384, 231 USPQ at 94 (the enablement requirement may be satisfied even though some experimentation is required). While perhaps fortuitous, as the district court found, the OSTEOSTIM device of Telectronics used a current level of 20 microamperes, within the "substantially 5 microamperes to substantially 20 microamperes" range set forth in claim 5 and disclosed in the specification.

The district court also held that if claim 1 is read to mean that the current must be applied so as to minimize fibrous tissue formation then it would be invalid under 35 U.S.C. Sec. 112 (1982) because it would be "impossible to determine when sufficient minimization takes place to determine what current range is involved." 658 F.Supp. at 589, 3 USPQ at 1578. The district court erred as a matter of law in this holding. *Shatterproof Glass Corp. v. Libby-Owens Ford Co.*, 758 F.2d 613, 624, 225 USPQ 634, 641 (Fed.Cir.), cert. dismissed, 474 U.S. 976, 106 S.Ct. 340, 88 L.Ed.2d 326 (1985). Section 112, p 2, requires only reasonable precision in delineating the bounds of the claimed invention. *Id.* Adjusting current so as to minimize fibrous tissue formation in other parts of the living being reasonably apprises those skilled in the art of the bounds of the claimed invention and is as precise as the subject matter permits. See *id.* Thus, we hold as a matter of law that the '841 patent is enabling and that the claims satisfy 35 U.S.C. Sec. 112, p 2.

In its cross appeal, Telectronics argues that the specification is enabling only for the use of stainless steel while the claims are not limited in the types of material from which the electrodes can be made. It contends that the scope of the protection must bear a reasonable relationship to the scope of enablement, citing *In re Fisher*, 427 F.2d 833, 838-39, 57 C.C.P.A. 1099, 1107, 166 USPQ 18, 23-24 (1970) ("In cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved."), and *In re Bowen*, 492 F.2d 859, 861-64, 181 USPQ 48, 50-52 (CCPA 1974) (section 112 requires that the scope of claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art). *Fisher* and *Bowen* both involved chemical reactions, recognized by our predecessor court as having a high degree of unpredictability and therefore requiring an increased enablement disclosure. Yet, in *Bowen* the board's non-enablement rejection was reversed where the "claims literally comprehend numerous polymers in addition to the one specifically described in appellant's specification" because no persuasive reason was given by the Patent Office why the specification does not realistically enable one skilled in the art to practice the invention as broadly as it is claimed. *In re Bowen*, 492 F.2d at 863, 181 USPQ at 51-52. The same can be said here. The only impediments are the time and cost of a dose response study, which the district court found could be performed by "those who were expert in the field and actually working with bone, doing electrical stimulation experiments ...," i.e., those skilled in the art. Moreover, as we have noted, Telectronic's device using different electrode materials actually operated within the current

parameters disclosed in the specification.

We conclude that the district court erred in its nonenablement conclusion and that facts supported by clear and convincing evidence of invalidity were not adduced.

In view of our decision, we need not consider the district court's denial of attorney fees to Teletronics.

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Costs

The parties shall bear their respective costs.

AFFIRMED-IN-PART AND REVERSED-IN-PART.

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Notes:

[1] Teletronics has not appealed the district court's holdings on other issues it raised below.

[2] There was some uncertainty as to which set of claims certain of these remarks applied, but the district court found that Amendments E and F related to the claims presented in Amendment D. Because we conclude that the district court erroneously limited the claims even if the remarks in controversy did apply to the claims which issued, we need not determine whether the district court correctly resolved this dispute.

[3] The district court recognized that "[t]here are three possible positions for placement of the anode: on the skin, in soft tissue, and in the bone. Placement within the bone must be done carefully to avoid the effect of insulation from the cortical bone." 658 F.Supp. at 583, 3 USPQ2d at 1573.