

Patent

3 Patent	5
United States Constitution, art. I, § 8, cl. 8	5
A Subject Matter	6
Patent Act § 101	6
1 Utility	6
<i>Juicy Whip, Inc. v. Orange Bang, Inc.</i>	6
MPEP §§ 2107, 2107.01	10
2 Statutory Subject Matter	14
MPEP § 2106	14
Tun-Jen Chiang, <i>The Rules and Standards of Patentable Subject Matter</i>	14
<i>Mayo Collaborative v. Prometheus Labs</i>	15
Tax Planning Patent Problem	19
B Procedures	19
1 Claims	23
Patent Act § 112(b)-(d)	23
T.J. Chiang, <i>The Levels of Abstraction Problem in Patent Law</i>	23
Mark A. Lemley, <i>Point of Novelty</i>	24
a Claim Drafting	24
<i>Catalina Marketing Intern. v. Coolsavings.com</i>	25
MPEP §§ 2111, 2173	25
b Indefiniteness	27
<i>Nautlius, Inc. v. Biosig Instruments Inc.</i>	27
<i>Datamize, LLC v. Plumtree Software, Inc.</i>	27
<i>Freeny v. Apple Inc.</i>	28
2 Disclosure	31
Patent Act § 112(a)	31
a Enablement	31
<i>Wyeth & Cordis Corp. v. Abbott Labs.</i>	31
Plastic Dye Problem	35
b Written Description	35
<i>Ariad Pharmaceuticals, Inc. v. Eli Lilly and Co</i>	35
c Best Mode	36
MPEP § 2165	36
d Problem	37

	Salt Shaker Problem	37
3	Patent Prosecution	38
	a Patent Office Procedure	38
	<i>Cuozzo Speed Technologies, LLC v. Lee</i>	38
	Patent Act § 122	38
	37 C.F.R. pt 1	38
	<i>Therasense, Inc. v. Becton, Dickinson and Co.</i>	39
	b Priority Dates	40
	USPTO, General Information Concerning	
	Patents	40
	c Judicial Review	40
	d Post-Grant Proceedings	40
	Patent Act § 251	40
	<i>Cuozzo Speed Technologies, LLC v. Lee</i>	41
4	Term	42
	Patent Act § 135(a)(2)	42
C	Ownership	42
	1 Collaborations	42
	MPEP § 2138 (“conception”)	42
	MPEP § 2137.01	43
	Patent Act § 135	44
	2 Priority: Novelty and Statutory Bars	45
	a Anticipation	46
	MPEP § 2131	46
	<i>Titanium Metals Corp. of America v. Banner</i>	47
	b Categories of Prior Art	51
	1 “patented”	51
	2 “described in a printed publication”	51
	<i>In re Klopfenstein</i>	51
	3 “in public use”	57
	<i>Egbert v. Lippmann</i>	57
	Mark A. Lemley, <i>Does “Public Use” Mean the</i>	
	<i>Same Thing It Did Last Year?</i>	60
	<i>Lough v. Brunswick Corp.</i>	61
	4 “on sale”	64
	MPEP §§ 2152.02(d), 2133.03(b) & (c)	64
	<i>Helsinn Healthcare S.A. v. Teva Pharmaceuticals</i>	
	<i>USA, Inc.</i>	65
	5 “otherwise available to the public”	65
	c Priority	65
	1 Old § 102	65
	Patent Act § 102 (pre-AIA)	65
	MPEP § 2138	66
	<i>Morway v. Bondi</i>	67
	2 New § 102	69

	Patent Act § 102	69
	Questions	69
	Pleistocene Park Problem	70
3	Nonobviousness	71
	Patent Act § 103	71
	<i>KSR Intern. Co. v. Teleflex Inc.</i>	71
	<i>Titanium Metals Corp. of America v. Banner</i>	81
	<i>In re Clay</i>	81
	KSR Problem	84
D	Infringement: Similarity	85
	Jeanne C. Fromer, <i>Claiming Intellectual Property</i>	85
	N.D. Cal. Model Patent Jury Instructions	86
1	Claim Construction	87
	<i>Phillips v. AWH Corp.</i>	87
	<i>Thorner v. Sony Computer Entertainment America LLC</i>	92
2	Literal Infringement	98
	<i>Angelo Mongiello's Children, LLC v. Pizza Hut, Inc.</i>	98
	<i>Abbott Laboratories v. Sandoz, Inc.</i>	100
3	Doctrine of Equivalents	101
	<i>Freedman Seating Co. v. American Seating Co.</i>	101
	<i>Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.</i>	108
	<i>Johnson & Johnston Associates v. R.E. Service Co.</i>	110
4	Problem	111
	Super Soaker Problem	111
E	Infringement: Prohibited Conduct	111
	<i>Herman v. Youngstown Car Mfg. Co.</i>	111
1	Direct Infringement	112
	Patent Act § 271(a)	112
	<i>Blazer v. eBay, Inc.</i>	112
	<i>Telectronics Pacing Systems v. Ventritex, Inc.</i>	113
	<i>Akamai Technologies, Inc. v. Limelight Networks, Inc.</i>	113
2	Indirect Infringement	114
	Patent Act § 271(b)-(c)	114
	<i>Limelight Networks, Inc. v. Akamai Technologies, Inc.</i>	114
	<i>Global-Tech Appliances, Inc. v. SEB S.A.</i>	115
	<i>Commil USA, LLC v. Cisco Systems Inc.</i>	115
	<i>Lucent Technologies, Inc. v. Gateway, Inc.</i>	116
	Questions	117
F	Defenses	118
1	Invalidity	118

	<i>Microsoft Corp. v. i4i Ltd. Partnership</i>	118
2 Exhaustion		118
	<i>Impression Products, Inc. v. Lexmark International, Inc.</i>	118
	<i>Quanta Computer, Inc. v. LG Electronics, Inc.</i>	123
	<i>Aktiebolag v. E.J. Co.</i>	126
3 Miscellaneous		130
	Patent Act §§ 273, 287	130
	<i>Madey v. Duke University</i>	131

3

Patent

United States Constitution

The Congress shall have Power ... To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.

art. I, § 8, cl. 8

Patent law provides exclusive rights over new and useful inventions. Although its structure has shifted over time, the modern synthesis of patent law (appropriately enough) is an intricately interlocking doctrinal machine. The mainspring of this system is the *claim*: a precise statement of the technologies over which the inventor asserts rights. The point of patent prosecution is to generate appropriately clear claim language that covers (or "reads on") what the inventor actually invented; patent infringement is directed to comparing claims with the defendant's product or process. As we will see, patent law uses a handful of basic concepts – e.g., "prior art reference," "the person of ordinary skill in the art," and "equivalent" – but it uses them again and again. The key to understanding patent law is to pay attention to these recurring concepts.

Why patent law? Three stories are usually advanced, two of which should already be familiar.

- Patent law serves an **innovation** function by giving incentives that enable investors to recoup their investment.
- It serves a **contracting** function by enabling inventors to commercialize their inventions without fear of being ripped off by business partners or imitated by competitors.
- It serves a **disclosure** function by requiring inventors to make public significant information about how their inventions work.

The leading patent treatises are Donald S. Chisum, *Chisum on Patents* (Matthew Bender, on Lexis), R. Carl Moy, *Moy's Walker on Patents* (Thomson Reuters, on Westlaw), and Robert C. Faber, *Faber on Mechanics of Patent Claim Drafting* (PLI, on Bloomberg Law).

"No economist, on the basis of present knowledge, could possibly state with certainty that the patent system, as it now operates, confers a net benefit or a net loss upon society. If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our current knowledge, to recommend abolishing it."

--Fritz Machlup

A Subject Matter

Patent Act

35 U.S.C. § 101
Inventions patentable

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.

As interpreted by the courts, this section imposes two conditions on patentability: utility and statutory subject matter.

1 Utility

Utility was at one time a categorical exclusion from patentability. No longer. But it still does some important work as a threshold condition, which can significantly affect the timing of patentability.

Juicy Whip, Inc. v. Orange Bang, Inc.
185 F.3d 1364 (Fed. Cir. 1999)

I

Juicy Whip, Inc., is the assignee of United States Patent No. 5,575,405, which is entitled “Post-Mix Beverage Dispenser With an Associated Simulated Display of Beverage.” A “post-mix” beverage dispenser stores beverage syrup concentrate and water in separate locations until the beverage is ready to be dispensed. The syrup and water are mixed together immediately before the beverage is dispensed, which is usually after the consumer requests the beverage. In contrast, in a “pre-mix” beverage dispenser, the syrup concentrate and water are pre-mixed and the beverage is stored in a display reservoir bowl until it is ready to be dispensed. The display bowl is said to stimulate impulse buying by providing the consumer with a visual beverage display. A pre-mix display bowl, however, has a limited capacity and is subject to contamination by bacteria. It therefore must be refilled and cleaned frequently.

The invention claimed in the ‘405 patent is a post-mix beverage dispenser that is designed to look like a pre-mix beverage dispenser. The claims require the post-mix dispenser to have a transparent bowl that is filled with a fluid that simulates the appearance of the dispensed beverage and is resistant to bacterial growth. The claims also require that the dispenser create the visual impression that the bowl is the principal source of the dispensed beverage, although in fact the

beverage is mixed immediately before it is dispensed, as in conventional post-mix dispensers.

The District Court concluded that the invention lacked utility because its purpose was to increase sales by deception, i.e., through imitation of another product. The court explained that the purpose of the invention “is to create an illusion, whereby customers believe that the fluid contained in the bowl is the actual beverage that they are receiving, when of course it is not.” Although the court acknowledged Juicy Whip’s argument that the invention provides an accurate representation of the dispensed beverage for the consumer’s benefit while eliminating the need for retailers to clean their display bowls, the court concluded that those claimed reasons for the patent’s utility “are not independent of its deceptive purpose, and are thus insufficient to raise a disputed factual issue to present to a jury.”

II

The threshold of utility is not high: An invention is “useful” under section 101 if it is capable of providing some identifiable benefit.

To be sure, since Justice Story’s opinion in *Lowell v. Lewis*, it has been stated that inventions that are “injurious to the well-being, good policy, or sound morals of society” are unpatentable. As examples of such inventions, Justice Story listed “a new invention to poison people, or to promote debauchery, or to facilitate private assassination.” Courts have continued to recite Justice Story’s formulation, but the principle that inventions are invalid if they are principally designed to serve immoral or illegal purposes has not been applied broadly in recent years. For example, years ago courts invalidated patents on gambling devices on the ground that they were immoral, but that is no longer the law.

In holding the patent in this case invalid for lack of utility, the district court relied on two Second Circuit cases dating from the early years of this century, *Rickard v. Du Bon*, and *Scott & Williams v. Aristo Hosiery Co.*. In the *Rickard* case, the court held invalid a patent on a process for treating tobacco plants to make their leaves appear spotted. At the time of the invention, according to the court, cigar smokers considered cigars with spotted wrappers to be of superior quality, and the invention was designed to make unspotted tobacco leaves appear to be of the spotted – and thus more desirable – type. The court noted that the invention did not promote the burning quality of the leaf or improve its quality in any way; “the only effect, if not the only object, of such treatment, is to spot the tobacco, and counterfeit the leaf spotted by natural causes.”

The *Aristo Hosiery* case concerned a patent claiming a seamless stocking with a structure on the back of the stocking that imitated a seamed stocking. The imitation was commercially useful because at

Lowell: 15 F. Cas. 1018 (C.C.D. Mass. 1817)

Rickard: 103 F. 868 (2d Cir. 1900)

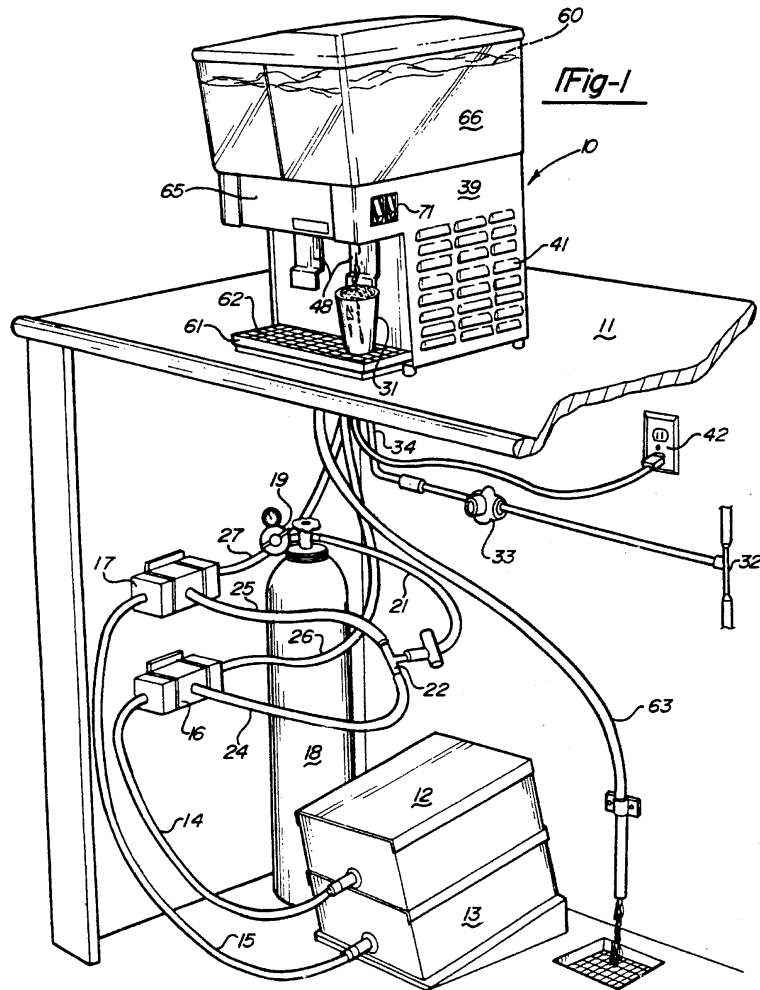
Aristo Hosiery: 7 F.2d 1003 (2d Cir. 1925)

U.S. Patent

Nov. 19, 1996

Sheet 1 of 3

5,575,405



U.S. Patent No. 5,575,405, Post-Mix Beverage Dispenser With an Associated Simulated Display of Beverage.

the time of the invention many consumers regarded seams in stockings as an indication of higher quality. The court noted that the imitation seam did not “change or improve the structure or the utility of the article,” and that the record in the case justified the conclusion that true seamed stockings were superior to the seamless stockings that were the subject of the patent. “At best,” the court stated, “the seamless stocking has imitation marks for the purposes of deception, and the idea prevails that with such imitation the article is more salable.” That was not enough, the court concluded, to render the invention patentable.

We decline to follow *Rickard* and *Aristo Hosiery*, as we do not regard them as representing the correct view of the doctrine of utility under the Patent Act of 1952. The fact that one product can be altered to make it look like another is in itself a specific benefit sufficient to satisfy the statutory requirement of utility.

It is not at all unusual for a product to be designed to appear to viewers to be something it is not. For example, cubic zirconium is designed to simulate a diamond, imitation gold leaf is designed to imitate real gold leaf, synthetic fabrics are designed to simulate expensive natural fabrics, and imitation leather is designed to look like real leather. In each case, the invention of the product or process that makes such imitation possible has “utility” within the meaning of the patent statute, and indeed there are numerous patents directed toward making one product imitate another. *See, e.g.*, U.S. Pat. No. [5,762,968](#) (method for producing imitation grill marks on food without using heat); U.S. Pat. No. [5,899,038](#) (laminated flooring imitating wood); U.S. Pat. No. [5,571,545](#) (imitation hamburger). Much of the value of such products resides in the fact that they appear to be something they are not. Thus, in this case the claimed post-mix dispenser meets the statutory requirement of utility by embodying the features of a post-mix dispenser while imitating the visual appearance of a pre-mix dispenser.

The fact that customers may believe they are receiving fluid directly from the display tank does not deprive the invention of utility. Orange Bang has not argued that it is unlawful to display a representation of the beverage in the manner that fluid is displayed in the reservoir of the invention, even though the fluid is not what the customer will actually receive. Moreover, even if the use of a reservoir containing fluid that is not dispensed is considered deceptive, that is not by itself sufficient to render the invention unpatentable. The requirement of “utility” in patent law is not a directive to the Patent and Trademark Office or the courts to serve as arbiters of deceptive trade practices. Other agencies, such as the Federal Trade Commission and the Food and Drug Administration, are assigned the task of protecting consumers from fraud and deception in the sale of food prod-

Watson: 517 F.2d 465 (C.C.P.A. 1975)

Webber: 103 U.S. (13 Otto) 344 (1880)

"The patent for a dynamite powder does not prevent the State from prescribing the conditions of its manufacture, storage, and sale, so as to protect the community from the danger of explosion. A patent for the manufacture and sale of a deadly poison does not lessen the right of the State to control its handling and use." *Webber*

ucts. *Cf. In re Watson* (stating that it is not the province of the Patent Office to determine, under section 101, whether drugs are safe). As the Supreme Court put the point more generally, "Congress never intended that the patent laws should displace the police powers of the States, meaning by that term those powers by which the health, good order, peace and general welfare of the community are promoted." *Webber v. Virginia*.

Of course, Congress is free to declare particular types of inventions unpatentable for a variety of reasons, including deceptiveness. *Cf.* 42 U.S.C. § 2181(a) (exempting from patent protection inventions useful solely in connection with special nuclear material or atomic weapons). Until such time as Congress does so, however, we find no basis in section 101 to hold that inventions can be ruled unpatentable for lack of utility simply because they have the capacity to fool some members of the public. The district court therefore erred in holding that the invention of the '405 patent lacks utility because it deceives the public through imitation in a manner that is designed to increase product sales.

Manual of Patent Examination Procedure (Rev. Nov. 2013)

§ 2107

Guidelines for Examination of Applications for Compliance with the Utility Requirement

A claimed invention must have a specific and substantial utility. This requirement excludes "throw-away," "insubstantial," or "nonspecific" utilities, such as the use of a complex invention as landfill.

Credibility is assessed from the perspective of one of ordinary skill in the art in view of the disclosure and any other evidence of record (e.g., test data, affidavits or declarations from experts in the art, patents or printed publications) that is probative of the applicant's assertions. An applicant need only provide one credible assertion of specific and substantial utility for each claimed invention to satisfy the utility requirement.

§ 2107.01

General Principles Governing Utility Rejections

I. SPECIFIC AND SUBSTANTIAL REQUIREMENTS

Courts have recognized that the term "useful" used with reference to the utility requirement can be a difficult term to define. Where an applicant has set forth a specific and substantial utility, courts have been reluctant to uphold a rejection under 35 U.S.C. § 101 solely on the basis that the applicant's opinion as to the nature of the specific and substantial utility was inaccurate.

Practical considerations require the Office to rely on the inventor's understanding of his or her invention in determining whether and in what regard an invention is believed to be "useful." Because of this, Office personnel should focus on and be receptive to assertions made by the applicant that an invention is "useful" for a particular reason.

A. *Specific Utility*

A “specific utility” is specific to the subject matter claimed and can “provide a well-defined and particular benefit to the public.” *In re Fisher*. This contrasts with a general utility that would be applicable to the broad class of the invention. Office personnel should distinguish between situations where an applicant has disclosed a specific use for or application of the invention and situations where the applicant merely indicates that the invention may prove useful without identifying with specificity why it is considered useful. For example, indicating that a compound may be useful in treating unspecified disorders, or that the compound has “useful biological” properties, would not be sufficient to define a specific utility for the compound. Similarly, a claim to a polynucleotide whose use is disclosed simply as a “gene probe” or “chromosome marker” would not be considered to be specific in the absence of a disclosure of a specific DNA target. *See Fisher* (“Any EST [expressed sequence tag] transcribed from any gene in the maize genome has the potential to perform any one of the alleged uses. Nothing about applicant’s seven alleged uses set the five claimed ESTs apart from the more than 32,000 ESTs disclosed in the application or indeed from any EST derived from any organism. Accordingly, we conclude that applicant has only disclosed general uses for its claimed ESTs, not specific ones that satisfy § 101.”). A general statement of diagnostic utility, such as diagnosing an unspecified disease, would ordinarily be insufficient absent a disclosure of what condition can be diagnosed. Contrast the situation where an applicant discloses a specific biological activity and reasonably correlates that activity to a disease condition. Assertions falling within the latter category are sufficient to identify a specific utility for the invention. Assertions that fall in the former category are insufficient to define a specific utility for the invention, especially if the assertion takes the form of a general statement that makes it clear that a “useful” invention may arise from what has been disclosed by the applicant.

Fisher: 421 F.3d 1365 (Fed. Cir. 2005)

B. *Substantial Utility*

“[A]n application must show that an invention is useful to the public as disclosed in its current form, not that it may prove useful at some future date after further research. Simply put, to satisfy the ‘substantial’ utility requirement, an asserted use must show that the claimed invention has a significant and presently available benefit to the public.” *Fisher*. The claims at issue in *fisher* were directed to expressed sequence tags (ESTs), which are short nucleotide sequences that can be used to discover what genes and downstream proteins are expressed in a cell. The court held that “the claimed ESTs can be used only to gain further information about the underlying genes and the

proteins encoded for by those genes. The claimed ESTs themselves are not an end of [applicant's] research effort, but only tools to be used along the way in the search for a practical utility. Applicant does not identify the function for the underlying protein-encoding genes. Absent such identification, we hold that the claimed ESTs have not been researched and understood to the point of providing an immediate, well-defined, real world benefit to the public meriting the grant of a patent." Thus a "substantial utility" defines a "real world" use. Utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities. For example, both a therapeutic method of treating a known or newly discovered disease and an assay method for identifying compounds that themselves have a "substantial utility" define a "real world" context of use. An assay that measures the presence of a material which has a stated correlation to a predisposition to the onset of a particular disease condition would also define a "real world" context of use in identifying potential candidates for preventive measures or further monitoring. On the other hand, the following are examples of situations that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use and, therefore, do not define "substantial utilities":

- (A) Basic research such as studying the properties of the claimed product itself or the mechanisms in which the material is involved;
- (B) A method of treating an unspecified disease or condition;
- (C) A method of assaying for or identifying a material that itself has no specific and/or substantial utility;
- (D) A method of making a material that itself has no specific, substantial, and credible utility; and
- (E) A claim to an intermediate product for use in making a final product that has no specific, substantial and credible utility.

Office personnel must be careful not to interpret the phrase "immediate benefit to the public" or similar formulations in other cases to mean that products or services based on the claimed invention must be "currently available" to the public in order to satisfy the utility requirement. Rather, any reasonable use that an applicant has identified for the invention that can be viewed as providing a public benefit should be accepted as sufficient, at least with regard to defining a "substantial" utility.

C. Research Tools

Some confusion can result when one attempts to label certain types of inventions as not being capable of having a specific and substantial

utility based on the setting in which the invention is to be used. One example is inventions to be used in a research or laboratory setting. Many research tools such as gas chromatographs, screening assays, and nucleotide sequencing techniques have a clear, specific and unquestionable utility (e.g., they are useful in analyzing compounds). An assessment that focuses on whether an invention is useful only in a research setting thus does not address whether the invention is in fact “useful” in a patent sense. Instead, Office personnel must distinguish between inventions that have a specifically identified substantial utility and inventions whose asserted utility requires further research to identify or reasonably confirm. Labels such as “research tool,” “intermediate” or “for research purposes” are not helpful in determining if an applicant has identified a specific and substantial utility for the invention.

II. WHOLLY INOPERATIVE INVENTIONS; “INCREDIBLE” UTILITY

An invention that is “inoperative” (i.e., it does not operate to produce the results claimed by the patent applicant) is not a “useful” invention in the meaning of the patent law. However, as the Federal Circuit has stated, “[t]o violate 35 U.S.C. § 101 the claimed device must be totally incapable of achieving a useful result.” *Brooktree Corp. v. Advanced Micro Devices, Inc.*. See also *E.I. du Pont De Nemours and Co. v. Berkley and Co.* (“A small degree of utility is sufficient. The claimed invention must only be capable of performing some beneficial function. An invention does not lack utility merely because the particular embodiment disclosed in the patent lacks perfection or performs crudely. A commercially successful product is not required. Nor is it essential that the invention accomplish all its intended functions or operate under all conditions, partial success being sufficient to demonstrate patentable utility. In short, the defense of non-utility cannot be sustained without proof of total incapacity.”) If an invention is only partially successful in achieving a useful result, a rejection of the claimed invention as a whole based on a lack of utility is not appropriate.

Situations where an invention is found to be “inoperative” and therefore lacking in utility are rare, and rejections maintained solely on this ground by a Federal court even rarer. In many of these cases, the utility asserted by the applicant was thought to be incredible in the light of the knowledge of the art, or factually misleading when initially considered by the Office. Other cases suggest that on initial evaluation, the Office considered the asserted utility to be inconsistent with known scientific principles or speculative at best as to whether attributes of the invention necessary to impart the asserted utility were actually present in the invention. However cast, the underlying finding by the court in these cases was that, based on the factual record of the case, it was clear that the invention could not and

Brooktree: 977 F.2d 1555, (Fed. Cir. 1992)

Berkley: 620 F.2d 1247 (8th Cir. 1980)

Consider U.S. Pat No. 6,960,975 B1 for a "Space Vehicle Propelled by the Pressure of Inflationary Vacuum State." Does it matter if the USPTO occasionally issues a patent on a device that violates the known laws of physics? In *Newman v. Quigg*, 877 F.2d 1575 (Fed. Cir. 1989), the USPTO ordered the inventor of a purported perpetual-motion machine to produce a model for testing by the National Bureau of Standards. It failed.

did not work as the inventor claimed it did. Indeed, the use of many labels to describe a single problem (e.g., a false assertion regarding utility) has led to some of the confusion that exists today with regard to a rejection based on the "utility" requirement. Examples of such cases include: an invention asserted to change the taste of food using a magnetic field, a perpetual motion machine, a flying machine operating on "flapping or flutter function," a "cold fusion" process for producing energy, a method for increasing the energy output of fossil fuels upon combustion through exposure to a magnetic field, uncharacterized compositions for curing a wide array of cancers, and a method of controlling the aging process. These examples are fact specific and should not be applied as a *per se* rule. Thus, in view of the rare nature of such cases, Office personnel should not label an asserted utility "incredible," "speculative" or otherwise unless it is clear that a rejection based on "lack of utility" is proper.

2 Statutory Subject Matter

Manual of Patent Examination Procedure

§ 2106

Patent Subject Matter Eligibility

A summary of the four categories of invention, as they have been defined by the courts, are:

- i. *Process*. – an act, or a series of acts or steps. A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.
- ii. *Machine*. – a concrete thing, consisting of parts, or of certain devices and combination of devices. This includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result.
- iii. *Manufacture*. – an article produced from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand labor or by machinery.
- iv. *Composition of matter*. – all compositions of two or more substances and all composite articles, whether they be the results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders or solids, for example.

Tun-Jen Chiang, *The Rules and Standards of Patentable Subject Matter* 2010 Wisc. L. Rev. 1353

A close examination of all of the patentable subject-matter categories reveals a clear distinction. Virtually all of the restrictions, save two, have been in the nature of categorical rules. The two exceptions are

the closely-related (indeed, for all practical purposes, identical) prohibitions on patenting “laws of nature” and “abstract ideas.” The laws of nature and abstract ideas prohibitions account for almost the entirety of patentable subject-matter case law, and the consequent uncertainty in the area. Section 101 thus contains a dichotomy: clear exclusionary rules that have almost never caused administrative difficulty or litigation; and a vague scope limiting standard that has caused tremendous difficulty and much litigation.

At present, there are two clear subject-matter exclusions from patentability: nuclear weapons and human organisms. What policies do these exclusions express?

As for laws of nature and abstract ideas, the Supreme Court profoundly shifted course in a series of four major decisions between 2010 and 2014. Three of them are excerpted in this book: *Mayo* here, *Myriad* in the biotechnology chapter, and *CLS Bank* in the software chapter. (The fourth, *Bilski*, is discussed in *CLS Bank*.)

Mayo Collaborative v. Prometheus Labs
132 S. Ct. 1289 (2012)

Section 101 of the Patent Act defines patentable subject matter. The Court has long held that this provision contains an important implicit exception. Laws of nature, natural phenomena, and abstract ideas are not patentable.

I

A

The patents before us concern the use of thiopurine drugs in the treatment of autoimmune diseases, such as Crohn’s disease and ulcerative colitis. When a patient ingests a thiopurine compound, his body metabolizes the drug, causing metabolites to form in his bloodstream. Because the way in which people metabolize thiopurine compounds varies, the same dose of a thiopurine drug affects different people differently, and it has been difficult for doctors to determine whether for a particular patient a given dose is too high, risking harmful side effects, or too low, and so likely ineffective.

At the time the discoveries embodied in the patents were made, scientists already understood that the levels in a patient’s blood of certain metabolites, including, in particular, 6-thioguanine and its nucleotides (6-TG) and 6-methyl-mercaptopurine (6-MMP), were correlated with the likelihood that a particular dosage of a thiopurine drug could cause harm or prove ineffective. But those in the field did not

Nuclear weapons: 42 U.S.C. § 2181(a) (“No patent shall hereafter be granted for any invention or discovery which is useful solely in the utilization of special nuclear material or atomic energy in an atomic weapon”)

Human organisms: America Invents Act § 33(a) (“Notwithstanding any other provision of law, no patent may issue on a claim directed to or encompassing a human organism.”)

know the precise correlations between metabolite levels and likely harm or ineffectiveness. The patent claims at issue here set forth processes embodying researchers' findings that identified these correlations with some precision.

More specifically, the patents – U.S. Patent No. 6,355,623 (623 patent) and U.S. Patent No. 6,680,302 (302 patent) – embody findings that concentrations in a patient's blood of 6-TG or of 6-MMP metabolite beyond a certain level (400 and 7000 picomoles per 8×10^8 red blood cells, respectively) indicate that the dosage is likely too high for the patient, while concentrations in the blood of 6-TG metabolite lower than a certain level (about 230 picomoles per 8×10^8 red blood cells) indicate that the dosage is likely too low to be effective.

The patent claims seek to embody this research in a set of processes. Like the Federal Circuit we take as typical claim 1 of the 623 Patent, which describes one of the claimed processes as follows:

A method of optimizing therapeutic efficacy for treatment of an immune-mediated gastrointestinal disorder, comprising:

- (a) administering a drug providing 6-thioguanine to a subject having said immune-mediated gastrointestinal disorder; and
- (b) determining the level of 6-thioguanine in said subject having said immune-mediated gastrointestinal disorder,

wherein the level of 6-thioguanine less than about 230 pmol per 8×10^8 red blood cells indicates a need to increase the amount of said drug subsequently administered to said subject and

wherein the level of 6-thioguanine greater than about 400 pmol per 8×10^8 red blood cells indicates a need to decrease the amount of said drug subsequently administered to said subject."

B

Respondent, Prometheus Laboratories, Inc. (Prometheus), is the sole and exclusive licensee of the 623 and 302 patents. It sells diagnostic tests that embody the processes the patents describe. For some time petitioners, Mayo Clinic Rochester and Mayo Collaborative Services (collectively Mayo), bought and used those tests. But in 2004 Mayo announced that it intended to begin using and selling its own test—a test using somewhat higher metabolite levels to determine toxicity

(450 pmol per 8×10^8 for 6-TG and 5700 pmol per 8×10^8 for 6-MMP). Prometheus then brought this action claiming patent infringement.

The District Court found that Mayo's test infringed claim 7 of the 623 patent. In interpreting the claim, the court accepted Prometheus' view that the toxicity-risk level numbers in Mayo's test and the claim were too similar to render the tests significantly different. The number Mayo used (450) was too close to the number the claim used (400) to matter given appropriate margins of error. The District Court also accepted Prometheus' view that a doctor using Mayo's test could violate the patent even if he did not actually alter his treatment decision in the light of the test. In doing so, the court construed the claim's language, "indicates a need to decrease" (or "to increase"), as not limited to instances in which the doctor actually decreases (or increases) the dosage level where the test results suggest that such an adjustment is advisable.

II

Prometheus' patents set forth laws of nature – namely, relationships between concentrations of certain metabolites in the blood and the likelihood that a dosage of a thiopurine drug will prove ineffective or cause harm. Claim 1, for example, states that if the levels of 6-TG in the blood (of a patient who has taken a dose of a thiopurine drug) exceed about 400 pmol per 8×10^8 red blood cells, then the administered dose is likely to produce toxic side effects. While it takes a human action (the administration of a thiopurine drug) to trigger a manifestation of this relation in a particular person, the relation itself exists in principle apart from any human action. The relation is a consequence of the ways in which thiopurine compounds are metabolized by the body – entirely natural processes. And so a patent that simply describes that relation sets forth a natural law.

The question before us is whether the claims do significantly more than simply describe these natural relations. To put the matter more precisely, do the patent claims add enough to their statements of the correlations to allow the processes they describe to qualify as patent-eligible processes that apply natural laws? We believe that the answer to this question is no.

A

If a law of nature is not patentable, then neither is a process reciting a law of nature, unless that process has additional features that provide practical assurance that the process is more than a drafting effort designed to monopolize the law of nature itself. A patent, for example, could not simply recite a law of nature and then add the instruction "apply the law." Einstein, we assume, could not have patented his famous law by claiming a process consisting of simply telling lin-

ear accelerator operators to refer to the law to determine how much energy an amount of mass has produced (or vice versa). Nor could Archimedes have secured a patent for his famous principle of flotation by claiming a process consisting of simply telling boat builders to refer to that principle in order to determine whether an object will float.

What else is there in the claims before us? The process that each claim recites tells doctors interested in the subject about the correlations that the researchers discovered. In doing so, it recites an "administering" step, a "determining" step, and a "wherein" step. These additional steps are not themselves natural laws but neither are they sufficient to transform the nature of the claim.

First, the "administering" step simply refers to the relevant audience, namely doctors who treat patients with certain diseases with thiopurine drugs. That audience is a pre-existing audience; doctors used thiopurine drugs to treat patients suffering from autoimmune disorders long before anyone asserted these claims. In any event, the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.

Second, the "wherein" clauses simply tell a doctor about the relevant natural laws, at most adding a suggestion that he should take those laws into account when treating his patient. That is to say, these clauses tell the relevant audience about the laws while trusting them to use those laws appropriately where they are relevant to their decisionmaking (rather like Einstein telling linear accelerator operators about his basic law and then trusting them to use it where relevant).

Third, the "determining" step tells the doctor to determine the level of the relevant metabolites in the blood, through whatever process the doctor or the laboratory wishes to use. As the patents state, methods for determining metabolite levels were well known in the art. Indeed, scientists routinely measured metabolites as part of their investigations into the relationships between metabolite levels and efficacy and toxicity of thiopurine compounds. Thus, this step tells doctors to engage in well-understood, routine, conventional activity previously engaged in by scientists who work in the field. Purely conventional or obvious pre-solution activity is normally not sufficient to transform an unpatentable law of nature into a patent-eligible application of such a law. The prohibition against patenting abstract ideas cannot be circumvented by adding insignificant post-solution activity.

Fourth, to consider the three steps as an ordered combination adds nothing to the laws of nature that is not already present when the steps are considered separately. Anyone who wants to make use of these laws must first administer a thiopurine drug and measure the

"A patent lawyer walks into a barber shop. The barber takes a look at the lawyer for a bit, and then says, 'Ok, that'll be \$20.' The lawyer responds, 'But you didn't cut my hair!' The barber replies, 'That's "insignificant post-solution activity.'" Michael S. Kwun, *Alice Tells a Joke*, 19 Green Bag 2d 329 (2016). Unfair?

resulting metabolite concentrations, and so the combination amounts to nothing significantly more than an instruction to doctors to apply the applicable laws when treating their patients.

The upshot is that the three steps simply tell doctors to gather data from which they may draw an inference in light of the correlations. To put the matter more succinctly, the claims inform a relevant audience about certain laws of nature; any additional steps consist of well-understood, routine, conventional activity already engaged in by the scientific community; and those steps, when viewed as a whole, add nothing significant beyond the sum of their parts taken separately. For these reasons we believe that the steps are not sufficient to transform unpatentable natural correlations into patentable applications of those regularities.

Tax Planning Patent Problem

You are staff counsel to Representative Helvering (R-IA), who has read a number of newspaper articles on the growing phenomenon of “tax planning patents.” These patents describe transactions designed to help a company reduce the taxes it owes. For example, one such patent describes dividing a real estate portfolio into a number of shares held as tenancies in common subject to a master lease, in which each holder receives guaranteed annual income and is subject to repurchase at fair market value at a specified date, such that the investments qualify for tax-deferred treatment under ... you get the picture.

The Representative has asked you to help her think through the policy and legal issues these patents raise. She wants to know whether they are valid under current law and whether they’re contributing to tax evasion. If they’re problematic, she would like your suggestions on possible legislative fixes (either to the Patent Act or to the Internal Revenue Code).

B Procedures

A patent (an example follows) has two jobs. It must describe the scope of the owner’s rights in the invention. This is the job of the *claims*. It must also disclose the invention in enough detail that others could (if not for the patent) make use of it. This is the job of the *specification*. The process of *patent prosecution* is designed not just to check that the invention is substantively eligible to be patented (discussed in the next section), but also to ensure that the claims and specification adequately carry out their jobs.

Is there anything here that the inventors could have patented with better drafting, or were their claims unsalvageable?

"For purposes of evaluating an invention under section 102 [novelty] or 103 [nonobviousness], any strategy for reducing, avoiding, or deferring tax liability, whether known or unknown at the time of the invention or application for patent, shall be deemed insufficient to differentiate a claimed invention from the prior art." America Invents Act § 14(a). What do you think of this solution?

[54] METHOD AND APPARATUS FOR TEMPORARILY IMMOBILIZING AN EARTHWORM

[76] Inventor: Loren Lukehart, 4391 Greer, Boise, Id. 83703

[21] Appl. No.: 161,144

[22] Filed: Feb. 26, 1988

[51] Int. Cl.⁴ A01K 97/02

[52] U.S. Cl. 43/4; 43/4.5; 43/55

[58] Field of Search 43/4, 4.5, 54.1, 55, 43/56, 57.1

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Primary Examiner—M. Jordan
Attorney, Agent, or Firm—Frank J. Dykas

[57] ABSTRACT

Method and apparatus for immobilization of an earthworm 13 to facilitate the baiting of a fishing hook. To immobilize the earthworm, the earthworm is partially coated with sharp grained sand 11 having a grain size of less than 1/20th of an inch. The apparatus 10 for carrying out the method consists of rectangular container 12 and a reservoir of sharp grained sand 11 and cover 14. Placing earthworm 13 in the apparatus 10 and allowing earthworm 13 to at least partially coat itself with sharp grained sand 11, results in the temporary immobilization of earthworm 13. Earthworm 13 is then impaled on the fishing hook by the fisherman. As soon as the baited hook is immersed in water, the sand is rinsed from earthworm 13 and it resumes wiggling.

3 Claims, 1 Drawing Sheet

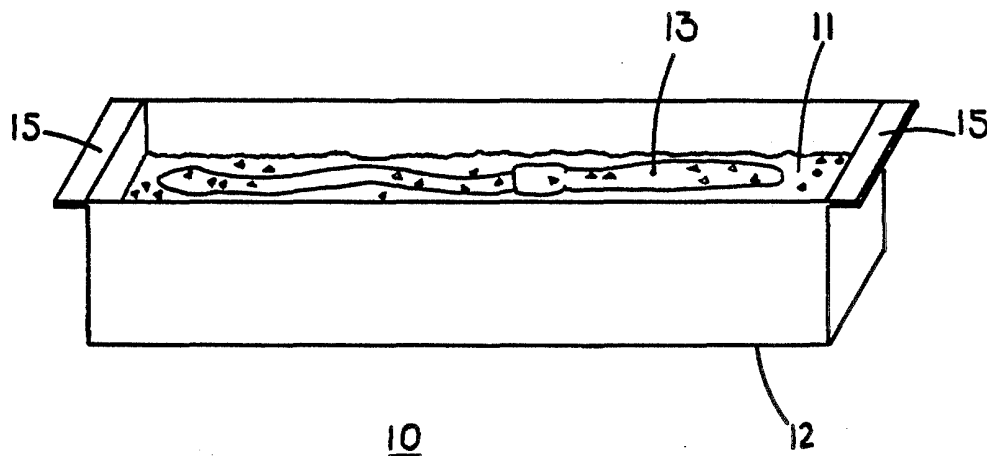


FIG. 1

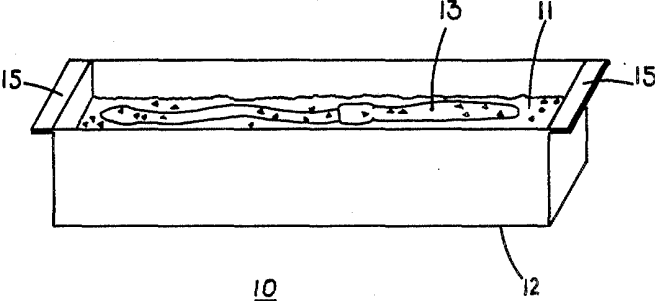


FIG. 2

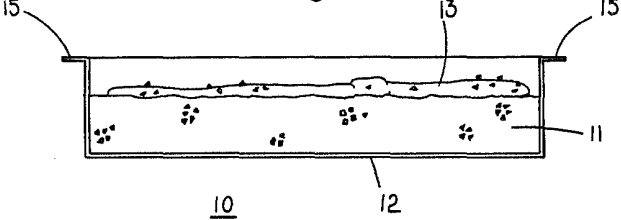
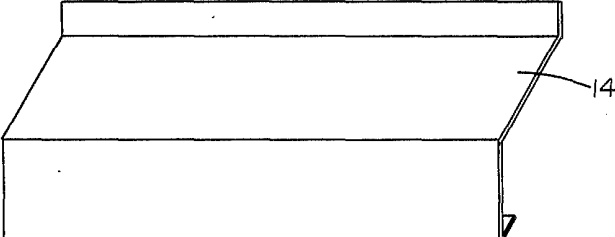


FIG. 3



METHOD AND APPARATUS FOR TEMPORARILY IMMOBILIZING AN EARTHWORM

BACKGROUND OF THE INVENTION

1. Technical Field.

This invention relates to the immobilization of live bait for use in fishing. In particular, the invention relates to a method and apparatus for the dewiggling of earthworms.

2. Background Art.

The use of live bait in fishing has long been known to be one of the most effective means for catching fish. The problem with live bait is that any creature has a natural tendency to resist the baiting process. A further complication in the specific case of earthworms is that they are naturally slimy. The ability of the earthworm to curl its body in almost any direction, connected with the fact that it is coated with slimy film, makes it extremely difficult for the fisherman to impale the earthworm with the fishing hook.

GRAHAM, U.S. Pat. No. 2,257,879, discloses a bait box having a compartment that is filled with a dry sand. The worm is dropped into the dry sand which adheres to the worm's body which makes it easier for the fisherman to hold onto the worm. The problem with the method is that the worm is still able to wiggle and curl its body, making it difficult for the fisherman to impale the worm on the fishing hook.

Accordingly, it is the object of this invention to provide a means for immobilizing an earthworm and thereby facilitating the impalement of the earthworm on a fishing hook by the fisherman.

DISCLOSURE OF INVENTION

These objects are accomplished by coating the earthworm with small sharp grained sand. Small sharp grained sand, as opposed to regular dry sand, has a dramatic affect on the worm's ability to curl its body.

A small rectangular container of sufficient length to harbor an earthworm is partially filled with sharp grained sand having a grain size equal or less than 1/20th of an inch. The rectangular container is also fitted with a removable cover which prevents sand spillage during transport. To dewiggle a worm, the fisherman has to simply set the worm in the rectangular container on top of the sharp grained sand. During the worm's natural locomotion process, the sand becomes partially imbedded in the earthworm and causes an immediate reaction wherein the earthworm completely relaxes. The earthworm is then effectively dewiggled and ready to be impaled onto the fishing hook.

Once the sand coated earthworm is immersed in water, the sand rinses free and the earthworm resume its normal wiggly character.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top perspective view of the container and sand reservoir with a worm.

FIG. 2 is a sectional side view of the container and sand reservoir with a worm.

FIG. 3 is a perspective view of the container cover.

BEST MODE FOR CARRYING OUT INVENTION

Referring to FIGS. 1, 2 and 3, an apparatus for the immobilization of earthworms is generally designated as

10 and is illustrated in its preferred embodiment. The first and only step in the immobilization of an earthworm by the preferred method is to coat the earthworm with small sharp grained sand 11 having a grain size equal to or less than 1/20th of an inch by momentarily depositing earthworm 13 on sand 11.

The preferred apparatus for the immobilization of an earthworm has a reservoir of sharp grained sand 11 having a grain size equal to or less than 1/20th of an inch, and a rectangular container 12 for housing the sand reservoir.

Sand reservoir container 12 is sized for transverse insertion into a standard bait box, not shown. Retainer lips 15 are attached to and extend perpendicularly out from the top edges of the ends of container 12. Retainer lips 15 are sized for cooperative engagement with the top edges of the sides of the bait box, so that when container 12 is transversely inserted into a bait box it is held suspended above the bottom of the bait box which contains a mixture of live worms and humus material.

Cover 14 is contoured to provide for a seal for sand reservoir container 12 and is held in place by the lid of the standard bait box.

To immobilize earthworm 13, one merely deposits earthworm 13 on top of sand 11. During the earthworm's natural locomotion process individual grains of sand 11 become partially imbedded in earthworm 13 and causes an immediate immobilizing reaction in earthworm 13. As a result earthworm 13 will rapidly straighten out and become immobilized. Since earthworm 13 is covered with grains of sand 11, it is not only immobilized, but also easy to pick up and handle.

Once earthworm 13 has been impaled upon the fisherman's hook, not shown, and immersed in water, said 11 washes off earthworm 13 and earthworm 13 will resume wiggling.

While there is shown and described the present preferred embodiment of the invention, it is to be distinctly understood that this invention is not limited thereto but may be variously embodied to practice within the scope of the following claims.

Accordingly, what I claim is:

1. An apparatus for temporarily immobilizing an earthworm which comprises:

- a container for housing the a reservoir of sand;
a reservoir of sharp sand having a grain size of 1/20th of an inch or less.

2. The apparatus of claim 1 wherein said container further comprises:

- a rectangular shaped container for holding a reservoir of sand, said rectangular container having a length slightly less than the width of a standard bait box;

- retainer lips attached to and extending perpendicularly from the ends of said rectangular container for cooperative engagement with the top edges of the sides of a standard bait box for transversely suspending and supporting the rectangular container within the bait box;

- a cover for cooperative engagement with the rectangular shaped container for containing the sand.

3. A method for immobilizing an earthworm which comprises partially coating said earthworm with a sharp grained sand having a grain size equal to or less than 1/20th of an inch.

* * * * *

1 Claims

Patent Act

- (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.* – 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.

35 U.S.C. § 112

Specification

The name of the game is the claim.

—Giles S. Rich

T.J. Chiang, *The Levels of Abstraction Problem in Patent Law* 105 NW. U.L. Rev. 1097 (2011)

The specification and the claims do not describe the same thing in different ways. Rather, they describe entirely different concepts. The specification describes a single embodiment (or a very limited number of embodiments). The claim describes an idea. To be sure, the specification embodiment embodies the claimed idea, but the claimed idea may be reflected in countless other embodiments; conversely, the specification embodiment also embodies countless other ideas in addition to what is claimed.

The two differing concepts of “invention” create a problem for defining patent scope. For any specification embodiment, an infinite array of ideas are equally apt for a claim. Consider the invention of a radiation machine that cures AIDS. The invention can be claimed as any of the following:

1. “A cure for AIDS,” covering all cures that might ever be devised.
2. “A cure for AIDS using radiation,” covering all cures using any type of radiation but not other methods.
3. “A cure for AIDS using X-radiation,” thereby excluding methods using other types of radiation.
4. “A cure for AIDS using X-radiation specifically by using the exact make and model of the radiation machine in the specification.”

Every level of abstraction describes something that is new, useful, and non-obvious. Thus, the standard criteria of patentability provide no guidance regarding which level of abstraction is proper for patent

protection. But a patent covering all cures for AIDS is obviously different from a patent covering only one particular radiation machine.

Mark A. Lemley, *Point of Novelty*

105 Nw. U.L. Rev. 1253 (2011)

The fundamental requirement for obtaining a patent is that the applicant must have invented something new.

It is curious, then, that patent law itself purports to pay no attention to which aspects of a patentee's invention are in fact new. A patented invention is legally defined by its claims – written definitions of the invention. And those written definitions virtually never call out what it is that is new about the patentee's invention. For example, suppose that makers of widgets have long used a three-step process to manufacture the widget. The inventor of a four-step process that results in higher-quality widgets will not claim to own merely the fourth step she has discovered. Rather, she is much more likely to define her invention as including all four steps. Our hypothetical patentee did not invent the first three steps: all three have been known in the art for decades. But you wouldn't know that fact from reading the patent claims.

Even if the parties do identify the novel element of an invention, the law purports not to care. Longstanding patent law doctrine has decried any focus on the "point of novelty" of an invention. The United States Court of Appeals for the Federal Circuit, which handles patent appeals, evaluates the claim as a whole, not just the piece of the claim that the patentee actually added to the storehouse of knowledge. As that court has put it, "there is no legally recognizable .. 'gist,' or 'heart' of the invention."

a Claim Drafting

A patent contains one or more claims, which are typically required to follow a rigid format. For example:

What is claimed is:

1. An apparatus for frobulating a thermozorp, comprising a frimble, a circular smorf plate, and a plurality of groozers attached to the frimble and to the smorf plate.
2. The apparatus of claim 1, wherein the smorf plate is positioned beneath the frimble.

It is usually said that each patent claim must be a single sentence, but as this example shows, it would be more precise to say that each claim is a single noun phrase, because the formulaic phrase "What is

claimed is” (or close equivalent) is repeated only once at the start of the claims.

Each claim contains three parts:

- A preamble like “An apparatus for frobulating a thermozorp,” which generally describes the claimed invention.
- A transition like “comprising.”
- The body, which sets out the details of the claim.

A claim is typically considered to be made of individual elements (or “restrictions”). Here, claim 1 would probably be considered to have three elements: a frimble, a smorf plate, and groozers. There is no hard-and-fast rule on how claims are divided into elements, but punctuation is a good starting point.

Claim drafting is a specialized skill, and claim language is full of specialized vocabulary, used precisely. Here, “plurality” is a good example: it just means “more than one.” As you see more patent claims, think about why claim drafters might converge on standard, if unwieldy, terminology. Note also that this claim refers to “a” frimble the first time it is introduced, but to “the” frimble subsequently. Why might that be?

Claims can be either independent or dependent. A dependent claim refers to and incorporates by reference all of the elements of a previous claim, to which it then adds additional elements. Do you see why it is usually said that dependent claims are “narrower” than the claims they refer to?

Catalina Marketing Intern. v. Coolsavings.com
289 F.3d 801 (Fed. Cir. 2002)

In general, a preamble limits the invention if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim. Conversely, a preamble is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.

Perhaps a hypothetical best illustrates these principles: Inventor A invents a shoe polish for shining shoes (which, for the sake of example, is novel, useful, and nonobvious). Inventor A receives a patent having composition claims for shoe polish. Indeed, the preamble of these hypothetical claims recites “a composition for polishing shoes.” Clearly, Inventor B could not later secure a patent with composition claims on the same composition because it would not be novel. Upon discovering, however, that the polish composition grows hair when rubbed on bare human skin, Inventor B can likely obtain method claims directed to the new use of the composition to grow hair.

Manual of Patent Examination Procedure**MPEP § 2111.03**
Transitional Phrases

The transitional phrases “comprising”, “consisting essentially of” and “consisting of” define the scope of a claim with respect to what unrecited additional components or steps, if any, are excluded from the scope of the claim. The determination of what is or is not excluded by a transitional phrase must be made on a case-by-case basis in light of the facts of each case.

Gillette: 405 F.3d 1367 (Fed. Cir. 2005)

The transitional term “comprising”, which is synonymous with “including,” “containing,” or “characterized by,” is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. In *Gillette Co. v. Energizer Holdings Inc.*, the court held that a claim to “a safety razor blade unit comprising a guard, a cap, and a group of first, second, and third blades” encompasses razors with more than three blades because the transitional phrase “comprising” in the preamble and the phrase “group of” are presumptively open-ended. The transitional phrase “consisting of” excludes any element, step, or ingredient not specified in the claim. The transitional phrase “consisting essentially of” limits the scope of a claim to the specified materials or steps and those that do not materially affect the basic and novel characteristic(s) of the claimed invention.

§ 2173.05(e)
Lack of Antecedent Basis

A claim is indefinite when it contains words or phrases whose meaning is unclear. The lack of clarity could arise where a claim refers to “said lever” or “the lever,” where the claim contains no earlier recitation or limitation of a lever and where it would be unclear as to what element the limitation was making reference. Similarly, if two different levers are recited earlier in the claim, the recitation of “said lever” in the same or subsequent claim would be unclear where it is uncertain which of the two levers was intended.

§ 2173.05(h)
Alternative Limitations

Alternative expressions are permitted if they present no uncertainty or ambiguity with respect to the question of scope or clarity of the claims. A “Markush” claim recites a list of alternatively useable species. A Markush claim is commonly formatted as: “selected from the group consisting of A, B, and C;” however, the phrase “Markush claim” means any claim that recites a list of alternatively useable species regardless of format. Inventions in metallurgy, refractories, ceramics, pharmacy, pharmacology and biology are most frequently claimed under the Markush formula but purely mechanical features or process steps may also be claimed by using the Markush style of claiming. It is improper to use the term “comprising” instead of “consisting of.”

b Indefiniteness**Nautlius, Inc. v. Biosig Instruments Inc.**

134 S. Ct. 2120 (2014)

The Patent Act requires that a patent specification “conclude with one or more claims *particularly pointing out and distinctly claiming* the subject matter which the applicant regards as [the] invention.” We hold that a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.

Datamize, LLC v. Plumtree Software, Inc.

417 F.3d 1342 (Fed. Cir. 2005)

[U.S. Patent No. 6,014,137], entitled “Electronic Kiosk Authoring System,” discloses a software program that allows a person to author user interfaces for electronic kiosks. “The authoring system enables the user interface for each individual kiosk to be customized quickly and easily within wide limits of variation, yet subject to constraints adhering the resulting interface to good standards of aesthetics and user friendliness.” ‘137 patent, Abstract. [It claimed, in relevant part (emphasis added):

In an electronic kiosk system ... a method for defining custom interface screens ... said method comprising the steps of: ... providing a plurality of pre-defined interface screen element types, each element type defining a form of element available for presentation on said custom interface screens, wherein each said element type permits limited variation in its on-screen characteristics in conformity with a desired uniform and *aesthetically pleasing* look and feel for said interface screens on all kiosks of said kiosk system

Datamize, the patentee, argued that the term “aesthetically pleasing” should be construed to refer to the intent of a person practicing the invention. That person must intend to create an aesthetically pleasing interface screen; whether she succeeds is irrelevant.]

Here Datamize has offered no objective definition identifying a standard for determining when an interface screen is “aesthetically pleasing.” In the absence of a workable objective standard, “aesthetically pleasing” does not just include a subjective element, it is completely dependent on a person’s subjective opinion. The scope of claim language cannot depend solely on the unrestrained, subjective opinion of a particular individual purportedly practicing the inven-

"The claims describe the step of extracting machine code instructions from something that does not have machine code instructions. The claims are nonsensical in the way a claim to extracting orange juice from apples would be, and are thus indefinite." *Trustees of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359 (Fed. Cir. 2016)

tion. Some objective standard must be provided in order to allow the public to determine the scope of the claimed invention. Even if the relevant perspective is that of the system creator, the identity of who makes aesthetic choices fails to provide any direction regarding the relevant question of how to determine whether that person succeeded in creating an "aesthetically pleasing" look and feel for interface screens. A purely subjective construction of "aesthetically pleasing" would not notify the public of the patentee's right to exclude since the meaning of the claim language would depend on the unpredictable vagaries of any one person's opinion of the aesthetics of interface screens. While beauty is in the eye of the beholder, a claim term, to be definite, requires an objective anchor.

And while the description of an embodiment provides examples of aesthetic features of screen displays that can be controlled by the authoring system, it does not explain what selection of these features would be "aesthetically pleasing." Major aesthetic choices apparently may include some aspect of button styles and sizes, window borders, color combinations, and type fonts. The written description, however, provides no guidance to a person making aesthetic choices such that their choices will result in an "aesthetically pleasing" look and feel of an interface screen. For example, the specification does not explain what factors a person should consider when selecting a feature to include in the authoring system. Left unanswered are questions like: which color combinations would be "aesthetically pleasing" and which would not? And more generally, how does one determine whether a color combination is "aesthetically pleasing"? Again, one skilled in the art reading the specification is left with the unhelpful direction to consult the subjective opinions of aesthetic design specialists, database specialists, and academic studies.

Simply put, the definition of "aesthetically pleasing" cannot depend on an undefined standard. We therefore affirm the district court's grant of summary judgment of invalidity of all claims of the '137 patent.

Freeny v. Apple Inc.

No.2:13-CV-00361-WCB, 2014 WL 4294505 (E.D. Tex. Aug. 28, 2014)

[Patent No. 7,110,744 ("the '744 patent"), described a single device that can communicate wirelessly with a variety of providers, such as hotel systems, vehicle parking systems, and toll systems, using multiple frequencies. It claimed:

A communication unit connected to a public communication system, the communication unit capable of detecting a plurality of wireless devices and servicing each of the plurality of wireless devices by providing access to

For "public communication system," think "Internet"

the public communication system when the wireless devices are within a predetermined proximity distance from the communication unit, the communication unit comprising [various elements, including a] transceiver simultaneously communicating with at least two wireless devices with different types of low power communication signals.]

The final term in dispute for purposes of claim construction is the term “low power communication signals.” The plaintiffs argue that the term “low power communication signals” should be construed to mean “signals having a power for transmission up to a maximum of several hundred feet.” The defendant argues that the term is indefinite because the words “low power” are wholly lacking in specificity.

While it is true that the patent does not define the term “low power” with precision, precision is not required as long as the claim language is as specific as is reasonably possible under the circumstances, and as long as a person of skill in the art would understand the scope of the claims with reasonable certainty. The Federal Circuit has frequently addressed claim language that was imprecise and has frequently upheld claims containing similar language, based on the commonsense observation that sometimes precision is impossible to achieve, consistent with an accurate description of the full scope of the invention. As the court has explained: “Definiteness problems often arise when words of degree are used in a claim. That some claim language may not be precise, however, does not automatically render a claim invalid.” *Seattle Box Co. v. Indus. Crating & Packing, Inc.* (upholding claim using term “substantially equal to”). When a word of degree is used, “the district court must determine whether the patent’s specification provides some standard for measuring that degree. The trial court must decide, that is, whether one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification.”

Seattle Box: 731 F.2d 818 (Fed. Cir. 1984)

Indefiniteness is a legal determination; if the court concludes that a person of ordinary skill in the art, with the aid of the specification, would understand what is claimed, the claim is not indefinite. For example, the term “substantially” has frequently been held not indefinite if a person of ordinary skill can discern from the claims and specification what the bounds of the claim are with reasonable certainty. [Cases cited found the terms “about 0.06,” “substantially planar,” “to increase substantially,” “not interfering substantially,” “relatively small,” “substantially equal to,” “closely approximate,” and “about 5:1 to about 7:1” not indefinite.] On numerous occasions, district courts, including this court, have held similarly imprecise claim language not indefinite. [Cases cited found the phrases “substan-

tially collimated," "roughly the same," "low frequency forces," "low hydroxyl ion content," and "low DC electrical voltage" not indefinite.]

In pressing its indefiniteness argument, the defendant relies heavily on the Supreme Court's recent decision in *Nautilus*, which addressed the issue of indefiniteness and modified the test applied in some prior Federal Circuit cases. The *Nautilus* Court held "a patent's claims, viewed in light of the specification and prosecution history, [must] inform those skilled in the art about the scope of the invention with reasonable certainty." Contrary to the defendant's suggestion, that standard does not render all of the prior Federal Circuit and district court cases inapplicable, nor does it require that the claim language in this case be held indefinite. The Supreme Court recognized that "some modicum of uncertainty" is "the price of ensuring the appropriate incentives for innovation," and that because patents are directed to persons of skill in the art, all that is required is that the patent apprise such persons of the scope of the invention. Indeed, the Court cited with approval *Eibel Process Co. v. Minn. & Ontario Paper Co.*, where the Court upheld claim language requiring a wire to be placed at a "high" or "substantial" elevation. That language, the *Eibel* Court held, would be sufficiently clear in context for persons of skill in the art to understand and therefore was not invalid for indefiniteness.

Eibel: 261 U.S. 45 (1923)

In light of the applicable caselaw, including the *Nautilus* case, the Court concludes that the term "low power communication signals" is not indefinite. The specification on several occasions refers to low power signals as those that do not communicate farther than a few hundred feet. See, e.g., '744 patent, col. 32, ll. 29–31 ("low power wireless link ... does not typically communicate farther than about 300 feet"); col. 35, ll. 50–51 (detection range of "say several hundred feet"); col. 36, ll. 31–38 (wireless connection ranges "will vary from several hundred feet to only several feet"); col. 39, ll. 13–15 (transmissions possible "within several hundred feet" of a communication unit); col. 7, ll. 4–8 (transceiver capable of communicating "up to at least a predetermined proximity distance such as a hundred feet"); col. 13, ll. 49–52 (different signal strengths designed for detection at 500 feet and 20 feet); col. 16, ll. 49–51 (authorization distance set at 500 feet and 20 feet). Moreover, the plaintiffs' expert filed a declaration pointing to the references in the patent to infrared signals, 900 MHz signals, 1.8 GHz signals, and 2.4 GHz signals as examples of different types of low power communication signals. He explained that a common characteristic of such signals is the limited distance over which they can be transmitted, as discussed in the specification. One of ordinary skill in the art, he explained, would understand from reading the '744 specification that the claim term "different types of low power communication signals" means "different types of com-

munication signals having a power for transmission up to a maximum of several hundred feet.” The defendant has not submitted a contrary expert declaration on the issue of indefiniteness.

Accordingly, the Court concludes that the term “low power communication signals,” viewed in light of the specification, would be understood by persons of skill in the art with reasonable certainty. The asserted claims in the '744 patent are therefore not indefinite. Furthermore, in light of the discussion of low power communications in the specification, the Court agrees with the plaintiffs that the term should be interpreted to mean “communication signals having a power for transmission of up to a maximum of several hundred feet.”

2 Disclosure

Patent Act

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.

This language has been interpreted by the courts to create three distinct disclosure requirements: *enablement*, *written description*, and *best mode*. Of the three, enablement is the most practically significant.

a Enablement

Wyeth & Cordis Corp. v. Abbott Labs.

720 F.3d 1380 (Fed. Cir. 2013)

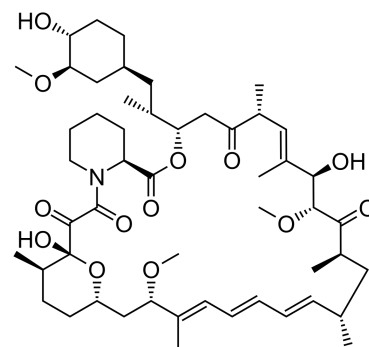
Wyeth and Cordis Corporation (Wyeth) appeal from the U.S. District Court for the District of New Jersey’s grant of summary judgment that claims 1 and 2 of U.S. Patent No. 5,516,781 ('781 patent) and claim 1 of U.S. Patent No. 5,563,146 ('146 patent) are invalid for nonenablement. Because we hold that there is no genuine issue of material fact that the specification does not enable one of ordinary skill to practice the asserted claims without undue experimentation, we affirm.

BACKGROUND

The patents-in-suit relate to the use of rapamycin for the treatment and prevention of restenosis, which is the renarrowing of an artery. To open a blocked artery, a physician guides a balloon catheter to the

35 U.S.C. § 112(a) Specification

The phrase “person skilled in the art” and the related phrase “person having ordinary skill in the art” from Section 103 are frequently abbreviated to “PHOSITA.” The PHOSITA is the hypothetical reasonable person of patent law.



Sirolimus

site of accumulated plaque, and then inflates the balloon to crush the plaque. As the balloon inflates, however, it may cause injury to the arterial wall. That vascular injury causes smooth muscle cells to proliferate, which thickens the arterial wall, and, in turn, leads to restenosis.

The claims recite a method of treating or preventing “restenosis in a mammal ... which comprises administering an antirestenosis effective amount of rapamycin to said mammal.” In general, “rapamycin” may refer to a class of compounds. While the patents-in-suit use the term “rapamycin,” the parties agree that the shared specification discloses only one rapamycin species called sirolimus. Sirolimus is naturally produced by a bacterium called *Streptomyces hygroscopicus*. [Sirolimus’s chemical structure has two relevant features: a “macro-cyclic triene ring” and a specific “substituent group.”]

The parties do not dispute that the effective filing date of both patents is January 9, 1992. At that time, it was known that sirolimus acts in part by binding two proteins at sites within the macrocyclic ring. It was also known that there were four additional compounds with the same macrocyclic ring as sirolimus, but different substituent groups.

The parties also do not dispute that the specification discloses the immunosuppressive and antirestenotic properties of sirolimus. The specification discloses *in vitro* test data indicating that sirolimus inhibits rat smooth muscle cell proliferation. It also discloses *in vivo* test data indicating that intraperitoneal injection of sirolimus in rats reduced the thickening of the arterial wall following vascular injury.

In two separate actions, Wyeth sued the defendants for infringement of the patents-in-suit. The defendants market stent products that elute everolimus and zotarolimus, two drugs that have the same macrocyclic ring as sirolimus but different [substituent groups]. After briefing and a hearing, the district court adopted Wyeth’s proposed construction of “rapamycin” as “a compound containing a macrocyclic triene ring structure produced by *Streptomyces hygroscopicus*, having immuno-suppressive and anti-restenotic effects.” Based in part on that construction, the court granted defendants’ joint motions for summary judgment of invalidity for nonenablement and lack of written description.

DISCUSSION

I.

A patent’s specification must describe the invention and “the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains ... to make and use the same.” 35 U.S.C. § 112(a). Claims

are not enabled when, at the effective filing date of the patent, one of ordinary skill in the art could not practice their full scope without undue experimentation.

II.

The central issue on appeal is whether practicing the full scope of the claims requires excessive – and thus undue – experimentation. The district court held that it does. It found that the claims cover any structural analog of sirolimus that exhibits immunosuppressive and antirestenotic effects. The court also found that, while the specification describes assays to ascertain whether a potential rapamycin compound exhibits the recited functional effects, the only species disclosed is sirolimus. In further support of its holding of nonenablement, the court relied on the unpredictability of the chemical arts, the complexity of the invention, and the limited knowledge of treatment of restenosis using sirolimus at the time of the invention.

Wyeth argues that the district court ignored evidence that practicing the full scope of the claims would have required only routine experimentation. First, a skilled artisan could ascertain whether a candidate rapamycin compound has the same macrocyclic ring as sirolimus. Second, a skilled artisan could routinely determine whether a candidate has immunosuppressive and antirestenotic effects using the assays disclosed in the specification.

Regarding the amount of experimentation, Wyeth acknowledges that one of its experts testified that there could be millions of compounds made by varying the substituent groups outside of sirolimus's macrocyclic ring. Wyeth counters that the same expert testified that the number of compounds that would exhibit the recited functional effects would be significantly smaller. [Wyeth's expert argued that a PHOSITA would have known that only compounds permeable across cell membranes, typically having molecular weights below 1,200 Daltons would need to be considered. For purposes of summary judgment, the court accepted this claim as true, and also the claim that the assays would effectively confirm whether a candidate compound had the desired immunosuppressive and antirestenotic effects.]

We agree with Appellees and the district court that there is no genuine dispute that practicing the full scope of the claims, measured at the time of filing, would require excessive experimentation. The scope of the claims at issue is broad. Under the district court's unchallenged construction of "rapamycin," the invention is a new method of use of a known compound (sirolimus) and any other compounds that meet the construction's structural and functional requirements. We also agree that there is no genuine dispute that the specification's guidance is limited to disclosures of the immunosuppressive and

antirestenotic properties of sirolimus and assays to screen for those properties.

Yet, even accepting Wyeth's assertions, we find no genuine dispute that practicing the full scope of the claims would require more than routine experimentation for two reasons.

First, there is no dispute that, even if potential rapamycin compounds must have a molecular weight below 1,200 Daltons, there are still at least tens of thousands of candidates. The specification is silent about how to structurally modify sirolimus, let alone in a way that would preserve the recited utility. Second, there is no genuine dispute that it would be necessary to first synthesize and then screen each candidate compound using the assays disclosed in the specification to determine whether it has immunosuppressive and antirestenotic effects. There is no evidence in the record that any particular substitutions outside of the macrocyclic ring are preferable. Indeed, a Wyeth scientist confirmed the unpredictability of the art and the ensuing need to assay each candidate by testifying that, "until you test [compounds], you really can't tell whether they work or not [i.e., have antirestenotic effects]." In sum, there is no genuine dispute that practicing the full scope of the claims would require synthesizing and screening each of at least tens of thousands of compounds.

The remaining question is whether having to synthesize and screen each of at least tens of thousands of candidate compounds constitutes undue experimentation. We hold that it does. Undue experimentation is a matter of degree. Even a considerable amount of experimentation is permissible, as long as it is merely routine or the specification provides a reasonable amount of guidance regarding the direction of experimentation. Yet, routine experimentation is not without bounds.

Our cases have described limits on permissible experimentation in the context of enablement. For example, in *ALZA Corp. v. Andrx Pharmaceuticals, LLC*, we affirmed a judgment of nonenablement where the specification provided "only a starting point, a direction for further research." We concluded that one of ordinary skill "would have been required to engage in an iterative, trial-and-error process to practice the claimed invention even with the help of the specification." Finally, in *In re Vaeck*, we affirmed the PTO's nonenablement rejection of claims reciting heterologous gene expression in as many as 150 genera of cyanobacteria. The specification disclosed only nine genera, despite cyanobacteria being a "diverse and relatively poorly understood group of microorganisms," with unpredictable heterologous gene expression. Here, the specification similarly discloses only a starting point for further iterative research in an unpredictable and poorly understood field. Synthesizing candidate compounds derived from sirolimus could, itself, require a complicated and lengthy

ALZA: 603 F.3d 935 (Fed. Cir. 2010)

Vaek: 947 F.2d 488 (Fed. Cir. 1991)

series of experiments in synthetic organic chemistry. Even putting the challenges of synthesis aside, one of ordinary skill would need to assay each of at least tens of thousands of candidates. Wyeth's expert conceded that it would take technicians weeks to complete each of these assays. The specification offers no guidance or predictions about particular substitutions that might preserve the immunosuppressive and antirestenotic effects observed in sirolimus. The resulting need to engage in a systematic screening process for each of the many rapamycin candidate compounds is excessive experimentation. We thus hold that there is no genuine dispute that practicing the full scope of the claims, measured at the filing date, required undue experimentation.

Plastic Dye Problem

You are drafting claims for a patent application for an industrial dye that turns certain plastics an attractive shade of blue. Your client has tested it, with success, on PETE, HDPE, PEEK, and PVDC (all semi-crystalline plastics). You could draft a broad claim that refers to "plastic" or you could draft a narrow claim that refers to "a plastic selected from the group of PETE, HDPE, PEEK, and PVDC." What are the advantages and disadvantages of each approach?

b Written Description

Ariad Pharmaceuticals, Inc. v. Eli Lilly and Co

598 F.3d 1336 (Fed Cir. 2010) (en banc)

Since its inception, this court has consistently held that § 112, first paragraph, contains a written description requirement separate from enablement, and we have articulated a fairly uniform standard, which we now affirm. Specifically, the description must clearly allow persons of ordinary skill in the art to recognize that the inventor invented what is claimed. In other words, the test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.

The term "possession," however, has never been very enlightening. It implies that as long as one can produce records documenting a written description of a claimed invention, one can show possession. But the hallmark of written description is disclosure. Thus, "possession as shown in the disclosure" is a more complete formulation. Yet whatever the specific articulation, the test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled

artisan and show that the inventor actually invented the invention claimed.

We have made clear that the written description requirement does not demand either examples or an actual reduction to practice; a constructive reduction to practice that in a definite way identifies the claimed invention can satisfy the written description requirement. Conversely, we have repeatedly stated that actual “possession” or reduction to practice outside of the specification is not enough. Rather, as stated above, it is the specification itself that must demonstrate possession. And while the description requirement does not demand any particular form of disclosure, or that the specification recite the claimed invention *in haec verba*, a description that merely renders the invention obvious does not satisfy the requirement.

c Best Mode

Manual of Patent Examination Procedure (Rev. Nov. 2013)

§ 2165

The Best Mode Requirement

The best mode requirement is a safeguard against the desire on the part of some people to obtain patent protection without making a full disclosure as required by the statute. The requirement does not permit inventors to disclose only what they know to be their second-best embodiment, while retaining the best for themselves.

Determining compliance with the best mode requirement requires a two-prong inquiry. First, it must be determined whether, at the time the application was filed, the inventor possessed a best mode for practicing the invention. This is a subjective inquiry which focuses on the inventor’s state of mind at the time of filing. Second, if the inventor did possess a best mode, it must be determined whether the written description disclosed the best mode such that a person skilled in the art could practice it. This is an objective inquiry, focusing on the scope of the claimed invention and the level of skill in the art. All applicants are required to disclose for the claimed subject matter the best mode contemplated by the inventor even if the inventor was not the discoverer of that mode.

Failure to disclose the best mode need not rise to the level of active concealment or inequitable conduct in order to support a rejection. Where an inventor knows of a specific material or method that will make possible the successful reproduction of the claimed invention, but does not disclose it, the best mode requirement has not been satisfied.

Section 15 of the Leahy-Smith America Invents Act (AIA) did not eliminate the requirement for a disclosure of the best mode, but effective September 16, 2011, it amended 35 U.S.C. 282 (the provision

that sets forth defenses in a patent validity or infringement proceeding) to provide that the failure to disclose the best mode shall not be a basis on which any claim of a patent may be canceled or held invalid or otherwise unenforceable. As this change is applicable only in patent validity or infringement proceedings, it does not alter current patent examining practices as set forth above for evaluation of an application for compliance with the best mode requirement of 35 U.S.C. 112.

d Problem

Salt Shaker Problem

Assume that you represent the inventor of the first screw-top salt shaker. (In this alternate universe, prior art salt shakers were filled through a hole in the bottom.) Draft a claim for this new invention. Suggestions:

- What are the constituent parts of the screw-top shaker? Your claim will need to describe them and explain how they are related.
- Which features of the screw-top shaker are essential to its use? Which can safely be omitted?
- Once the new screw-top shaker is publicly available, competing shaker-makers will try to invent around the patent. How can you make their job harder?
- Inventors in other industries may be inspired by the screw-top design. Can you make sure that your claim is not restricted to the one use your client has in mind?



3 Patent Prosecution

a Patent Office Procedure

Cuozzo Speed Technologies, LLC v. Lee

136 S. Ct. 2131 (2016)

An inventor obtains a patent by applying to the Patent Office. A patent examiner with expertise in the relevant field reviews an applicant's patent claims, considers the prior art, and determines whether each claim meets the applicable patent law requirements.

If the examiner rejects a claim, the applicant can resubmit a narrowed (or otherwise modified) claim, which the examiner will consider anew, measuring the new claim against the same patent law requirements. If the examiner rejects the new claim, the inventor typically has yet another chance to respond with yet another amended claim. Ultimately, the Patent Office makes a final decision allowing or rejecting the application. The applicant may seek judicial review of any final rejection.

Patent Act

35 U.S.C. § 122

Confidential status of applications; publication of patent applications

- (a) *Confidentiality.* – Except as provided in subsection (b), applications for patents shall be kept in confidence by the Patent and Trademark Office.
- (b) *Publication.* –
 - (1)(A) Subject to paragraph (2), each application for a patent shall be published, in accordance with procedures determined by the Director, promptly after the expiration of a period of 18 months from the earliest filing date for which a benefit is sought under this title. At the request of the applicant, an application may be published earlier than the end of such 18-month period.
 - (2)(B)(i) If an applicant makes a request upon filing, certifying that the invention disclosed in the application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing, the application shall not be published as provided in paragraph (1)

Code of Federal Regulations

37 C.F.R. § 1.56(a) (2015)

Duty to disclose information material to patentability.

A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination

occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned.

Therasense, Inc. v. Becton, Dickinson and Co.

649 F.3d 1276 (Fed. Cir. 2011) (en banc)

Inequitable conduct is an equitable defense to patent infringement that, if proved, bars enforcement of a patent. This judge-made doctrine evolved from a trio of Supreme Court cases that applied the doctrine of unclean hands to dismiss patent cases involving egregious misconduct before the PTO.

As the inequitable conduct doctrine evolved from these unclean hands cases, it came to embrace a broader scope of misconduct, including not only egregious affirmative acts of misconduct intended to deceive both the PTO and the courts but also the mere nondisclosure of information to the PTO. Inequitable conduct also diverged from the doctrine of unclean hands by adopting a different and more potent remedy – unenforceability of the entire patent rather than mere dismissal of the instant suit.

To prevail on a claim of inequitable conduct, the accused infringer must prove that the patentee acted with the specific intent to deceive the PTO. A finding that the misrepresentation or omission amounts to gross negligence or negligence under a “should have known” standard does not satisfy this intent requirement. In a case involving nondisclosure of information, clear and convincing evidence must show that the applicant made a deliberate decision to withhold a known material reference. In other words, the accused infringer must prove by clear and convincing evidence that the applicant knew of the reference, knew that it was material, and made a deliberate decision to withhold it.

Because direct evidence of deceptive intent is rare, a district court may infer intent from indirect and circumstantial evidence. However, to meet the clear and convincing evidence standard, the specific intent to deceive must be the single most reasonable inference able to be drawn from the evidence. Indeed, the evidence must be sufficient to *require* a finding of deceitful intent in the light of all the circumstances.

This court holds that, as a general matter, the materiality required

to establish inequitable conduct is but-for materiality. When an applicant fails to disclose prior art to the PTO, that prior art is but-for material if the PTO would not have allowed a claim had it been aware of the undisclosed prior art.

b Priority Dates

USPTO, General Information Concerning Patents

Provisional Application for Patent

A provisional application for patent (provisional application) is a U.S. national application filed in the USPTO under 35 U.S.C. § 111(b). A provisional application is not required to have a formal patent claim or an oath or declaration. Provisional applications also should not include any information disclosure (prior art) statement since provisional applications are not examined. A provisional application provides the means to establish an early effective filing date in a later filed nonprovisional patent application filed under 35 U.S.C. § 111(a). It also allows the term "Patent Pending" to be applied in connection with the description of the invention.

A provisional application for patent has a pendency lasting 12 months from the date the provisional application is filed. **The 12-month pendency period cannot be extended.** Therefore, an applicant who files a provisional application must file a corresponding nonprovisional application for patent (nonprovisional application) during the 12-month pendency period of the provisional application in order to benefit from the earlier filing of the provisional application.

c Judicial Review

Applicants can appeal rejections to the Patent Trial and Appeal Board (PTAB). 35 U.S.C. § 134(a). If the PTAB also rejects the application, the applicant can seek judicial review either before the Federal Circuit, *id.* § 141, or the Eastern District of Virginia, *id.* § 145.

d Post-Grant Proceedings

Patent Act

35 U.S.C. § 251 Reissue of defective patents

- (a) *In general.* – Whenever any patent is, through error, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent, the Director shall, on the surrender of such patent and the payment of the fee required by law, reissue the patent for the invention

disclosed in the original patent, and in accordance with a new and amended application, for the unexpired part of the term of the original patent. No new matter shall be introduced into the application for reissue.

- (d) *Reissue patent enlarging scope of claims.* – No reissued patent shall be granted enlarging the scope of the claims of the original patent unless applied for within two years from the grant of the original patent.

Cuozzo Speed Technologies, LLC v. Lee

136 S. Ct. 2131 (2016)

For several decades, the Patent Office has also possessed the authority to reexamine – and perhaps cancel – a patent claim that it had previously allowed. In 1980, for example, Congress enacted a statute providing for “*ex parte* reexamination.” That statute (which remains in effect) gives “any person at any time” the right to “file a request for reexamination” on the basis of certain prior art “bearing on the patentability” of an already-issued patent. If the Patent Office concludes that the cited prior art raises “a substantial new question of patentability,” the agency can reexamine the patent. And that reexamination can lead the Patent Office to cancel the patent (or some of its claims). Alternatively, the Director of the Patent Office can, on her “own initiative,” trigger such a proceeding. And, as with examination, the patent holder can seek judicial review of an adverse final decision.

See 35 U.S.C. § 302 *et seq.*

In 1999 and 2002, Congress enacted statutes that established another, similar procedure, known as “*inter partes* reexamination.” Those statutes granted third parties greater opportunities to participate in the Patent Office’s reexamination proceedings as well as in any appeal of a Patent Office decision.

In 2011, Congress enacted the statute before us. That statute modifies “*inter partes reexamination*,” which it now calls “*inter partes review*” (IPR). Like *inter partes* reexamination, any third party can ask the agency to initiate *inter partes* review of a patent claim. But the new statute has changed the standard that governs the Patent Office’s institution of the agency’s process. Instead of requiring that a request for reexamination raise a “substantial new question of patentability,” it now requires that a petition show “a reasonable likelihood that” the challenger “would prevail.”

See 35 U.S.C. § 311 *et seq.*

The new statute provides a challenger with broader participation rights. It creates within the Patent Office a Patent Trial and Appeal Board (Board) composed of administrative patent judges, who are patent lawyers and former patent examiners, among others. That Board conducts the proceedings, reaches a conclusion, and sets forth

its reasons.

The statute sets forth time limits for completing this review. It grants the Patent Office the authority to issue rules. Like its predecessors, the statute authorizes judicial review of a "final written decision" canceling a patent claim.

PGR: See 35 U.S.C. § 321 *et seq.*

CBM: See AIA § 18. For guidance on what is and is not a "covered business method," see *Unwired Planet, LLC v. Google Inc.* 841 F.3d 1376 (Fed. Cir. 2016).

Even more confusingly, the AIA also introduced "post-grant review" (PGR). PGR is only available within nine months after a patent issues – except for a "transitional" program that allows for PGR of any "covered business method patent" at any time, but sunsets in 2020. IPR becomes available after the nine-month PGR window closes. The major differences are that IPR only allows for challenges under § 102 (novelty) and § 103 (nonobviousness) and that the threshold for the PTO to hear an IPR is higher. Paradoxically, because of the wider range of challenges available in PGR, the potential estoppel against parties who bring one is much broader.

4 Term

Patent Act

§ 135

Contents and term of patent

Prior to June 8, 1995, patent terms were set at 17 years from the date of the patent *grant*. Given that applicants can partially control the pace at which applications move, can you think of ways this rule was vulnerable to gamesmanship?

Subject to the payment of fees under this title, such grant shall be for a term beginning on the date on which the patent issues and ending 20 years from the date on which the application for the patent was filed in the United States or, if the application contains a specific reference to an earlier filed application or applications under section 120, 121, 365(c), or 386(c), from the date on which the earliest such application was filed.

Section 135 also contains an extensive and intricate set of provisions for adjusting the patent term "if the issue of an original patent is delayed due to the failure of the Patent and Trademark Office" to act expeditiously, as specified by the statute, in its examination of the application.

C Ownership

1 Collaborations

Conception has been defined as “the complete performance of the mental part of the inventive act” and it is “the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice.” Conception is established when the invention is made sufficiently clear to enable one skilled in the art to reduce it to practice without the exercise of extensive experimentation or the exercise of inventive skill. Conception has also been defined as a disclosure of an invention which enables one skilled in the art to reduce the invention to a practical form without “exercise of the inventive faculty.” It is settled that in establishing conception a party must show possession of every feature recited in the count, and that every limitation of the count must have been known to the inventor at the time of the alleged conception. Conception must be proved by corroborating evidence. In *Hitzeman v. Rutter*, the inventor’s “hope” that a genetically altered yeast would produce antigen particles having the particle size and sedimentation rates recited in the claims did not establish conception, since the inventor did not show that he had a “definite and permanent understanding” as to whether or how, or a reasonable expectation that, the yeast would produce the recited antigen particles. There must be a contemporaneous recognition and appreciation of the invention for there to be conception.

Hitzeman: 243 F.3d 1345 (Fed. Cir. 2001)

Manual of Patent Examination Procedure (Rev. Nov. 2013)

The inventor, or each individual who is a joint inventor of a claimed invention, in an application for patent (other than a provisional application) must execute an oath or declaration directed to the application, except as provided for in 37 CFR 1.64.

§ 2137
Inventorship

The definition for inventorship can be simply stated: The threshold question in determining inventorship is who conceived the invention. Unless a person contributes to the conception of the invention, he is not an inventor. Insofar as defining an inventor is concerned, reduction to practice, per se, is irrelevant. One must contribute to the conception to be an inventor. With regard to the inventorship of chemical compounds, an inventor must have a conception of the specific compounds being claimed. General knowledge regarding the anticipated biological properties of groups of complex chemical compounds is insufficient to confer inventorship status with respect to specifically claimed compounds. One who suggests an idea of a result to be accomplished, rather than the means of accomplishing it, is not an coinventor. See MPEP § 2138.04 - § 2138.05 for a discussion of what evidence is required to establish conception or reduction to practice.

In arriving at conception the inventor may consider and adopt ideas and materials derived from many sources such as a suggestion from an employee, or hired consultant so long as he maintains intellectual domination of the work of making the invention down to the successful testing, selecting or rejecting as he goes even if such suggestion or material proves to be the key that unlocks his problem. (Adoption of the ideas and materials from another can become a derivation.)

Difficulties arise in separating members of a team effort, where each member of the team has contributed something, into those members that actually contributed to the conception of the invention, such as the physical structure or operative steps, from those members that merely acted under the direction and supervision of the conceivers. It is not essential for the inventor to be personally involved in carrying out process steps where implementation of those steps does not require the exercise of inventive skill. There is no requirement that the inventor be the one to reduce the invention to practice so long as the reduction to practice was done on his behalf. *See also Mattor v. Coolegem* (one following oral instructions is viewed as merely a technician); *Tucker v. Naito* 188 USPQ 260 (Bd. Pat. Inter. 1975) (inventors need not “personally construct and test their invention”); *Davis v. Carrier* (noninventor’s work was merely that of a skilled mechanic carrying out the details of a plan devised by another).

Mattor: 530 F.2d 1391 (CCPA 1976)

Tucker :

Carrier: 81 F.2d 250 (CCPA 1936)

35 U.S.C. 116.

The inventive entity for a particular application is based on some contribution to at least one of the claims made by each of the named inventors. “Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.” The statute neither states nor implies that two inventors can be “joint inventors” if they have had no contact whatsoever and are completely unaware of each other’s work. What is required is some quantum of collaboration or connection. In other words, for persons to be joint inventors, there must be some element of joint behavior, such as collaboration or working under common direction, one inventor seeing a relevant report and building upon it or hearing another’s suggestion at a meeting. It is not necessary that the inventive concept come to both joint inventors at the same time.

Each joint inventor must generally contribute to the conception of the invention. A coinventor need not make a contribution to every claim of a patent. A contribution to one claim is enough.

Patent Act

35 U.S.C. § 135

Derivation proceedings

(a) *Institution of Proceeding.* –

- (1) *In general.* – An applicant for patent may file a petition with respect to an invention to institute a derivation proceeding in the Office. The petition shall set forth with particularity the basis for finding that an individual named in an earlier application as the inventor or a joint inventor derived such invention from an individual named in the petitioner’s application as the inventor or a joint inventor and, without authorization, the earlier application claiming such invention was filed.
- (b) *Determination by Patent Trial and Appeal Board.* – ... In appropriate circumstances, the Patent Trial and Appeal Board may correct the naming of the inventor in any application or patent at issue.

2 Priority: Novelty and Statutory Bars

Priority rules determine which of competing claimants is entitled to an IP right based on an earlier claim. It is rarely as simple as “first in time” because what counts as “first” could be assessed in different ways. As we shall see, U.S. patent law mostly creates priority by preventing all but one – or sometimes all – of the potential claimants from obtaining a patent.

Under the present section 102, an applicant “shall be entitled to a patent unless” someone somewhere has done something that makes the invention not patentable. That something is called a *prior art reference* and it is said to *anticipate* the applicant’s invention. Conceptually, any such rule raises three questions:

- What makes a prior art reference sufficiently *similar* to the applicant’s “claimed invention” to make it unpatentable? If Alfie applies to patent an oven, Beth’s previous work on metalworking is irrelevant to the novelty of Alfie’s oven. Patent law has settled on a remarkably elegant test to capture this idea: the test for anticipation is simply the test for infringement plus the test for enablement. A claim is anticipated by a prior art reference if that reference would infringe the claim. *Peters v. Active Mfg. Co.* “That which infringes, if later, would anticipate, if earlier.”
- Which kinds of *activities* count as prior art? The present section 102 uses the words “patented, described in a printed publication, or in public use, on sale, or otherwise available to the public.” They are broad, but they do not exhaust the universe of human activity. If Alfie files for a patent on an oven of a type that Beth once built and then demolished without using or telling anyone else, Beth’s secret use does not qualify as prior art and will not stand in the way of Alfie’s application.

Peters: 129 U.S. 530 (1889).

The effective filing date is also called the *priority date*. The word "effective" should have you suspecting that maybe the effective filing date is not always the actual filing date. And it isn't. An application can relate back to the earlier filing date of a provisional application; of a foreign application; or of an application of which it is a continuation, continuation-in-part, or divisional. In each case, there are appropriate restrictions to ensure that the application is meaningfully the same as the one on whose filing date it depends.

- *When* must an activity have taken place to qualify as prior art? The present section 102 uses the words "before the effective filing date of the claimed invention," so the patent applicant must not only think of the invention and make it work but must also make it to the Patent Office before anyone else goes public with the same idea. If Alfie invents in January and files in March but Beth publishes (or worse, files her own application) in February, Alfie is out of luck. This is one of the major changes in the America Invents Act: under pre-AIA law, Alfie's March application based off a January invention date would have been good enough. As we dig into the text of the AIA, we will see why it is said to create a rule of "first inventor to file."

Not coincidentally, these are the same kinds of questions one must also ask about *infringement*: what kinds of conduct are prohibited, what makes a defendant's use too similar, and when does it fall within the term of the plaintiff's rights? This symmetry is baked into patent law, as it is to many other fields of intellectual property law.

a Anticipation

Manual of Patent Examination Procedure

§ 2131

Anticipation -- Application of 35 U.S.C. § 102

A claimed invention may be rejected under 35 U.S.C. 102 when the invention is anticipated (or is "not novel") over a disclosure that is available as prior art. To anticipate a claim, the disclosure must teach every element of the claim.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. "When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art." *Brown v. 3M* (claim to a system for setting a computer clock to an offset time to address the Year 2000 (Y2K) problem, applicable to records with year date data in "at least one of two-digit, three-digit, or four-digit" representations, was held anticipated by a system that offsets year dates in only two-digit formats). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required.

Brown v. 3M: 265 F.3d 1349 (Fed. Cir. 2001)

§ 2131.02

Genus-Species Situations

A generic claim cannot be allowed to an applicant if the prior art discloses a species falling within the claimed genus. The species in that case will anticipate the genus.

A genus does not always anticipate a claim to a species within

the genus. However, when the species is clearly named, the species claim is anticipated no matter how many other species are additionally named. See *Ex parte A* ("The tenth edition of the *Merck Index* lists ten thousand compounds. In our view, each and every one of those compounds is 'described' as that term is used in [pre-AIA] 35 U.S.C. § 102(a), in that publication.").

Ex parte A: 17 USPQ 2d 1716 (BPAI 1990)

When the reference relied on expressly anticipates or makes obvious all of the elements of the claimed invention, the reference is presumed to be operable. Once such a reference is found, the burden is on applicant to provide facts rebutting the presumption of operability.

§ 2121

Prior Art; General Level of Operability Required to Make a Prima Facie Case

A prior art reference provides an enabling disclosure and thus anticipates a claimed invention if the reference describes the claimed invention in sufficient detail to enable a person of ordinary skill in the art to carry out the claimed invention; proof of efficacy is not required for a prior art reference to be enabling for purposes of anticipation.

Titanium Metals Corp. of America v. Banner

778 F.2d 775 (Fed. Cir. 1985)

This appeal is from an Order of the United States District Court for the District of Columbia in a civil action brought pursuant to 35 U.S.C. § 145 against Donald W. Banner as Commissioner of Patents and Trademarks authorizing the Commissioner to issue to appellee a patent containing claims 1, 2, and 3 of patent application serial No. 598,935 for "TITANIUM ALLOY."

The inventors, Loren C. Covington and Howard R. Palmer, employees of appellee to whom they have assigned their invention and the application thereon, filed an application on March 29, 1974, serial No. 455,964, to patent an alloy they developed. The application involved in this appeal contains the three claims on appeal. The alloy is made primarily of titanium (Ti) and contains small amounts of nickel (Ni) and molybdenum (Mo) as alloying ingredients to give the alloy certain desirable properties, particularly corrosion resistance in hot brine solutions, while retaining workability so that articles such as tubing can be fabricated from it by rolling, welding and other techniques. The inventors apparently also found that iron content should be limited, iron being an undesired impurity rather than an alloying ingredient. They determined the permissible ranges of the components, above and below which the desired properties were not obtained. A precise definition of the invention sought to be patented is found in the claims, set forth below, claim 3 representing the preferred composition, it being understood, however, that no iron at all would be even more preferred.

1. A titanium base alloy consisting essentially by weight of about 0.6% to 0.9% nickel, 0.2% to 0.4% molybdenum, up to 0.2% maximum iron, balance titanium, said alloy being characterized by good corrosion resistance in hot brine environments.
2. A titanium base alloy as set forth in Claim 1 having up to 0.1% iron, balance titanium.
3. A titanium base alloy as set forth in Claim 1 having 0.8% nickel, 0.3% molybdenum, up to 0.1% maximum iron, balance titanium.

The examiner's final rejection, repeated in his Answer on appeal to the Patent and Trademark Office (PTO) Board of Appeals (board), was on the grounds that claims 1 and 2 are anticipated (fully met) by, and claim 3 would have been obvious from, an article by Kalabukhova and Mikheyew, *Investigation of the Mechanical Properties of Ti-Mo-Ni Alloys*, *RUSSIAN METALLURGY (METALLY)* No. 3, pages 130-133 (1970) (in the court below and hereinafter called "the Russian article") under 35 U.S.C. §§ 102 and 103, respectively. The board affirmed the examiner's rejection.

The Russian article is short (3 pages), highly technical, and contains 10 graphs as part of the discussion. As its title indicates, it relates to ternary Ti-Mo-Ni alloys, the subject of the application at bar. The examiner and the board both found that it would disclose to one skilled in the art an alloy on which at least claims 1 and 2 read, so that those claims would not be allowable under the statute because of lack of novelty of their subject matter. Since the article does not specifically disclose such an alloy in words, a little thinking is required about what it would disclose to one knowledgeable about Ti-Ni-Mo alloys. The PTO did that thinking as follows:

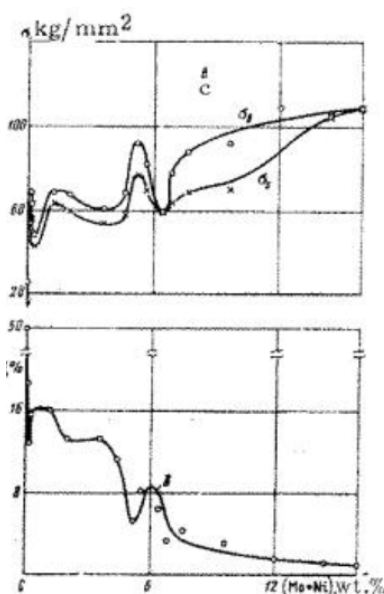


Figure 1c from Kalabukhova and Mikheyew

Figure 1c [a graph] shows data for the ternary titanium alloy which contains Mo and Ni in the ratio of 1:3. Amongst the actual points on the graph is one at 1% Mo + Ni. At this point, the amounts of Mo and Ni would be 0.25% and 0.75% respectively. A similar point appears on the graph shown in Figure 2 of the article.

Appellants do not deny that the data points are disclosed in the reference. In fact, the Hall affidavit indicates at least two specific points (at 1% and 1.25% Mo + Ni) which would represent a description of alloys falling within the scope of the instant claims.

On that basis, the board found that the claimed alloys were not new, because they were disclosed in the prior art. It having been argued that the Russian article contains no disclosure of corrosion-resistant properties of any of the alloys, the board held: "The fact that a par-

ticular property or the end use for this alloy as contemplated by appellants was not recognized in the article is of no consequence.” It therefore held the Russian article to be an anticipation, noting that although the article does not discuss corrosion resistance, it does disclose other properties such as strength and ductility. The PTO further points out that the authors of the reference must have made the alloys to obtain the data points.

Being dissatisfied with the decision of the board, Titanium Metals Corporation of America, as assignee of the Covington and Palmer application, then brought an action in the District Court for the District of Columbia against the Commissioner pursuant to 35 U.S.C. § 145.

The case came on for trial on January 24, 1980, before the Honorable John G. Penn and was concluded in two and a half hours. The testimony of one witness was heard by the court, Dr. James C. Williams, professor at Carnegie-Mellon University in Pittsburgh and an expert in titanium metallurgy.

The court then concluded that claims 1-3 were not anticipated and that claim 3 was wrongly rejected as directed to obvious subject matter. In the court’s view, Dr. Williams’ testimony tipped the scales in favor of issuing a patent.

We are left in no doubt that the court was impressed by the totality of the evidence that the applicants for patent had discovered or invented and disclosed knowledge which is not to be found in the reference, nor do we have any doubt about that ourselves. But those facts are beside the point. The patent law imposes certain fundamental conditions for patentability, paramount among them being the condition that what is sought to be patented, as determined by the claims, be new. The title of the application here involved is “Titanium Alloy,” a composition of matter. Surprisingly, in all of the evidence, nobody discussed the key issue of whether the alloy was new, which is the essence of the anticipation issue, including the expert Dr. Williams. Plaintiff’s counsel, bringing Dr. Williams’ testimony to its climax, after he had explained the nature of the ingredients, the alloys made therefrom, and their superior corrosion resistance in hot brine, etc., repetitively asked him such questions as “Does the [Russian] article *direct you* as one skilled in the art to a titanium alloy having nickel present in an amount between .6 and .9 percent molybdenum in an amount between .2 and .4 percent?” (emphasis ours) followed by “Is there anything mentioned in the article about corrosion resistance?” Of course, the answers were emphatically negative. But this and like testimony does not deal with the critical question: do claims 1 and 2, to which the questions obviously relate, read on or encompass an alloy which was already known by reason of the disclosure of the Russian article?

Section 102, the usual basis for rejection for lack of novelty or an-

ticipation, lays down certain principles for determining the novelty [of an invention], among which are the provisions in § 102(a) and (b) that the claimed invention has not been “described in a printed publication in this or a foreign country,” either (a) before the invention by the applicant or (b) more than one year before the application date to which he is entitled (strictly a “loss of right” provision similar to novelty). Either provision applies in this case, the Russian article having a date some 5 years prior to the filing date and its status as “prior art” not being questioned. The question, therefore, is whether claims 1 and 2 encompass and, if allowed, would enable plaintiff-appellee to exclude others from making, using, or selling an alloy described in the Russian article.

To answer the question we need only turn to the affidavit of James A. Hall, a metallurgist employed by appellee’s TIMET Division, who undertook to analyze the Russian article disclosure by calculating the ingredient percentages shown in the graph data points, which he presented in tabular form. There are 15 items in his table. The second item shows a titanium base alloy containing 0.25% by weight Mo and 0.75% Ni and this is squarely within the ranges of 0.2-0.4% Mo and 0.6-0.9% Ni of claims 1 and 2. As to that disclosed alloy of the prior art, there can be no question that claims 1 and 2 read on it and would be infringed by anyone making, using, or selling it. Therefore, the statute prohibits a patent containing them. This seems to be a case either of not adequately considering the novelty requirement of the statute, the true meaning of the correlative term “anticipation,” or the meaning of the claims.

By reason of the court’s quotations from cases holding that a reference is not an anticipation which does not enable one skilled in the art to practice the claimed invention, it appears that the trial court thought there was some deficiency in the Russian article on that score. Enablement in this case involves only being able to make the alloy, given the ingredients and their proportions without more. The evidence here, however, clearly answers that question in two ways. Appellee’s own patent application does not undertake to tell anyone how to make the alloy it describes and seeks to patent. It assumes that those skilled in the art would know how. Secondly, appellee’s expert, Dr. Williams, testified on cross examination that given the alloy information in the Russian article, he would know how to prepare the alloys “by at least three techniques.” Enablement is not a problem in this case.

As we read the situation, the court was misled by the arguments and evidence to the effect that the inventors here found out and disclosed in their application many things that one cannot learn from reading the Russian article and that this was sufficient in law to justify granting them a patent for their contributions—such things as what

good corrosion resistance the claimed alloys have against hot brine, which possibly was not known, and the range limits of the Ni and Mo content, outside of which that resistance diminishes, which are teachings of very useful information. These things the applicants teach the art and the Russian article does not. But throughout the trial counsel never came to grips with the real issues: (1) what do the claims cover and (2) is what they cover new? Under the laws Congress wrote, they must be considered. Congress has not seen fit to permit the patenting of an old alloy, known to others through a printed publication, by one who has discovered its corrosion resistance or other useful properties, or has found out to what extent one can modify the composition of the alloy without losing such properties.

For all of the foregoing reasons, the court below committed clear error and legal error in authorizing the issuance of a patent on claims 1 and 2 since, properly construed, they are anticipated under § 102 by the Russian article which admittedly discloses an alloy on which these claims read.

b Categories of Prior Art

Under the new § 102(a)(1), "A person shall be entitled to a patent unless the claimed invention was *patented, described in a printed publication, or in public use, on sale, or otherwise available to the public* before the effective filing date of the claimed invention." Most of the caselaw bearing on these phrases was developed under the old § 102; significant relevant differences will be noted.

1 "patented"

U.S. patents pose few conceptual or practical difficulties; they are prior art as of the day they issue. It is not always so easy to tell whether a foreign right is a "patent" within the meaning of § 102. *In re Carlson* held that a German Geschmacksmuster counted as a patent for prior art purposes. A person may obtain one by "depositing with a local office an application with a drawing, photograph or sample of the article." That was enough, even though "Geschmacksmuster on display for public view in remote cities in a far-away land may create a burden of discovery for one without the time, desire, or resources to journey there in person or by agent to observe that which was registered and protected under German law." Such is life.

2 "described in a printed publication"

In re Klopfenstein
380 F.3d 1345 (Fed Cir. 2004)

In hindsight, is there a claim that the patentee's counsel could have drafted that would have captured the newly-discovered properties of the alloy (corrosion resistance in hot brine) without being anticipated by the Russian article?

Carlson: 983 F.2d 1032 (Fed. Cir. 1992)

Carol Klopfenstein and John Brent appeal a decision from the Patent and Trademark Office's Board of Patent Appeals and Interferences ("Board") upholding the denial of their patent application. The Board upheld the Patent and Trademark Office's ("PTO's") initial denial of their application on the ground that the invention described in the patent application was not novel under 35 U.S.C. § 102(b) because it had already been described in a printed publication more than one year before the date of the patent application. We affirm.

BACKGROUND

The appellants applied for a patent on October 30, 2000. Their patent application, Patent Application Serial No. 09/699,950 ("the '950 application"), discloses methods of preparing foods comprising extruded soy cotyledon fiber ("SCF"). The '950 application asserts that feeding mammals foods containing extruded SCF may help lower their serum cholesterol levels while raising HDL cholesterol levels. The fact that extrusion reduces cholesterol levels was already known by those of ordinary skill in the art that worked with SCF. What was not known at the time was that double extrusion increases this effect and yielded even stronger results.

In October 1998, the appellants, along with colleague M. Liu, presented a printed slide presentation ("Liu" or "the Liu reference") entitled "Enhancement of Cholesterol-Lowering Activity of Dietary Fibers By Extrusion Processing" at a meeting of the American Association of Cereal Chemists ("AACC"). The fourteen-slide presentation was printed and pasted onto poster boards. The printed slide presentation was displayed continuously for two and a half days at the AACC meeting.

In November of that same year, the same slide presentation was put on display for less than a day at an Agriculture Experiment Station ("AES") at Kansas State University.

Both parties agree that the Liu reference presented to the AACC and at the AES in 1998 disclosed every limitation of the invention disclosed in the '950 patent application. Furthermore, at neither presentation was there a disclaimer or notice to the intended audience prohibiting note-taking or copying of the presentation. Finally, no copies of the presentation were disseminated either at the AACC meeting or at the AES, and the presentation was never catalogued or indexed in any library or database.

DISCUSSION

B.

The appellants argue on appeal that the key to establishing whether or not a reference constitutes a "printed publication" lies in determin-

ing whether or not it had been disseminated by the distribution of reproductions or copies and/or indexed in a library or database. They assert that because the Liu reference was not distributed and indexed, it cannot count as a “printed publication” for the purposes of 35 U.S.C. § 102(b). To support their argument, they rely on several precedents from this court and our predecessor court on “printed publications.” They argue that *In re Cronyn*, *In re Hall*, *Massachusetts Institute of Technology v. AB Fortia*, and *In re Wyer*, among other cases, all support the view that distribution and/or indexing is required for something to be considered a “printed publication.”

We find the appellants’ argument unconvincing and disagree with their characterization of our controlling precedent. Even if the cases cited by the appellants relied on inquiries into distribution and indexing to reach their holdings, they do not limit this court to finding something to be a “printed publication” only when there is distribution and/or indexing. Indeed, the key inquiry is whether or not a reference has been made “publicly accessible.”

The statutory phrase “printed publication” has been interpreted to mean that before the critical date the reference must have been sufficiently accessible to the public interested in the art; dissemination and public accessibility are the keys to the legal determination whether a prior art reference was “published.”

For example, a public billboard targeted to those of ordinary skill in the art that describes all of the limitations of an invention and that is on display for the public for months may be neither “distributed” nor “indexed” – but it most surely is “sufficiently accessible to the public interested in the art” and therefore, under controlling precedent, a “printed publication.”

Furthermore, the cases that the appellants rely on can be clearly distinguished from this case. *Cronyn* involved college students’ presentations of their undergraduate theses to a defense committee made up of four faculty members. Their theses were later catalogued in an index in the college’s main library. The index was made up of thousands of individual cards that contained only a student’s name and the title of his or her thesis. The index was searchable by student name and the actual theses themselves were neither included in the index nor made publicly accessible. We held that because the theses were only presented to a handful of faculty members and had not been catalogued or indexed in a meaningful way, they were not sufficiently publicly accessible for the purposes of 35 U.S.C. § 102(b).

In *Hall*, this court determined that a thesis filed and indexed in a university library did count as a “printed publication.” The *Hall* court arrived at its holding after taking into account that copies of the indexed thesis itself were made freely available to the general public by the university more than one year before the filing of the relevant

Cronyn: F.2d 1158 (Fed. Cir. 1989)

Hall: 781 F.2d 897 (Fed. Cir. 1986)

MIT: 774 F.2d 1104 (Fed. Cir. 1985)

Wyer: 655 F.2d 221 (CCPA 1981)

patent application in that case. But the court in *Hall* did not rest its holding merely on the indexing of the thesis in question. Instead, it used indexing as a factor in determining “public accessibility.” As the court asserted:

The “printed publication” bar is grounded on the principle that once an invention is in the public domain, it is no longer patentable by anyone. Because there are many ways in which a reference may be disseminated to the interested public, “public accessibility” has been called the touchstone in determining whether a reference constitutes a “printed publication” bar under 35 U.S.C. § 102(b).

In *MIT*, a paper delivered orally to the First International Cell Culture Congress was considered a “printed publication.” In that case, as many as 500 persons having ordinary skill in the art heard the presentation, and at least six copies of the paper were distributed. The key to the court’s finding was that actual copies of the presentation were distributed. The court did not consider the issue of indexing. The *MIT* court determined the paper in question to be a “printed publication” but did not limit future determinations of the applicability of the “printed publication” bar to instances in which copies of a reference were actually offered for distribution.⁴

Finally, the *Wyer* court determined that an Australian patent application kept on microfilm at the Australian Patent Office was sufficiently accessible to the public and to persons skilled in the pertinent art to qualify as a “printed publication.” The court so found even though it did not determine whether or not there was “actual viewing or dissemination” of the patent application. *Id.* It was sufficient for the court’s purposes that the records of the application were kept so that they could be accessible to the public. *Id.*⁵ According to the *Wyer* court, the entire purpose of the “printed publication” bar was to “prevent withdrawal” of disclosures already in the possession of the public by the issuance of a patent.

Thus, throughout our case law, public accessibility has been the criterion by which a prior art reference will be judged for the pur-

⁴With regard to scientific presentations, it is important to note that an entirely oral presentation at a scientific conference that includes neither slides nor copies of the presentation is without question not a “printed publication” for the purposes of 35 U.S.C. § 102(b). Furthermore, a presentation that includes a transient display of slides is likewise not necessarily a “printed publication.” See, e.g., *Regents of the Univ. of Cal. v. Howmedica, Inc.*, 530 F.Supp. 846 (D.N.J. 1981) (holding that “the projection of slides at the lecture that was limited in duration and could not disclose the invention to the extent necessary to enable a person of ordinary skill in the art to make or use the invention” was not a “printed publication”).

⁵Unlike in *Cronyn*, it was the actual patent application — and not just an index card searchable by author name only — that was made publicly accessible.

poses of § 102(b). Oftentimes courts have found it helpful to rely on distribution and indexing as proxies for public accessibility. But when they have done so, it has not been to the exclusion of all other measures of public accessibility. In other words, distribution and indexing are not the only factors to be considered in a § 102(b) “printed publication” inquiry.

C.

In this case, the Liu reference was displayed to the public approximately two years before the ‘950 application filing date. The reference was shown to a wide variety of viewers, a large subsection of whom possessed ordinary skill in the art of cereal chemistry and agriculture. Furthermore, the reference was prominently displayed for approximately three cumulative days at AACC and the AES at Kansas State University. The reference was shown with no stated expectation that the information would not be copied or reproduced by those viewing it. Finally, no copies of the Liu display were distributed to the public and the display was not later indexed in any database, catalog or library.

The duration of the display is important in determining the opportunity of the public in capturing, processing and retaining the information conveyed by the reference. The more transient the display, the less likely it is to be considered a “printed publication.” Conversely, the longer a reference is displayed, the more likely it is to be considered a “printed publication.” In this case, the Liu reference was displayed for a total of approximately three days. It was shown at the AACC meeting for approximately two and a half days and at the AES at Kansas State University for less than one day.

The expertise of the intended audience can help determine how easily those who viewed it could retain the displayed material. As Judge Learned Hand explained in *Jockmus v. Leviton*, a reference, “however ephemeral its existence,” may be a “printed publication” if it “goes direct to those whose interests make them likely to observe and remember whatever it may contain that is new and useful.” In this case, the intended target audience at the AACC meeting was comprised of cereal chemists and others having ordinary skill in the art of the ‘950 patent application. The intended viewers at the AES most likely also possessed ordinary skill in the art.

Whether a party has a reasonable expectation that the information it displays to the public will not be copied aids our § 102(b) inquiry. Where professional and behavioral norms entitle a party to a reasonable expectation that the information displayed will not be copied, we are more reluctant to find something a “printed publication.” This reluctance helps preserve the incentive for inventors to participate in academic presentations or discussions. Where parties have taken

Jockmus: 28 F.2d 812, (2d Cir. 1928)

steps to prevent the public from copying temporarily posted information, the opportunity for others to appropriate that information and assure its widespread public accessibility is reduced. These protective measures could include license agreements, non-disclosure agreements, anti-copying software or even a simple disclaimer informing members of the viewing public that no copying of the information will be allowed or countenanced. Protective measures are to be considered insofar as they create a reasonable expectation on the part of the inventor that the displayed information will not be copied. In this case, the appellants took no measures to protect the information they displayed — nor did the professional norms under which they were displaying their information entitle them to a reasonable expectation that their display would not be copied. There was no disclaimer discouraging copying, and any viewer was free to take notes from the Liu reference or even to photograph it outright.

Finally, the ease or simplicity with which a display could be copied gives further guidance to our § 102(b) inquiry. The more complex a display, the more difficult it will be for members of the public to effectively capture its information. The simpler a display is, the more likely members of the public could learn it by rote or take notes adequate enough for later reproduction. The Liu reference was made up of 14 separate slides. One slide was a title slide; one was an acknowledgement slide; and four others represented graphs and charts of experiment results. The other eight slides contained information presented in bullet point format, with no more than three bullet points to a slide. Further, no bullet point was longer than two concise sentences. Finally, as noted earlier, the fact that extrusion lowers cholesterol levels was already known by those who worked with SCF. The discovery disclosed in the Liu reference was that double extrusion increases this effect. As a result, most of the eight substantive slides only recited what had already been known in the field, and only a few slides presented would have needed to have been copied by an observer to capture the novel information presented by the slides.

Upon reviewing the above factors, it becomes clear that the Liu reference was sufficiently publicly accessible to count as a “printed publication” for the purposes of 35 U.S.C. § 102(b). The reference itself was shown for an extended period of time to members of the public having ordinary skill in the art of the invention behind the ‘950 patent application. Those members of the public were not precluded from taking notes or even photographs of the reference. And the reference itself was presented in such a way that copying of the information it contained would have been a relatively simple undertaking for those to whom it was exposed — particularly given the amount of time they had to copy the information and the lack of any restrictions on their copying of the information. For these reasons, we conclude that the

Suppose that the Liu presentation had not been shown at the AACC meeting but instead been posted to Liu's personal webpage. Printed publication? What if Liu had emailed it to a mailing list for cereal chemists? Are there further questions you would want to ask before committing to an answer on either of these hypotheticals?

Liu reference was made sufficiently publicly accessible to count as a "printed publication" under § 102(b).

3 "in public use"

The old § 102 got at this concept in two different ways. It denied a patent where the invention was "known or used by others" before the *date of invention* (a "novelty" rule) or where it was "in public use" more than a year before the *filing date* (a "statutory bar"). While the two provisions differed in their timing (more on this in the Priority section below), the most fundamental distinction was that "known or used by others" only applied to uses made by *third parties*, whereas "in public use" also could be triggered by anyone, *including the inventor*.

Egbert v. Lippmann 104 U.S. 333 (1881)

This suit was brought for an alleged infringement of the complainant's reissued letters-patent, No. 5216, dated Jan. 7, 1873, for an improvement in corset-springs.

The original letters bear date July 17, 1866, and were issued to Samuel H. Barnes. The reissue was made to the complainant, under her then name, Frances Lee Barnes, executrix of the original patentee.

The specification for the reissue declares:

This invention consists in forming the springs of corsets of two or more metallic plates, placed one upon another, and so connected as to prevent them from sliding off each other laterally or edgewise, and at the same time admit of their playing or sliding upon each other, in the direction of their length or longitudinally, whereby their flexibility and elasticity are greatly increased, while at the same time much strength is obtained.

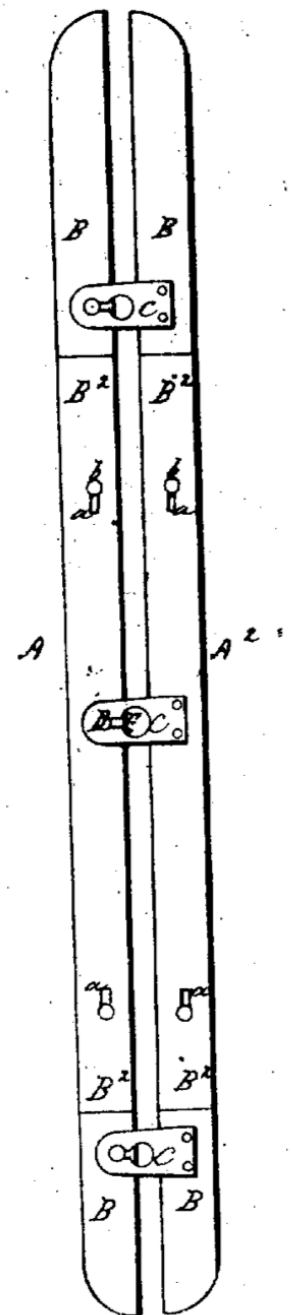
The second claim is as follows:

A pair of corset-springs, each member of the pair being composed of two or more metallic plates, placed one on another, and fastened together at their centres, and so connected at or near each end that they can move or play on each other in the direction of their length.

[The patent statute in force at the time had a two-year statutory bar, whose] effect is to render letters-patent invalid if the invention which they cover was in public use, with the consent and allowance of the inventor, for more than two years prior to his application.

The evidence on which the defendants rely to establish a prior public use of the invention consists mainly of the testimony of the

It also used the phrase "in this country," which the AIA drops. Don't worry about the geographic issues for now.



Barnes's improved corset-springs

complainant.

She testifies that Barnes invented the improvement covered by his patent between January and May, 1855; that between the dates named the witness and her friend Miss Cugier were complaining of the breaking of their corset-steels. Barnes, who was present, and was an intimate friend of the witness, said he thought he could make her a pair that would not break. At their next interview he presented her with a pair of corset-steels which he himself had made. The witness wore these steels a long time. In 1858 Barnes made and presented to her another pair, which she also wore a long time. When the corsets in which these steels were used wore out, the witness ripped them open and took out the steels and put them in new corsets. This was done several times.

It is admitted, and, in fact, is asserted, by complainant, that these steels embodied the invention afterwards patented by Barnes and covered by the reissued letters-patent on which this suit is brought.

Joseph H. Sturgis, another witness for complainant, testifies that in 1863 Barnes spoke to him about two inventions made by himself, one of which was a corset-steel, and that he went to the house of Barnes to see them. Before this time, and after the transactions testified to by the complainant, Barnes and she had intermarried. Barnes said his wife had a pair of steels made according to his invention in the corsets which she was then wearing, and if she would take them off he would show them to witness. Mrs. Barnes went out, and returned with a pair of corsets and a pair of scissors, and ripped the corsets open and took out the steels. Barnes then explained to witness how they were made and used.

The question for our decision is, whether this testimony shows a public use within the meaning of the statute.

We observe, in the first place, that to constitute the public use of an invention it is not necessary that more than one of the patented articles should be publicly used. The use of a great number may tend to strengthen the proof, but one well-defined case of such use is just as effectual to annul the patent as many. For instance, if the inventor of a mower, a printingpress, or a railway-car makes and sells only one of the articles invented by him, and allows the vendee to use it for two years, without restriction or limitation, the use is just as public as if he had sold and allowed the use of a great number.

We remark, secondly, that, whether the use of an invention is public or private does not necessarily depend upon the number of persons to whom its use is known. If an inventor, having made his device, gives or sells it to another, to be used by the donee or vendee, without limitation or restriction, or injunction of secrecy, and it is so used, such use is public, even though the use and knowledge of the use may be confined to one person.

We say, thirdly, that some inventions are by their very character only capable of being used where they cannot be seen or observed by the public eye. An invention may consist of a lever or spring, hidden in the running gear of a watch, or of a ratchet, shaft, or cog-wheel covered from view in the recesses of a machine for spinning or weaving. Nevertheless, if its inventor sells a machine of which his invention forms a part, and allows it to be used without restriction of any kind, the use is a public one. So, on the other hand, a use necessarily open to public view, if made in good faith solely to test the qualities of the invention, and for the purpose of experiment, is not a public use within the meaning of the statute. *City of Elizabeth v. American Nicholson Pavement Co.*

City of Elizabeth: 97 U.S. 126 (1878)

Tested by these principles, we think the evidence of the complainant herself shows that for more than two years before the application for the original letters there was, by the consent and allowance of Barnes, a public use of the invention, covered by them. He made and gave to her two pairs of corset-steels, constructed according to his device, one in 1855 and one in 1858. They were presented to her for use. He imposed no obligation of secrecy, nor any condition or restriction whatever. They were not presented for the purpose of experiment, nor to test their qualities. No such claim is set up in her testimony. The invention was at the time complete, and there is no evidence that it was afterwards changed or improved. The donee of the steels used them for years for the purpose and in the manner designed by the inventor. They were not capable of any other use. She might have exhibited them to any person, or made other steels of the same kind, and used or sold them without violating any condition or restriction imposed on her by the inventor.

According to the testimony of the complainant, the invention was completed and put to use in 1855. The inventor slept on his rights for eleven years. Letters-patent were not applied for till March, 1866. In the mean time, the invention had found its way into general, and almost universal, use. A great part of the record is taken up with the testimony of the manufacturers and venders of corset-steels, showing that before he applied for letters the principle of his device was almost universally used in the manufacture of corset-steels. It is fair to presume that having learned from this general use that there was some value in his invention, he attempted to resume, by his application, what by his acts he had clearly dedicated to the public.

An abandonment of an invention to the public may be evinced by the conduct of the inventor at any time, even within the two years named in the law. The effect of the law is that no such consequence will necessarily follow from the invention being in public use or on sale, with the

inventor's consent and allowance, at any time within two years before his application; but that, if the invention is in public use or on sale prior to that time, it will be conclusive evidence of abandonment, and the patent will be void.

City of Elizabeth We are of opinion that the defence of two years' public use, by the consent and allowance of the inventor, before he made application for letters-patent, is satisfactorily established by the evidence.

Mark A. Lemley, *Does "Public Use" Mean the Same Thing It Did Last Year?*
93 Tex. L. Rev. 1119 (2015)

An inventor can obtain a patent only if the invention is "novel" – that is, that no one has done the same thing before. Rather than adopting an absolute novelty rule, however, patent law has traditionally required that most categories of prior art be "accessible to the public." Thus, while [old] 35 U.S.C. § 102(a) bars a patent if the invention was "known or used by others" before the applicant invented it, courts have interpreted that term to mean "publicly known or used." At the same time, the public accessibility requirement does not require that the public have a realistic chance of accessing the information; "public" seems to mean merely "not secret." An invention performed underground on private property in a rural area, an invention found only inside the walls of a safe, and a single copy of a graduate thesis in the basement of a library in Germany have all been held sufficiently "public" to constitute prior art.

In addition to novelty, the Patent Act of 1952, like its predecessors, created a series of "statutory bars" designed to prevent inventors from making commercial use of their invention while keeping it secret. [Old] section 102(b) provides that even a true first inventor is not entitled to a patent if the invention has been "on sale" or "in public use" more than a year before the inventor files her patent application. As with [old] section 102(a), the courts have interpreted the word "public" quite loosely, so that even uses that are extremely unlikely to be viewed by the public are nonetheless classed as "public uses" so long as they are not affirmatively secret. In the most extreme example, the Supreme Court held that a woman engaged in a public use of a corset invented by her fiancé when she wore it under her clothing.

But even a very broad definition of "public" left a significant loophole – an inventor could avoid the one-year statutory bar by commercializing his invention but treating it as a trade secret. Because a secret use is by definition not a public use, a company could make commercial use of an invention indefinitely without triggering the one-year

period for filing. To solve this problem, courts for more than seventy years have created a special rule for secret commercial uses: a secret commercial use is not prior art that bars a third party from later obtaining a patent, but it does start the one-year clock running for the user. This rule originated in a 1940 opinion by Judge Learned Hand in *Metallizing Engineering v. Kenyon Bearing & Auto Parts*. The court acknowledged that interpreting the same term (“public use”) to have different meanings was hard to reconcile with the statute. But Judge Hand reasoned that it was not the intent of the statute to encourage secrecy, but instead to encourage disclosure. *Metallizing’s* split interpretation of public use served that goal in two ways. First, it encouraged inventors to file a patent quickly rather than relying in trade secrecy, because they would lose the right to patent if they waited longer than a year. Second, the fact that a secret commercial use wouldn’t prevent a later patent from issuing to a third party adds to the disclosure incentive, because an inventor who opts for trade secrecy may find that a later inventor has patented their own idea and there is nothing they can do to stop it.

Lough v. Brunswick Corp
86 F.3d 1113 (Fed. Cir. 1996)

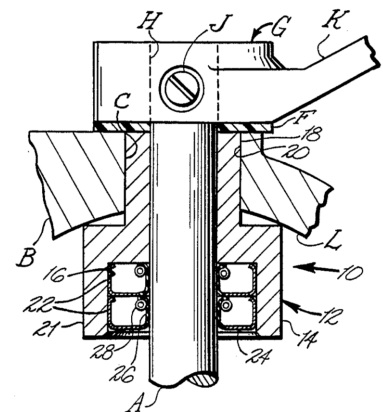
[Lough designed an improved seal for outboard motors.] After some trial and error with his grand-father’s metal lathe, he made six usable prototypes in the spring of 1986. He installed one prototype in his own boat at home. Three months later, he gave a second prototype to a friend who installed it in his boat. He also installed prototypes in the boat of the owner of the marina where he worked and in the boat of a marina customer. He gave the remaining prototypes to longtime friends who were employees at another marina in Sarasota. Lough did not charge anyone for the prototypes. For over a year following the installation of these prototypes, Lough neither asked for nor received any comments about the operability of the prototypes. During this time, Lough did not attempt to sell any seal assemblies.

On June 6, 1988, Lough filed a patent application entitled “Liquid Seal for Marine Stern Drive Gear Shift Shafts,” which issued as [U.S. Patent No. 4,848,775A] on July 18, 1989.

One is entitled to a patent unless, *inter alia*, “the invention was ... in public use ... in this country, more than one year prior to the date of the application for patent in the United States.” We have defined “public use” as including any use of the claimed invention by a person other than the inventor who is under no limitation, restriction or obligation of secrecy to the inventor. An evaluation of a question of public use depends on how the totality of the circumstances of the case comports with the policies underlying the public use bar. These policies include: (1) discouraging the removal, from the public do-

Metallizing: 153 F.2d 516 (2d Cir. 1946)

“It 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. [If he does,] he forfeits his right regardless of how little the public may have learned about the invention.” *Metallizing*.



Lough’s improved seal

35 U.S.C. § 102(b) (1994)

main, of inventions that the public reasonably has come to believe are freely available; (2) favoring the prompt and widespread disclosure of inventions; (3) allowing the inventor a reasonable amount of time following sales activity to determine the potential economic value of a patent; and (4) prohibiting the inventor from commercially exploiting the invention for a period greater than the statutorily prescribed time.

Neither party disputes that Lough's prototypes were in use before the critical date. Thus, both parties agree that the issue presented on appeal is whether the jury properly decided that the use of Lough's six prototypes in 1986, prior to the critical date, constituted experimental use so as to negate the conclusion of public use.

"The use of an invention by the inventor himself, or of any other person under his direction, by way of experiment, and in order to bring the invention to perfection, has never been regarded as [a public] use." *City of Elizabeth*. This doctrine is based on the underlying policy of providing an inventor time to determine if the invention is suitable for its intended purpose, in effect, to reduce the invention to practice. *See id.* ("It is sometimes said that an inventor acquires an undue advantage over the public by delaying to take out a patent, but this cannot be said with justice when the delay is occasioned by a bona fide effort to bring his invention to perfection, or to ascertain whether it will answer the purpose intended."). If a use is experimental, it is not, as a matter of law, a public use within the meaning of section 102.

To determine whether a use is "experimental," a question of law, the totality of the circumstances must be considered, including various objective indicia of experimentation surrounding the use, such as the number of prototypes and duration of testing, whether records or progress reports were made concerning the testing, the existence of a secrecy agreement between the patentee and the party performing the testing, whether the patentee received compensation for the use of the invention, and the extent of control the inventor maintained over the testing.

In order to justify a determination that legally sufficient experimentation has occurred, there must be present certain minimal indicia. The framework might be quite formal, as may be expected when large corporations conduct experiments, governed by contracts and explicit written obligations. When individual inventors or small business units are involved, however, less formal and seemingly casual experiments can be expected. Such less formal experiments may be deemed legally sufficient to avoid the public use bar, but only if they demonstrate the presence of the same basic elements that are required to validate any experimental program.

It cannot be reasonably disputed that Lough's use of the invention

was not “experimental” so as to negate a conclusion of public use. It is true that Lough did not receive any compensation for the use of the prototypes. He did not place the seal assembly on sale before applying for a patent. Lough’s lack of commercialization, however, is not dispositive of the public use question in view of his failure to present objective evidence of experimentation. Lough kept no records of the alleged testing. Nor did he inspect the seal assemblies after they had been installed by other mechanics. He provided the seal assemblies to friends and acquaintances, but without any provision for follow-up involvement by him in assessment of the events occurring during the alleged experiments, and at least one seal was installed in a boat that was later sold to strangers. Thus, Lough did not maintain any supervision and control over the seals during the alleged testing.

Lough argues that other evidence supports a finding that his uses were experimental, including his own testimony that the prototypes were installed for experimental purposes and the fact that the prototypes were used in such a manner that they were unlikely to be seen by the public. However, the expression by an inventor of his subjective intent to experiment, particularly after institution of litigation, is generally of minimal value. In addition, the fact that the prototypes were unlikely to be seen by the public does not support Lough’s position. As the Supreme Court stated in *Egbert*:

Some inventions are by their very character only capable of being used where they cannot be seen or observed by the public eye. An invention may consist of a lever or spring, hidden in the running gear of a watch, or of a ratchet, shaft, or cogwheel covered from view in the recesses of a machine for spinning or weaving. Nevertheless, if its inventor sells a machine of which his invention forms a part, and allows it to be used without restriction of any kind, the use is a public one.

Moreover, those to whom he gave the prototypes constituted “the public,” in the absence of meaningful evidence of experimentation.

We therefore hold that the jury had no legal basis to conclude that the uses of Lough’s prototypes were experimental and that the prototypes were not in public use prior to the critical date. Our holding is consistent with the policy underlying the experimental use negation, that of providing an inventor time to determine if the invention is suitable for its intended purpose, i.e., to reduce the invention to practice. Lough’s activities clearly were not consistent with that policy. We do not dispute that it may have been desirable in this case for Lough to have had his prototypes installed by mechanics of various levels of skill in boats that were exposed to different conditions. Moreover, Lough was free to test his invention in boats of friends

and acquaintances to further verify that his invention worked for its intended purpose; however, Lough was required to maintain some degree of control and feedback over those uses of the prototypes if those tests were to negate public use.

4 "on sale"

Manual of Patent Examination Procedure (Rev. Nov. 2013)

§ 2152.02(d)

On Sale

Pfaff: 525 U.S. 55 (1998)

The pre-AIA case law indicates that on sale activity will bar patentability if the claimed invention was: (1) the subject of a commercial sale or offer for sale, not primarily for experimental purposes; and (2) ready for patenting. See *Pfaff v. Wells Elecs., Inc.* Contract law principles apply in order to determine whether a commercial sale or offer for sale occurred.

§ 2133.03(b)

"On Sale" (describing pre-AIA law)

Linear Tech: 275 F.3d 1040 (Fed. Cir. 2001)

A sale is a contract between parties wherein the seller agrees to give and to pass rights of property in return for the buyer's payment or promise "to pay the seller for the things bought or sold.. A contract for the sale of goods requires a concrete offer and acceptance of that offer. See, e.g., *Linear Tech. Corp. v. Micrel, Inc.* (Court held there was no sale where prospective purchaser submitted an order for goods at issue, but received an order acknowledgement reading "will advise-not booked." Prospective purchaser would understand that order was not accepted.).

Kollar: 286 F.3d 1326 (Fed. Cir. 2002)

An assignment or sale of the rights in the invention and potential patent rights is not a sale of "the invention." *In re Kollar*, distinguishes licenses which trigger the on-sale bar (e.g., a standard computer software license wherein the product is just as immediately transferred to the licensee as if it were sold), from licenses that merely grant rights to an invention which do not per se trigger the on-sale bar (e.g., exclusive rights to market the invention or potential patent rights).

2133.03(c)

The "Invention" (describing pre-AIA law)

Invitrogen: 424 F.3d 1374 (Fed. Cir. 2005)

The Supreme Court's "ready for patenting" prong applies in the context of both the on sale and public use bars. "Ready for patenting," the second prong of the *Pfaff* test, 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. In *Invitrogen Corp. v. Biocrest Manufacturing L.P.*, The patent was held invalid because the invention for a computer chip socket was "ready for patenting" when it was offered for sale more than one year prior to the application filing date. Even though the invention had not yet

been reduced to practice, the manufacturer was able to produce the claimed computer chip sockets using the inventor's detailed drawings and specifications, and those sockets contained all elements of invention claimed in the patent.

Helsinn Healthcare S.A. v. Teva Pharmaceuticals USA, Inc.

139 S.Ct. 628 (2019)

More than 20 years ago, this Court determined that an invention was "on sale" within the meaning of an earlier version of § 102(a) when it was "the subject of a commercial offer for sale" and "ready for patenting." *Pfaff*. We did not further require that the sale make the details of the invention available to the public. In light of this earlier construction, we determine that the reenactment of the phrase "on sale" in the AIA did not alter this meaning. Accordingly, a commercial sale to a third party who is required to keep the invention confidential may place the invention "on sale" under the AIA.

5 "otherwise available to the public"

The old § 102 had a closed list of prior art categories. The open-ended language "otherwise available to the public" is new with the AIA. In the PTO's view, "This 'catch-all' provision permits decision makers to focus on whether the disclosure was 'available to the public,' rather than on the means by which the claimed invention became available to the public or whether a disclosure constitutes a 'printed publication' or falls within another category of prior art."

MPEP § 2152.02(e)

c Priority

The AIA's novelty provisions took effect on March 16, 2013. They apply to any applications filed on or after that date. Applications filed before that date are examined under the old pre-AIA rules.

1 Old § 102

Patent Act (pre-AIA)

A person shall be entitled to a patent unless –

- (a) the invention was [prior art by someone else] before the invention thereof by the applicant for patent, or
- (b) the invention was [prior art by anyone] more than one year prior to the date of the application for patent, or
- (g) before such person's invention thereof, the invention was made by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not

35 U.S.C. § 102

Conditions for patentability; novelty (before March 16, 2013)

As hinted above, the categories of prior art under the old § 102 varied significantly from subsection to subsection. It's not necessary to get into the details to understand the modern priority rules. Some additional subsections have been omitted. Old § 102 was absurdly intricate.

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.

Pay attention to the structural differences between old subsections (a), (b), and (g). Old § 102(a) was a *novelty* provision: it denied a patent where someone else engaged in activity showing that the applicant's invention was not novel when it was supposedly "invented." Old § 102(b) was a *statutory bar*: it denied a patent to an applicant who waited too long to apply. And old § 102(g) was a true *priority* provision that dealt with the non-uncommon situation in which two parties independently came up with the same invention and neither of them generated prior art that would block the other's application.

To apply old § 102(a), it was necessary to break down the inventive process. The basic concepts were "invention" (i.e. "conception"), "reduction to practice," and "reasonable diligence."

Manual of Patent Examination Procedure

§ 2138

Pre-AIA 35 U.S.C. 102(g)

Pre-AIA 35 U.S.C. 102(g) issues such as conception, reduction to practice and diligence, while more commonly applied to interference matters, also arise in other contexts.

Subsection (g) of pre-AIA 35 U.S.C § 102 is the basis of interference practice for determining priority of invention between two parties. An interference is an *inter partes* proceeding directed at determining the first to invent as among the parties to the proceeding, involving two or more pending applications naming different inventors or one or more pending applications and one or more unexpired patents naming different inventors. The United States [was] unusual in having a first to invent rather than a first to file system. Upon conclusion of an interference, subject matter claimed by the losing party that was the basis of the interference is rejected under pre-AIA 35 U.S.C. § 102(g).

On rare occasions conception and reduction to practice occur simultaneously.

Reduction to practice may be an actual reduction or a constructive reduction to practice which occurs when a patent application on the claimed invention is filed. The filing of a patent application serves as conception and constructive reduction to practice of the subject matter described in the application. Thus the inventor need not provide evidence of either conception or actual reduction to practice when relying on the content of the patent application.

In an interference proceeding, a party seeking to establish an actual reduction to practice must satisfy a two-prong test: (1) the party constructed an embodiment or performed a process that met every element of the interference count, and (2) the embodiment or process operated for its intended purpose. Actual reduction to practice requires a showing of the invention in a physical or tangible form that shows every element of the count. For an actual reduction to practice, the invention must have been sufficiently tested to demonstrate that it will work for its intended purpose, but it need not be in a commercially satisfactory stage of development. If a device is so simple, and its purpose and efficacy so obvious, construction alone is sufficient to demonstrate workability. The invention must be recognized and appreciated for a reduction to practice to occur. An inventor need not understand precisely why his invention works in order to achieve an actual reduction to practice.

Morway v. Bondi

203 F.2d 742 (CCPA 1953)

[Morway (appellants) conceived on or before April 12, 1945 and filed on December 27, 1946. Bondi (appellees) conceived on June 14, 1945 and filed on October 31, 1945. Both parties were entitled to constructive reduction to practice as of their filing dates.]

Appellants contend that there was a reduction to practice between January 31, 1945 and March 13, 1945. It is claimed that on January 30, 1945 Beerbower, one of the joint appellants herein, compounded a grease containing Carbowax 1500, which grease is said to meet the issue counts. That grease was subjected to a standard Norma-Hoffman oxidation test. It is claimed that the results of this test were good, and counsel for Morway et al. contends that there was an actual reduction to practice when this grease was successfully tested.

Mr. Alan Beerbower, one of the appellants herein, testified on cross-examination that the Norma-Hoffman bomb test merely measures resistance of the grease to oxidation under static or storage conditions, but not under service conditions; and that he would not be able to predict service life from Norma-Hoffman bomb results. In view of the foregoing testimony by appellants' expert witnesses, we think it clear that a successful Norma-Hoffman laboratory test falls far short of simulating actual service tests with sufficient closeness to constitute a reduction to practice.

Thus, appellants, although first to conceive, were last to reduce to practice. If they are to prevail, they must affirmatively establish continuing and reasonable diligence in reducing to practice or reasonable excuse for failure to act. Such diligence must be shown from a date immediately prior to the time that Bondi conceived, on June 14, 1945, until reduction to practice by themselves as first conceivers.

The record shows the following activities by appellants:

- On June 7, August 1, August 15, and September 28, 1945, greases meeting the counts were prepared, and laboratory tests, such as the A.S.T.M. penetration test, were conducted on them.
- On October 2, 1945, Miss O'Halloran conducted a Ford Wheel Bearing Test on the grease prepared September 28.
- On December 26, 1945, a grease meeting the counts was prepared, and laboratory tests conducted on it.
- The record then shows further activities (mainly aimed at possible commercial exploitation of the grease in issue) in February, May, August, and November of 1946.

There was no activity at all between June 7 and August 1, 1945, thereby creating a hiatus of one and one-half months right at the outset of the critical period when Bondi entered the field. There is a further hiatus of one and one-half months, during the early part of the critical period, from August 15 to September 28, 1945, when there was no activity at all by Morway et al. It seems manifest from the above chronology that the activities by Morway et al. from early June 1945 to December 1946 were quite sporadic throughout that period.

In our opinion, the foregoing activities by appellants do not constitute reasonable diligence in reducing the invention to practice during the critical period.

Appellants have introduced testimony to the effect that the joint inventors herein and other assisting members of the research team which developed the grease of the issue counts had many other projects and duties. For example, there is testimony indicating that Mr. Morway's primary assignment at the time in question was the development of a carbon black lubricant; and that Mr. Beerbower's primary assignment was the development of a continuous process for manufacturing greases. When the party first to conceive voluntarily lays aside his inventive concept because he is engrossed in pursuit of other projects, this is generally not an acceptable excuse for failure to act diligently in reducing to practice. Clearly there may be circumstances creating exceptions to this rule, but we find no such circumstances in this record.

Morway et al. also seek to explain their lack of diligence by reference to wartime assignments which allegedly took first call on their time. In proper cases, war activities may reasonably excuse the first conceiver's failure to act diligently, but lack of diligence is not excused by a mere assertion that the applicant was engaged in war work. We fail to find in the record before us adequate evidence of such war activities as would excuse appellants' lack of reasonable diligence.

2 *New § 102***Patent Act**

- (a) A person shall be entitled to a patent unless—
- (1) the claimed invention was [prior art] before the effective filing date of the claimed invention; or
 - (2) the claimed invention was described in a [published patent or application that] names another inventor and was effectively filed before the effective filing date of the claimed invention.
- (b) *Exceptions.* —
- (1) A disclosure made 1 year or less before the effective filing date of a claimed invention shall not be prior art to the claimed invention under subsection (a)(1) if—
 - (A) the disclosure was made by the inventor or joint inventor or by another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor; or
 - (B) the subject matter disclosed had, before such disclosure, been publicly disclosed by the inventor or a joint inventor or another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor.

35 U.S.C. § 102
Conditions for patentability; novelty

Do you see why the passage of the AIA is described as taking the United States from a “first to invent” system to a “first inventor to file” system? And also, in view of *Morway*, why the AIA’s proponents described it as simplifying interference practice and giving inventors greater certainty about their rights? (Who would have won in *Morway* under the AIA?)

The AIA’s proponents also described it as harmonizing the United States with the rest of the world, where priority is assessed strictly on a first-to-file basis. The one-year grace period of new § 102(b)(1)(B), however, is not typical of true first-to-file systems.

Questions

1. Suppose that from 1960 to 1972, the Acme Corporation sold the Bait-o-Matic, a grey egg-shaped plastic container containing sharp-grained sand with a grain size of 1/25 of an inch designed to be used to immobilize earthworms. Which claims, if

any, of the Lukehart worm-immobilizing patent are invalid because they were anticipated by the Bait-o-Matic?

2. Ivan Inventor is working on a new battery design. Ivan has identified promising materials, but has not yet found a way to combine them safely in a sealed container. Ivan is afraid that others are working on a similar invention. What factors do Ivan and his patent attorney need to consider in deciding when to file?

Pleistocene Park Problem

Two biotechnology firms, Crichton Industries and Spielberg Genetics, have been attempting to clone a woolly mammoth (an elephant-like mammal that became extinct about 3,500 years ago) from scattered preserved DNA fragments. The teams made only slow progress at first; the available mammoth DNA fragments were too short and too numerous to combine into a complete DNA sequence using standard laboratory techniques.

Then, on January 1, 2004, mathematician Rube Goldblum published an academic paper describing efficient ways to arrange books in libraries. Crichton's lead researcher read the paper on February 2, 2005 and realized that the method Goldblum was describing could be used to arrange DNA fragments and compile complete DNA sequences.

Goldblum published (on March 3, 2006), a follow-up academic paper explaining how to apply his book-sorting method to the problem of DNA compilation. An executive at Spielberg read the paper on April 4, 2007, and decided to try the technique on the woolly mammoth problem.

On May 5, 2013, in a Crichton laboratory, a modern elephant implanted with a woolly mammoth embryo using standard artificial insemination techniques gave birth to a live woolly mammoth. On June 6, 2013, a Spielberg elephant successfully gave birth to a woolly mammoth. Because both teams started from the same, publicly available sets of woolly mammoth DNA fragments, their DNA sequences were identical. The next day, June 7, 2013, Spielberg held a press conference to announce the birth; it showed video of the baby mammoth and its scientists passed out CDs with the DNA sequence.

On July 12, 2013, Spielberg filed a patent application claiming "a woolly mammoth, having the DNA sequence ..." Crichton filed its own patent application on August 20, 2013 with an identical claim.

Which application, if either, should the PTO allow, and why? Would the answer be different under the old § 102?

3 Nonobviousness

Patent Act

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

KSR Intern. Co. v. Teleflex Inc. 550 U.S. 398 (2007)

The patent at issue, United States Patent No. 6,237,565 B1, is entitled “Adjustable Pedal Assembly With Electronic Throttle Control.” Supplemental App. 1. The patentee is Steven J. Engelgau, and the patent is referred to as “the Engelgau patent.” Claim 4 of the Engelgau patent describes a mechanism for combining an electronic sensor with an adjustable automobile pedal so the pedal’s position can be transmitted to a computer that controls the throttle in the vehicle’s engine.

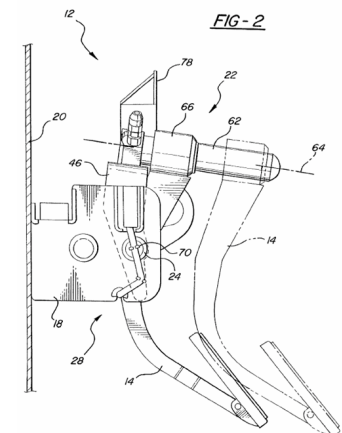
In *Graham v. John Deere Co.*, the Court set out a framework for applying the statutory language of § 103:

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

If a court, or patent examiner, conducts this analysis and concludes the claimed subject matter was obvious, the claim is invalid under § 103.

Seeking to resolve the question of obviousness with more uniformity and consistency, the Court of Appeals for the Federal Circuit has employed an approach referred to by the parties as the “teaching, suggestion, or motivation” test (TSM test), under which a patent claim is only proved obvious if “some motivation or suggestion to

35 U.S.C. § 103
Conditions for patentability; non-obvious subject matter



The Engelgau pedal
Graham: 383 U.S. 1 (1966)

combine the prior art teachings” can be found in the prior art, the nature of the problem, or the knowledge of a person having ordinary skill in the art. KSR challenges that test, or at least its application in this case.

I

A

In car engines without computer-controlled throttles, the accelerator pedal interacts with the throttle via cable or other mechanical link. The pedal arm acts as a lever rotating around a pivot point. In a cable-actuated throttle control the rotation caused by pushing down the pedal pulls a cable, which in turn pulls open valves in the carburetor or fuel injection unit. The wider the valves open, the more fuel and air are released, causing combustion to increase and the car to accelerate. When the driver takes his foot off the pedal, the opposite occurs as the cable is released and the valves slide closed.

In the 1990’s it became more common to install computers in cars to control engine operation. Computer-controlled throttles open and close valves in response to electronic signals, not through force transferred from the pedal by a mechanical link. Constant, delicate adjustments of air and fuel mixture are possible. The computer’s rapid processing of factors beyond the pedal’s position improves fuel efficiency and engine performance.

For a computer-controlled throttle to respond to a driver’s operation of the car, the computer must know what is happening with the pedal. A cable or mechanical link does not suffice for this purpose; at some point, an electronic sensor is necessary to translate the mechanical operation into digital data the computer can understand.

Before discussing sensors further we turn to the mechanical design of the pedal itself. In the traditional design a pedal can be pushed down or released but cannot have its position in the footwell adjusted by sliding the pedal forward or back. As a result, a driver who wishes to be closer or farther from the pedal must either reposition himself in the driver’s seat or move the seat in some way. In cars with deep footwells these are imperfect solutions for drivers of smaller stature. To solve the problem, inventors, beginning in the 1970’s, designed pedals that could be adjusted to change their location in the footwell. Important for this case are two adjustable pedals disclosed in U.S. Patent Nos. [5,010,782](#) (filed July 28, 1989) (Asano) and [5,460,061](#) (filed Sept. 17, 1993) (Redding). The Asano patent reveals a support structure that houses the pedal so that even when the pedal location is adjusted relative to the driver, one of the pedal’s pivot points stays fixed. The pedal is also designed so that the force necessary to push the pedal down is the same regardless of adjustments to its location. The

Redding patent reveals a different, sliding mechanism where both the pedal and the pivot point are adjusted.

We return to sensors. Well before Engelgau applied for his challenged patent, some inventors had obtained patents involving electronic pedal sensors for computer-controlled throttles. These inventions, such as the device disclosed in U.S. Patent No. 5,241,936 (filed Sept. 9, 1991) ('936), taught that it was preferable to detect the pedal's position in the pedal assembly, not in the engine. The '936 patent disclosed a pedal with an electronic sensor on a pivot point in the pedal assembly. U.S. Patent No. 5,063,811 (filed July 9, 1990) (Smith) taught that to prevent the wires connecting the sensor to the computer from chafing and wearing out, and to avoid grime and damage from the driver's foot, the sensor should be put on a fixed part of the pedal assembly rather than in or on the pedal's footpad.

In addition to patents for pedals with integrated sensors inventors obtained patents for self-contained modular sensors. A modular sensor is designed independently of a given pedal so that it can be taken off the shelf and attached to mechanical pedals of various sorts, enabling the pedals to be used in automobiles with computer-controlled throttles. One such sensor was disclosed in U.S. Patent No. (filed Dec. 18, 1992) ('068). In 1994, Chevrolet manufactured a line of trucks using modular sensors attached to the pedal support bracket, adjacent to the pedal and engaged with the pivot shaft about which the pedal rotates in operation.

The prior art contained patents involving the placement of sensors on adjustable pedals as well. For example, U.S. Patent No. 5,819,593 (filed Aug. 17, 1995) (Rixon) discloses an adjustable pedal assembly with an electronic sensor for detecting the pedal's position. In the Rixon pedal the sensor is located in the pedal footpad. The Rixon pedal was known to suffer from wire chafing when the pedal was depressed and released.

This short account of pedal and sensor technology leads to the instant case.

B

Engelgau filed the patent application on August 22, 2000 as a continuation of a previous application for U.S. Patent No. 6,109,241, which was filed on January 26, 1999. He has sworn he invented the patent's subject matter on February 14, 1998. The Engelgau patent discloses an adjustable electronic pedal described in the specification as a "simplified vehicle control pedal assembly that is less expensive, and which uses fewer parts and is easier to package within the vehicle." Claim 4 of the patent, at issue here, describes:

A vehicle control pedal apparatus comprising:

a support adapted to be mounted to a vehicle structure;
an adjustable pedal assembly having a pedal arm moveable in for[e] and aft directions with respect to said support;
a pivot for pivotally supporting said adjustable pedal assembly with respect to said support and defining a pivot axis; and
an electronic control attached to said support for controlling a vehicle system;
said apparatus characterized by said electronic control being responsive to said pivot for providing a signal that corresponds to pedal arm position as said pedal arm pivots about said pivot axis between rest and applied positions wherein the position of said pivot remains constant while said pedal arm moves in fore and aft directions with respect to said pivot.

We agree with the District Court that the claim discloses “a position-adjustable pedal assembly with an electronic pedal position sensor attached to the support member of the pedal assembly. Attaching the sensor to the support member allows the sensor to remain in a fixed position while the driver adjusts the pedal.”

Before issuing the Engelgau patent the U.S. Patent and Trademark Office (PTO) rejected one of the patent claims that was similar to, but broader than, the present claim 4. The claim did not include the requirement that the sensor be placed on a fixed pivot point. The PTO concluded the claim was an obvious combination of the prior art disclosed in Redding and Smith, explaining:

Since the prior art references are from the field of endeavor, the purpose disclosed would have been recognized in the pertinent art of Redding. Therefore it would have been obvious to provide the device of Redding with the means attached to a support member as taught by Smith.

In other words Redding provided an example of an adjustable pedal and Smith explained how to mount a sensor on a pedal’s support structure, and the rejected patent claim merely put these two teachings together.

Although the broader claim was rejected, claim 4 was later allowed because it included the limitation of a fixed pivot point, which distinguished the design from Redding’s. Engelgau had not included Asano among the prior art references, and Asano was not mentioned in the patent’s prosecution. Thus, the PTO did not have before it an adjustable pedal with a fixed pivot point. The patent issued on May

29, 2001 and was assigned to Teleflex.

C

The District Court determined, in light of the expert testimony and the parties' stipulations, that the level of ordinary skill in pedal design was "an undergraduate degree in mechanical engineering (or an equivalent amount of industry experience) and familiarity with pedal control systems for vehicles." Following *Graham's* direction, the court compared the teachings of the prior art to the claims of Engelgau. It found "little difference." Asano taught everything contained in claim 4 except the use of a sensor to detect the pedal's position and transmit it to the computer controlling the throttle. That additional aspect was revealed in sources such as the '068 patent and the sensors used by Chevrolet.

Under the controlling cases from the Court of Appeals for the Federal Circuit, however, the District Court was not permitted to stop there. The court was required also to apply the TSM test. The District Court held KSR had satisfied the test. It reasoned (1) the state of the industry would lead inevitably to combinations of electronic sensors and adjustable pedals, (2) Rixon provided the basis for these developments, and (3) Smith taught a solution to the wire chafing problems in Rixon, namely locating the sensor on the fixed structure of the pedal. This could lead to the combination of Asano, or a pedal like it, with a pedal position sensor.

The conclusion that the Engelgau design was obvious was supported, in the District Court's view, by the PTO's rejection of the broader version of claim 4. Had Engelgau included Asano in his patent application, it reasoned, the PTO would have found claim 4 to be an obvious combination of Asano and Smith, as it had found the broader version an obvious combination of Redding and Smith. As a final matter, the District Court held that the secondary factor of Teleflex's commercial success with pedals based on Engelgau's design did not alter its conclusion.

With principal reliance on the TSM test, the Court of Appeals reversed. It ruled the District Court had not been strict enough in applying the test, having failed to make "findings as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of the invention to attach an electronic control to the support bracket of the Asano assembly." The Court of Appeals held that the District Court was incorrect that the nature of the problem to be solved satisfied this requirement because unless the "prior art references address[ed] the precise problem that the patentee was trying to solve," the problem would not motivate an inventor to look at those references.

Here, the Court of Appeals found, the Asano pedal was designed

to solve the “constant ratio problem” – that is, to ensure that the force required to depress the pedal is the same no matter how the pedal is adjusted—whereas Engelgau sought to provide a simpler, smaller, cheaper adjustable electronic pedal. As for Rixon, the court explained, that pedal suffered from the problem of wire chafing but was not designed to solve it. In the court’s view Rixon did not teach anything helpful to Engelgau’s purpose. Smith, in turn, did not relate to adjustable pedals and did not “necessarily go to the issue of motivation to attach the electronic control on the support bracket of the pedal assembly.” When the patents were interpreted in this way, the Court of Appeals held, they would not have led a person of ordinary skill to put a sensor on the sort of pedal described in Asano.

That it might have been obvious to try the combination of Asano and a sensor was likewise irrelevant, in the court’s view, because “‘obvious to try’ has long been held not to constitute obviousness.”

II

A

We begin by rejecting the rigid approach of the Court of Appeals. Throughout this Court’s engagement with the question of obviousness, our cases have set forth an expansive and flexible approach inconsistent with the way the Court of Appeals applied its TSM test here. To be sure, *Graham* recognized the need for “uniformity and definiteness.” Yet the principles laid down in *Graham* reaffirmed the “functional approach” of *Hotchkiss v. Greenwood*.

Hotchkiss: 52 U.S. 248 (1851)

Neither the enactment of § 103 nor the analysis in *Graham* disturbed this Court’s earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art. For over a half century, the Court has held that a patent for a combination which only unites old elements with no change in their respective functions obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men. This is a principal reason for declining to allow patents for what is obvious. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. Three cases decided after *Graham* illustrate the application of this doctrine.

Adams: 383 U.S. 39 (1966)

In *United States v. Adams*, a companion case to *Graham*, the Court considered the obviousness of a “wet battery” that varied from prior designs in two ways: It contained water, rather than the acids conventionally employed in storage batteries; and its electrodes were magnesium and cuprous chloride, rather than zinc and silver chloride. The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution

of one element for another known in the field, the combination must do more than yield a predictable result. It nevertheless rejected the Government's claim that Adams's battery was obvious. The Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious. When Adams designed his battery, the prior art warned that risks were involved in using the types of electrodes he employed. The fact that the elements worked together in an unexpected and fruitful manner supported the conclusion that Adams's design was not obvious to those skilled in the art.

In *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, the Court elaborated on this approach. The subject matter of the patent before the Court was a device combining two pre-existing elements: a radiant-heat burner and a paving machine. The device, the Court concluded, did not create some new synergy: The radiant-heat burner functioned just as a burner was expected to function; and the paving machine did the same. The two in combination did no more than they would in separate, sequential operation. In those circumstances, "while the combination of old elements performed a useful function, it added nothing to the nature and quality of the radiant-heat burner already patented," and the patent failed under § 103.

Finally, in *Sakraida v. Ag Pro, Inc.*, the Court derived from the precedents the conclusion that when a patent "simply arranges old elements with each performing the same function it had been known to perform" and yields no more than one would expect from such an arrangement, the combination is obvious..

The principles underlying these cases are instructive when the question is whether a patent claiming the combination of elements of prior art is obvious. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* and *Anderson's Black-Rock* are illustrative – a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

Following these principles may be more difficult in other cases than it is here because the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready

Anderson's Black-Rock: 396 U.S. 57 (1969)

Compare *Adams* and *Anderson's Black-Rock* What makes the two cases distinguishable

Sakraida: 425 U.S. 273 (1976)

for the improvement. Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

B

When it first established the requirement of demonstrating a teaching, suggestion, or motivation to combine known elements in order to show that the combination is obvious, the Court of Customs and Patent Appeals captured a helpful insight. As is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

Helpful insights, however, need not become rigid and mandatory formulas; and when it is so applied, the TSM test is incompatible with our precedents. The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.

C

One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.

The first error of the Court of Appeals in this case was to foreclose this reasoning by holding that courts and patent examiners should look only to the problem the patentee was trying to solve. The Court of Appeals failed to recognize that the problem motivating the patentee may be only one of many addressed by the patent's subject matter. The question is not whether the combination was obvious to the patentee but whether the combination was obvious to a person with ordinary skill in the art. Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

The second error of the Court of Appeals lay in its assumption that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem. The primary purpose of Asano was solving the constant ratio problem; so, the court concluded, an inventor considering how to put a sensor on an adjustable pedal would have no reason to consider putting it on the Asano pedal. Common sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle. Regardless of Asano's primary purpose, the design provided an obvious example of an adjustable pedal with a fixed pivot point; and the prior art was replete with patents indicating that a fixed pivot point was an ideal mount for a sensor. The idea that a designer hoping to make an adjustable electronic pedal would ignore Asano because Asano was designed to solve the constant ratio problem makes little sense. A person of ordinary skill is also a person of ordinary creativity, not an automaton.

The same constricted analysis led the Court of Appeals to conclude, in error, that a patent claim cannot be proved obvious merely by showing that the combination of elements was obvious to try. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.

In cases in which "common sense" is used to supply a missing limitation, as distinct from a motivation to combine, our search for a reasoned basis for resort to common sense must be searching. Appellees have failed to show why it would be common sense for the "Add to address book" function to operate by first searching for entries with the same telephone number.

Arendi S.A.R.L. v. Apple, Inc., 832 F.3d 1355 (Fed. Cir Aug. 10, 2016). SRSLY?

When we apply the standards we have explained to the instant facts, claim 4 must be found obvious.

B

The District Court was correct to conclude that, as of the time Engelgau designed the subject matter in claim 4, it was obvious to a person of ordinary skill to combine Asano with a pivot-mounted pedal position sensor. There then existed a marketplace that created a strong incentive to convert mechanical pedals to electronic pedals, and the prior art taught a number of methods for achieving this advance. The Court of Appeals considered the issue too narrowly by, in effect, asking whether a pedal designer writing on a blank slate would have chosen both Asano and a modular sensor similar to the ones used in the Chevrolet truckline and disclosed in the '068 patent. The proper question to have asked was whether a pedal designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, would have seen a benefit to upgrading Asano with a sensor.

In automotive design, as in many other fields, the interaction of multiple components means that changing one component often requires the others to be modified as well. Technological developments made it clear that engines using computer-controlled throttles would become standard. As a result, designers might have decided to design new pedals from scratch; but they also would have had reason to make pre-existing pedals work with the new engines. Indeed, upgrading its own pre-existing model led KSR to design the pedal now accused of infringing the Engelgau patent.

For a designer starting with Asano, the question was where to attach the sensor. The consequent legal question, then, is whether a pedal designer of ordinary skill starting with Asano would have found it obvious to put the sensor on a fixed pivot point. The prior art discussed above leads us to the conclusion that attaching the sensor where both KSR and Engelgau put it would have been obvious to a person of ordinary skill.

The '936 patent taught the utility of putting the sensor on the pedal device, not in the engine. Smith, in turn, explained to put the sensor not on the pedal's footpad but instead on its support structure. And from the known wire-chafing problems of Rixon, and Smith's teaching that "the pedal assemblies must not precipitate any motion in the connecting wires," the designer would know to place the sensor on a nonmoving part of the pedal structure. The most obvious nonmoving point on the structure from which a sensor can easily detect the pedal's position is a pivot point. The designer, accordingly, would follow Smith in mounting the sensor on a pivot, thereby designing an adjustable electronic pedal covered by claim 4.

Just as it was possible to begin with the objective to upgrade Asano to work with a computer-controlled throttle, so too was it possible to take an adjustable electronic pedal like Rixon and seek an improvement that would avoid the wire-chafing problem. Following similar steps to those just explained, a designer would learn from Smith to avoid sensor movement and would come, thereby, to Asano because Asano disclosed an adjustable pedal with a fixed pivot.

Like the District Court, finally, we conclude Teleflex has shown no secondary factors to dislodge the determination that claim 4 is obvious. Proper application of Graham and our other precedents to these facts therefore leads to the conclusion that claim 4 encompassed obvious subject matter. As a result, the claim fails to meet the requirement of § 103.

IV

We build and create by bringing to the tangible and palpable reality around us new works based on instinct, simple logic, ordinary inferences, extraordinary ideas, and sometimes even genius. These advances, once part of our shared knowledge, define a new threshold from which innovation starts once more. And as progress beginning from higher levels of achievement is expected in the normal course, the results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise patents might stifle, rather than promote, the progress of useful arts.

Titanium Metals Corp. of America v. Banner

778 F.2d 775 (Fed. Cir. 1985)

Little more need be said in support of the examiner's rejection of claim 3, affirmed by the board, on the ground that its more specific subject matter would have been obvious at the time the invention was made from the knowledge disclosed in the reference.

As admitted by appellee's affidavit evidence from James A. Hall, the Russian article discloses two alloys having compositions very close to that of claim 3, which is 0.3% Mo and 0.8% Ni, balance titanium. The two alloys in the prior art have 0.25% Mo-0.75% Ni and 0.31% Mo-0.94% Ni, respectively. The proportions are so close that prima facie one skilled in the art would have expected them to have the same properties. Appellee produced no evidence to rebut that prima facie case. The specific alloy of claim 3 must therefore be considered to have been obvious from known alloys.

In re Clay

966 F.2d 656 (Fed. Cir. 1992)

Clay's invention, assigned to Marathon Oil Company, is a process for storing refined liquid hydrocarbon product in a storage tank hav-

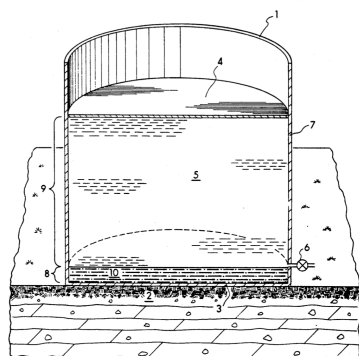
The Bud Light Foozie consists of a foam can holder attached to a foam we're-number-one finger. Obvious? What about a Sawzie -- a foam can holder attached to a rotary saw?

ing a dead volume between the tank bottom and its outlet port. The process involves preparing a gelation solution which gels after it is placed in the tank's dead volume; the gel can easily be removed by adding to the tank a gel-degrading agent such as hydrogen peroxide.

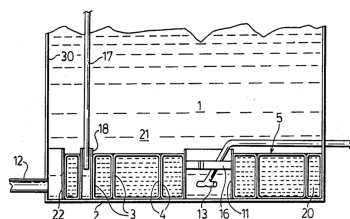
Two prior art references were applied against the claims on appeal. They were U.S. Patent 4,664,294 (Hetherington), which discloses an apparatus for displacing dead space liquid using impervious bladders, or large bags, formed with flexible membranes; and U.S. Patent 4,683,949 (Sydansk), also assigned to Clay's assignee, Marathon Oil Company, which discloses a process for reducing the permeability of hydrocarbon-bearing formations and thus improving oil production, using a gel similar to that in Clay's invention.

The Board agreed with the examiner that, although neither reference alone describes Clay's invention, Hetherington and Sydansk combined support a conclusion of obviousness. It held that one skilled in the art would glean from Hetherington that Clay's invention "was appreciated in the prior art and solutions to that problem generally involved filling the dead space with something."

The Board also held that Sydansk would have provided one skilled in the art with information that a gelation system would have been impervious to hydrocarbons once the system gelled. The Board combined the references, finding that the "cavities" filled by Sydansk are sufficiently similar to the "volume or void space" being filled by Hetherington for one of ordinary skill to have recognized the applicability of the gel to Hetherington.



Clay's process



Hetherington's apparatus

DISCUSSION

The issue presented in this appeal is whether the Board's conclusion was correct that Clay's invention would have been obvious from the combined teachings of Hetherington and Sydansk.

A prerequisite to making this finding is determining what is "prior art." Although § 103 does not, by its terms, define the "art to which [the] subject matter [sought to be patented] pertains," this determination is frequently couched in terms of whether the art is analogous or not, i.e., whether the art is too remote to be treated as prior art. Clay argues that the claims at issue were improperly rejected over Hetherington and Sydansk, because Sydansk is nonanalogous art.

Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

The Board found Sydansk to be within the field of Clay's endeavor because, as the Examiner stated, "one of ordinary skill in the

art would certainly glean from Sydansk that the rigid gel as taught therein would have a number of applications within the manipulation of the storage and processing of hydrocarbon liquids and that the gel as taught in Sydansk would be expected to function in a similar manner as the bladders in the Hetherington patent." These findings are clearly erroneous.

The PTO argues that Sydansk and Clay's inventions are part of a common endeavor – "maximizing withdrawal of petroleum stored in petroleum reservoirs." However, Sydansk cannot be considered to be within Clay's field of endeavor merely because both relate to the petroleum industry. Sydansk teaches the use of a gel in unconfined and irregular volumes within generally underground natural oil-bearing formations to channel flow in a desired direction; Clay teaches the introduction of gel to the confined dead volume of a man-made storage tank. The Sydansk process operates in extreme conditions, with petroleum formation temperatures as high as 115°C and at significant well bore pressures; Clay's process apparently operates at ambient temperature and atmospheric pressure. Clay's field of endeavor is the storage of refined liquid hydrocarbons. The field of endeavor of Sydansk's invention, on the other hand, is the extraction of crude petroleum. The Board clearly erred in considering Sydansk to be within the same field of endeavor as Clay's.

Even though the art disclosed in Sydansk is not within Clay's field of endeavor, the reference may still properly be combined with Hetherington if it is reasonably pertinent to the problem Clay attempts to solve. A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve. If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection. An inventor may well have been motivated to consider the reference when making his invention. If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it.

Sydansk's gel treatment of underground formations functions to fill anomalies¹ so as to improve flow profiles and sweep efficiencies

¹Sydansk refers to an anomaly, one of two general region types in an oil-bearing geological formation, as "a volume or void space [e.g., 'streaks, fractures, fracture networks, vugs, solution channels, caverns, washouts, cavities, etc.'] in the formation having very high permeability relative to the matrix [the other region type, consisting of homogeneous porous rock]."

of injection and production fluids through a formation, while Clay's gel functions to displace liquid product from the dead volume of a storage tank. Sydansk is concerned with plugging formation anomalies so that fluid is subsequently diverted by the gel into the formation matrix, thereby forcing bypassed oil contained in the matrix toward a production well. Sydansk is faced with the problem of recovering oil from rock, i.e., from a matrix which is porous, permeable sedimentary rock of a subterranean formation where water has channeled through formation anomalies and bypassed oil present in the matrix. Such a problem is not reasonably pertinent to the particular problem with which Clay was involved – preventing loss of stored product to tank dead volume while preventing contamination of such product.

A person having ordinary skill in the art would not reasonably have expected to solve the problem of dead volume in tanks for storing refined petroleum by considering a reference dealing with plugging underground formation anomalies. The Board's finding to the contrary is clearly erroneous. Since Sydansk is non-analogous art, the rejection over Hetherington in view of Sydansk cannot be sustained.

KSR Problem

In relevant part, claim 4 of the patent in suit in KSR comprises:

- A pedal
- that is adjustable
- and has a fixed pivot,
- and a sensor
- that is in the pedal
- and is and mounted on a fixed position

The Court had before it a number of pieces of prior art, and had to decide whether claim 4 was obvious in light of them. Please look closely at the Court's descriptions of the following prior art:

- Asano
- Redding
- '936
- Smith
- '068
- Certain 1994 Chevrolet trucks
- Rixon

Which of the characteristics of claim 4, as listed above, do each of these prior art references disclose? *Make a chart.* What improvements, if any, does each prior art reference suggest to a person having ordinary skill in the art. Using your chart as a guide, explain whether the

Supreme Court's analysis is persuasive.

D Infringement: Similarity


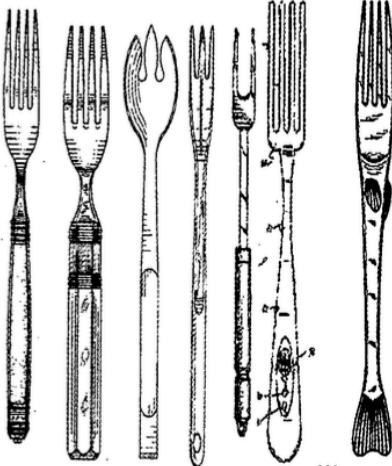
Jeanne C. Fromer, Claiming Intellectual Property

76 U. Chi. L. Rev. 719 (2009)

To claim the set of things protected by an intellectual property right, one might be required to delineate to the public the set's bounds so that a third party could determine whether any particular embodiment is a set member thus protected by the right. This sort of claiming is known as peripheral claiming." Alternatively, one might publicly describe only some members of the set, which are clearly protected under the right, and use them to determine whether other items are similar enough to the enumerated members to fall also within the same right. This sort of claiming is known as central claiming, in that the rightsholder describes the central, or prototypical, set members, but the right tends to cover a broader, similar set of items.

There is another important dimension on which claiming can vary, which until now has not been readily appreciated. Either peripheral or central claiming can be done by exemplar or by characteristic. Claiming by exemplar entails enumerating particular members of the set of protected embodiments. In the case of peripheral claiming by exemplar, one would enumerate each set member, while for central claiming by exemplar, one would catalog only some set members. Claiming by characteristic, on the other hand, requires a description of the essential properties of the set's members. For peripheral claiming by characteristic, one would describe the necessary and sufficient features common to all members of the set of protected embodiments. And for central claiming by characteristic, one would express the features common to at least some central members of the set of protected embodiments. Claiming by exemplar and by characteristic can be seen as opposing points on a spectrum of how much distillation of the actual works' characteristics is necessary.

TABLE 1
DIFFERENT WAYS TO CLAIM THE FORK

	Central Claiming	Peripheral Claiming
Claiming by Exemplar ³³		
Claiming by Characteristic	An instrument made out of sterling silver and having a handle attached to four prongs for piercing and carrying food	"An implement [having a handle attached to] two or more prongs," used "for eating or serving food" or "for raising, carrying, piercing, or digging" ³⁴

A statutory change in 1870 – requiring a patent applicant to “particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery” – officially (though gradually) brought peripheral claiming, almost always by characteristic, to American patent law. The Supreme Court held that, pursuant to this statutory language, the articulated bounds of the patent claim would govern the scope of the set of things protected by the patent right. Validity and infringement would thus be measured by construing the claim’s bounds and then determining whether particular embodiments fell within those bounds. Characteristic peripheral claiming – in contrast to central claiming (by characteristic or exemplar) – thus did not require courts to decide which of an invention’s properties were essential, as the patentee would delineate these qualities in the patent claims.

At least two vestiges of central claiming have remained in the patent system, namely the doctrine of equivalents and means-plus-function claims.

Model Patent Jury Instructions for the Northern District of California

A patent’s claims define what is covered by the patent. A [product] [method] directly infringes a patent if it is covered by at least one claim of the patent.

Deciding whether a claim has been directly infringed is a two-step process. The first step is to decide the meaning of the patent claim. I have already made this decision, [and I will instruct you later as to the meaning of the asserted patent claims] [and I have already instructed you as to the meaning of the asserted patent claims]. The second step is to decide whether [alleged direct infringer] has [made,] [used,] [sold,] [offered for sale] or [imported] within the United States a [product] [method] covered by a claim of the [] patent. If it has, it infringes. You, the jury, make this decision.

[With one exception,] you must consider each of the asserted claims of the patent individually, and decide whether [alleged direct infringer]'s [product] [method] infringes that claim. [The one exception to considering claims individually concerns dependent claims. A dependent claim includes all of the requirements of a particular independent claim, plus additional requirements of its own. As a result, if you find that an independent claim is not infringed, you must also find that its dependent claims are not infringed. On the other hand, if you find that an independent claim has been infringed, you must still separately decide whether the additional requirements of its dependent claims have also been infringed.]

There are two ways in which a patent claim may be directly infringed. A claim may be “literally” infringed, or it may be infringed under the “doctrine of equivalents.”

To decide whether [alleged infringer]'s [product] [method] literally infringes a claim of the [] patent, you must compare that [product] [method] with the patent claim and determine whether every requirement of the claim is included in that [product] [method]. If so, [alleged infringer]'s [product] [method] literally infringes that claim. If, however, [alleged infringer]'s [product] [method] does not have every requirement in the patent claim, [alleged infringer]'s [product] [method] does not literally infringe that claim. You must decide literal infringement for each asserted claim separately.

1 Claim Construction

Phillips v. AWH Corp. 415 F.3d 1303 (2005) (en banc)

It is a “bedrock principle” of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude. We have frequently stated that the words of a claim are generally given their ordinary and customary meaning. We have made clear, moreover, that the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the

effective filing date of the patent application.

The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation. That starting point is based on the well-settled understanding that inventors are typically persons skilled in the field of the invention and that patents are addressed to and intended to be read by others of skill in the pertinent art. S

Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. This court explained that point well in *Multiform Desiccants, Inc. v. Medzam, Ltd.*:

Multiform: 133 F.3d 1473 (Fed. Cir. 1998)

It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed. Such person is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning and usage in the field. The inventor's words that are used to describe the invention – the inventor's lexicography – must be understood and interpreted by the court as they would be understood and interpreted by a person in that field of technology. Thus the court starts the decisionmaking process by reviewing the same resources as would that person, viz., the patent specification and the prosecution history.

B

In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words. In such circumstances, general purpose dictionaries may be helpful. In many cases that give rise to litigation, however, determining the ordinary and customary meaning of the claim requires examination of terms that have a particular meaning in a field of art. Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean. Those sources include the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.

1

Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claim terms.

To begin with, the context in which a term is used in the asserted claim can be highly instructive. To take a simple example, the claim in this case refers to "steel baffles," which strongly implies that the term "baffles" does not inherently mean objects made of steel. This court's cases provide numerous similar examples in which the use of a term within the claim provides a firm basis for construing the term. [Cited cases construed the claim term "ingredients" in light of the use of the term "mixture" in the same claim phrase and the claim term "discharge rate" in light of the use of the same term in another limitation of the same claim.]

Other claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term. Because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims. Differences among claims can also be a useful guide in understanding the meaning of particular claim terms. For example, 1315*1315 the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.

2

The claims, of course, do not stand alone. Rather, they are part of a fully integrated written instrument, consisting principally of a specification that concludes with the claims. For that reason, claims must be read in view of the specification, of which they are a part. The specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.

The importance of the specification in claim construction derives from its statutory role. The close kinship between the written description and the claims is enforced by the statutory requirement that the specification describe the claimed invention in "full, clear, concise, and exact terms." In light of the statutory directive that the inventor provide a "full" and "exact" description of the claimed invention, the specification necessarily informs the proper construction of the claims.

Consistent with that general principle, our cases recognize that the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise pos-

sess. In such cases, the inventor's lexicography governs. In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor. In that instance as well, the inventor has dictated the correct claim scope, and the inventor's intention, as expressed in the specification, is regarded as dispositive.

3

In addition to consulting the specification, we have held that a court should also consider the patent's prosecution history, if it is in evidence. The prosecution history, which we have designated as part of the "intrinsic evidence," consists of the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent. Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent. Furthermore, like the specification, the prosecution history was created by the patentee in attempting to explain and obtain the patent. Yet because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes. Nonetheless, the prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.

C

Although we have emphasized the importance of intrinsic evidence in claim construction, we have also authorized district courts to rely on extrinsic evidence, which consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises. However, while extrinsic evidence can shed useful light on the relevant art, it is less significant than the intrinsic record in determining the legally operative meaning of claim language.

Within the class of extrinsic evidence, dictionaries and treatises can be useful in claim construction. We have especially noted the help that technical dictionaries may provide to a court to better understand the underlying technology and the way in which one of skill in the art might use the claim terms. Because dictionaries, and especially technical dictionaries, endeavor to collect the accepted meanings of terms used in various fields of science and technology, those resources have been properly recognized as among the many tools that can assist the court in determining the meaning of particular terminology to those of skill in the art of the invention. Such evidence,

may be considered if the court deems it helpful in determining the true meaning of language used in the patent claims.

Extrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how an invention works, to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field. However, conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court. Similarly, a court should discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.

We have viewed extrinsic evidence in general as less reliable than the patent and its prosecution history in determining how to read claim terms, for several reasons. First, extrinsic evidence by definition is not part of the patent and does not have the specification's virtue of being created at the time of patent prosecution for the purpose of explaining the patent's scope and meaning. Second, while claims are construed as they would be understood by a hypothetical person of skill in the art, extrinsic publications may not be written by or for skilled artisans and therefore may not reflect the understanding of a skilled artisan in the field of the patent. Third, extrinsic evidence consisting of expert reports and testimony is generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence. The effect of that bias can be exacerbated if the expert is not one of skill in the relevant art or if the expert's opinion is offered in a form that is not subject to cross-examination. Fourth, there is a virtually unbounded universe of potential extrinsic evidence of some marginal relevance that could be brought to bear on any claim construction question. In the course of litigation, each party will naturally choose the pieces of extrinsic evidence most favorable to its cause, leaving the court with the considerable task of filtering the useful extrinsic evidence from the fluff. Finally, undue reliance on extrinsic evidence poses the risk that it will be used to change the meaning of claims in derogation of the indisputable public records consisting of the claims, the specification and the prosecution history, thereby undermining the public notice function of patents.

In sum, extrinsic evidence may be useful to the court, but it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence. Nonetheless, because extrinsic evidence can help educate the court regarding the field of the invention and can help the court determine what a person of ordinary skill in the art would understand claim terms to mean, it

is permissible for the district court in its sound discretion to admit and use such evidence. In exercising that discretion, and in weighing all the evidence bearing on claim construction, the court should keep in mind the flaws inherent in each type of evidence and assess that evidence accordingly.

Thorner v. Sony Computer Entertainment America LLC
669 F.3d 1362 (Fed. Cir. 2012)

Craig Thorner and Virtual Reality Feedback Corporation (Appellants, collectively) accused Sony Computer Entertainment America LLC and a number of other Sony entities (Sony, collectively) of infringing claims of U.S. patent no. 6,422,941 ('941 patent) relating to a tactile feedback system for computer video games. The district court construed disputed claim terms and the parties stipulated to a judgment of noninfringement. Because the district court improperly limited the term "attached to said pad" to mean attachment only to an external surface and erred in its construction of the term "flexible", we vacate and remand.

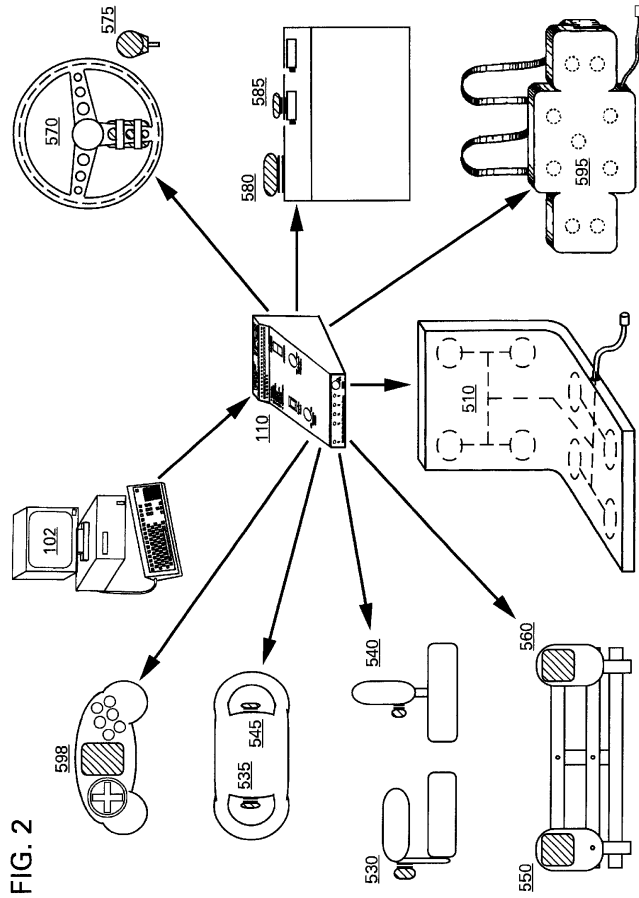
BACKGROUND

The '941 patent describes a tactile feedback system for use with video games. Figure 2 shows the many different embodiments of the invention:

Tactile feedback controller 110 is part of a larger gaming system that operates one or more of the devices shown above. Each device includes some type of actuator that provides tactile feedback to a user in response to certain game activities. For instance, the actuators in hand-held game controller 598 may vibrate during a crash in a car racing game. Independent claim 1 requires "a flexible pad," "a plurality of actuators attached to said pad" and a control circuit that activates the actuators in response to game activity. The accused products are hand-held game controllers.

Two claim limitations are relevant to this appeal, "flexible pad" and "attached to said pad." The district court held that flexible does not mean simply "capable of being flexed." It reasoned that this definition was inappropriate because "many objects that are capable of being flexed are not flexible. A steel I-beam is capable of being flexed, but no one would call it 'flexible.'" The court thus construed the term to mean "capable of being noticeably flexed with ease."

The district court then turned to the construction of "attached to said pad." Appellants argued that attached should be given its plain and ordinary meaning and that an actuator can be attached to the inside of an object. Sony argued that "attached to said pad" should be construed as affixed to the exterior surface of the pad and does not include embedded within said pad. The court held that "the specifi-



U.S. Patent No. 6,422,941, Universal tactile feedback system for computer video games and simulations

cation redefines 'attached' by implication." The court held that the word attached was limited to attached to the outside of an object because the embodiments in the specification consistently use the term "attached" to indicate affixing an actuator to the outer surface of an object and use the word "embedded" when referring to an actuator inside an object. For additional support for the notion that attached and embedded have different meanings, the court pointed to claim 1 which uses the word "attached" and dependent claim 10 which uses the word "embedded."

Following claim construction, the parties stipulated to noninfringement by the accused products. They stated that "under the Court's construction of the phrase 'attached to said pad,' Defendants have not infringed...." The stipulation further stated that the "parties reserve their rights to challenge this or any other construction of the disputed claim phrases of the '941 patent on appeal."

DISCUSSION

The words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art when read in the context of the specification and prosecution history. *See AWH*. There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution. The use of the term "attached" in this specification does not meet either of these exceptions.

To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning. . It is not enough for a patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee must clearly express an intent to redefine the term. For example, in *3M Innovative Properties Co. v. Avery Dennison Corp.*, we held that the patentee acted as its own lexicographer when the specification stated: "'Multiple embossed' means two or more embossing patterns are superimposed on the web to create a complex pattern of differing depths of embossing."). Similarly, we limited a patentee to particular examples of solubilizers when it stated in the specification that "[t]he solubilizers suitable according to the invention are defined below." *Astrazeneca AB v. Mutual Pharm. Co.*

The standard for disavowal of claim scope is similarly exacting. Where the specification makes clear that the invention does not include a particular feature, that feature is deemed to be outside the reach of the claims of the patent, even though the language of the claims, read without reference to the specification, might be considered broad enough to encompass the feature in question. The patentee may demonstrate intent to deviate from the ordinary and accus-

3M Innovative Properties: 350 F.3d 1365 (Fed.Cir. 2004)

Astrazeneca: 384 F.3d 1333 (Fed. Cir. 2004)

tomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope. For example, in *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, the patentee described two different types of catheters in the prior art, those with dual lumens (side-by-side) and those with coaxial lumens. In discussing the prior art, the patentee disparaged the dual lumen configuration as larger than necessary and less pliable than the coaxial type. Further, the specification repeatedly described the “present invention” as a coaxial design. Finally, the specification stated: “The intermediate sleeve structure defined above [coaxial design] is the basic sleeve structure for all embodiments of the present invention contemplated and disclosed herein.” This court held that collectively this amounted to disavowal of the dual lumen design.

SciMed: 242 F.3d 1337 (Fed. Cir. 2001)

Mere criticism of a particular embodiment encompassed in the plain meaning of a claim term is not sufficient to rise to the level of clear disavowal. Even where a particular structure makes it particularly difficult to obtain certain benefits of the claimed invention, this does not rise to the level of disavowal of the structure. It is likewise not enough that the only embodiments, or all of the embodiments, contain a particular limitation. We do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do that. To constitute disclaimer, there must be a clear and unmistakable disclaimer.

It is the claims that define the metes and bounds of the patentee’s invention. The patentee is free to choose a broad term and expect to obtain the full scope of its plain and ordinary meaning unless the patentee explicitly redefines the term or disavows its full scope.

Claim 1 of the patent at issue includes the disputed claim terms:

In a computer or video game system, apparatus for providing, in response to signals generated by said computer or video game system, a tactile sensation to a user of said computer or video game system, said apparatus comprising:

a flexible pad;

a plurality of actuators, attached to said pad, for selectively generating tactile sensation; and a control circuit ... for generating a control signal to control activation of said plurality of actuators....

I. “attached to said pad”

Appellants argue that the district court erred by holding that the specification implicitly defined “attached” to mean “affixed to an exterior surface.” They argue that the term does not require any construction and that the plain and ordinary meaning includes affixing an item to

either an exterior or an interior surface. They contend that the specification explicitly states whether an attachment is to an interior or exterior surface: “a vibratory actuator can be attached to [the] outer side of the throttle handle.” They argue this shows that when the applicant wished to distinguish an internal from an external attachment, he did so with deliberate, express language. Thus, appellants argue that the specification contemplates “attached” to have its plain and ordinary meaning—attached to either an interior or exterior surface. Finally, appellants argue that the fact that claim 10 includes the word “embedded” does not mean that “attached” can only mean connected to an exterior surface. Rather, appellants argue that “embedded” is merely a narrower term that includes only attachment to an interior surface.

Sony responds that the patent clearly identified two different connections, “attached to” and “embedded within.” It argues that in every instance where the specification uses the term “attached,” it refers to an attachment to an outer surface. Conversely, in every embodiment where the actuator is placed inside a housing, the specification uses the term “embedded.” See, e.g., ‘941 patent col.32 l.66 (“embedded within or attached to”).

Our case law is clear, claim terms must be given their plain and ordinary meaning to one of skill in the art. The plain meaning of the term “attached” encompasses either an external or internal attachment. We must decide whether the patentee has redefined this term to mean only attachment to an external surface. As Sony argues, the specification repeatedly uses the term “attached” in reference to embodiments where the actuators are “attached to [an] outer side.” In fact, the specification never uses the word “attached” when referring to an actuator located on the interior of a controller. We hold that this does not rise to the level of either lexicography or disavowal. Both exceptions require a clear and explicit statement by the patentee. It is not enough that the patentee used the term when referencing an attachment to an outer surface in each embodiment. In fact, the specification explains that an actuator was “attached to [an] outer surface.” If the applicant had redefined the term “attached” to mean only “attached to an outer surface,” then it would have been unnecessary to specify that the attachment was “to [an] outer surface” in the specification. We conclude that the term attached should be given its plain and ordinary meaning. The specification does not redefine attached nor is there any disavowal.

The fact that the specification uses the two terms “attached” and “embedded” as alternatives does not require a different result. There is nothing inconsistent about the applicant’s use of the narrower term, “embedded,” to describe embodiments affixed to an internal surface. The plain and ordinary meaning of embedded, “attached within,” is

narrower than “attached.” Hence it makes sense that the applicant would want to use embedded when it meant to explicitly claim attached to the inside only. That does not mean the word attached automatically means attached to the external surface, as opposed to the broader plain meaning—attached to either the interior or exterior.

Other parts of the claim and specification also support this construction. The claim at issue requires a “flexible pad.” The only embodiment in the specification that includes flexible material is the seat cushion 510 shown in Figure 2. The specification states that “the tactile feedback seating unit 510 is a semi-rigid flexible foam structure ... with a plurality of actuators embedded within the foam structure.” Thus, the only flexible embodiment in the specification has embedded actuators. If we agreed with Sony that “attached” must mean attached to an outer surface, then the claim would exclude the only flexible embodiment disclosed in the specification. This is further evidence that the term “attached” should have its plain and ordinary meaning which includes either internal or external attachments.

We hold that the term “attached to said pad” should be given its plain and ordinary meaning which encompasses either internal or external attachment. Because the parties based the stipulation of noninfringement on the district court’s erroneous construction of this claim term, we vacate and remand.

II. “flexible pad” ...

Appellants argue that the term “flexible” simply means “capable of being flexed” and that the district court erred by requiring “capable of being noticeably flexed with ease.” They note that the specification only uses the term “flexible pad” when referring to a “semi-rigid” structure and that a “semi-rigid” structure would certainly not be “noticeably flexed with ease.”

Sony responds that although the specification uses the term to refer to a “semi-rigid” structure, that structure is made out of foam in every embodiment. It argues that foam is capable of being noticeably flexed with ease and thus a rigid, barely bendable material should not be considered “flexible.” Sony also points to portions of the Markman hearing where the district court judge inspected one of the accused hard plastic controllers. The judge noted that the controller was rigid and “[i]f I try to flex this thing, I think that you’re going to see it snap.”

We agree with the appellants that the district court improperly limited the term. Neither the claims nor the specification requires the “flexible pad” to be noticeably flexed with ease. The specification says only that the flexible pad must be a semi-rigid structure. The task of determining the degree of flexibility, the degree of rigidity that amounts to “semi-rigid,” is part of the infringement analysis,

dant's method as follows:

- Place thumbs on edge of dough.
- Press dough ridge up the sides of pan.
 - Dough must extend just above rim of pan ($\frac{1}{4}$ ")
- Evenly space five pieces of thawed mozzarella string cheese approximately a thumb's width apart along the outside edge of the dough
 - Place close to bottom of pan where edge meets.
- Use thumb and index fingers to stretch and fold edge of the dough over string cheese and press firmly to seal.
 - Dough overlap should be visible on both sides of thumb.
 - Keep stuffed edge at score line etched in pan to keep dough in round shape.
- Use thumbs to press and seal overlapped dough to bottom edge.
- Use thumbs to push stuffed edge out to edge of pan....
- All Stuffed Crust Pizzas are cut into 8 slices. If cheese is leaking through small hole in crust, begin cutting pizza at that spot.

An objective of the method was to create "cheese pull," which means that the cheese within the crust joins together during baking so that the consumer receives "cheese in every bite."

Defendant launched a pepperoni and cheese Stuffed Crust Pizza in September of 1995, which contained a continuous layer of pepperoni slices beneath the five pieces of cheese within the outer edge of the pizza. Plaintiff concedes that the pepperoni and cheese version does not infringe the '361 patent.

Shortly after learning of the 1995 launch of defendant's Stuffed Crust Pizza, Anthony Mongiello and his brother Lawrence cut open Stuffed Crust Pizzas purchased from defendant's restaurants. They say that when they cut into the crusts, they observed "pockets" of mozzarella cheese and spots where "a dough wall separated adjacent mozzarella strings."

Based on their observations of randomly occurring dough walls dividing cheese within the crust of defendant's baked product, the Mongiellos believed that the method defendant used to make Stuffed Crust Pizzas infringed on their claimed method.

Defendant argues that its method of making Stuffed Crust Pizza does not infringe the '361 patent, either literally or through substantial equivalence, because it does not perform what it says are three required elements of the claimed method [including]:

- (1) The "cutting step" of claim 1: "when the dough base is cut into substantially equally sized pieces, each individual food portion is located upon a portion of each piece."

- (2) The “forming step” of claim 1: “forming a separate closed pocket about each food portion.”

Defendant says that the phrase “such that, when the dough base is cut into substantially equally sized portions, each individual food portion is located upon a portion of each piece” is an essential limitation of the claim requiring that the pizza be cut in a specific manner. Plaintiff contends that the phrase should be construed as an optional step that merely explains where the food portions should be placed, and says that the phrase really means: “if the dough base were cut into equal slices, a food portion would be on each slice.” Plaintiff argues that cutting the pizza such that there is an individual filled pocket on each piece is not required, but that “it is enough that it is possible to do so.”

But the plain language of the claim says “when,” not “if.” If the patent applicants had wanted the language to be hypothetical, they would have drafted it in that manner.

In order to find literal infringement, the defendant must practice each and every element of the claimed method. Defendant’s method, as described in the February 1995 manager’s guide and the affidavit of Patricia Scheibmeir, a manager in defendant’s research and development department, does not practice the “cutting” limitation as construed by the court. Although the Stuffed Crust Pizzas in question used five separate pieces of cheese, separated by a thumb’s width, the instructions direct that the pizza be cut into eight slices using a “rocker blade,” which cuts pizzas into an even number of slices. It is thus impossible for individual portions of cheese to be located on each portion of defendant’s pizza.

Since defendant does not practice one of the essential limitations of the ‘361 patent, the court need not consider the other limitations before making a finding of no literal infringement.

Abbott Laboratories v. Sandoz, Inc.

566 F.3d 1282 (Fed. Cir. 2009)

[Abbott’s patent No. 4,935,507, as construed, claimed cefdinir anhydrate (or “Crystal A”). Sandoz and Teva’s products contained primarily cefdinir monohydrate (or “Crystal B”). The District Court had held:

The evidence does not convince us that there in fact are trace amounts of cefdinir anhydrate contained within the cefdinir monohydrate in defendants’ products. Moreover, there is no evidence that, even if there were traces, that those trace amounts could be a contributing factor in the efficacy of the defendants’ products. If there is a small amount of cefdinir anhydrate in defendants’ products, we

Two pages of further claim construction discussion omitted. Focus on what the court does once it has construed the claim language.

This is the court’s *complete* discussion of literal infringement. This is not atypical. Once claim construction is complete, applying the claim language is often (though not always) trivial. Why might that be?

do not conclude that this could cause literal infringement of the '507 patent.]

As to the alleged presence of small amounts of Crystal A in Sandoz and Teva's products, Abbott's evidence did not persuade the Northern District of Illinois. This court perceives that decision as well within the trial court's discretion. As additional support, the Northern District observed that there was no evidence that any trace amounts of cefdinir anhydrate, i.e. Crystal A, in Sandoz and Teva's products "could be a contributing factor in the efficacy" and that even "if there is a small amount of cefdinir anhydrate in defendants' products, we do not conclude that this could cause literal infringement." While these may be misstatements of the law, because *de minimis* infringement can still be infringement, this court need not reach that issue in a preliminary injunction context which affords the trial court broad leeway to discern a "likelihood of success." As noted, this court sustains the trial court's discretion based primarily on its administration of the proper claim construction and its finding that Abbott was not likely to show Sandoz and Teva's products contained any Crystal A at all.

3 Doctrine of Equivalents

Freedman Seating Co. v. American Seating Co. 420 F.3d 1350 (Fed. Cir. 2005)

Freedman Seating Company ("Freedman") sued American Seating Company and Hi-Tech Seating Products (doing business as Kustom Fit) (collectively, "American Seating") for infringement of U.S. Patent No. 5,492,389 (issued Feb. 20, 1996) ("the '389 patent"). Because we conclude that the judgment of infringement under the doctrine of equivalents has the effect of vitiating a limitation of the claims of the '389 patent, we reverse the judgment and remand the case to the district court with instructions to enter judgment of non-infringement in favor of American Seating.

BACKGROUND

Freedman manufactures seats used in public transportation vehicles. Its product line includes stowable seats, which are seats that have the ability to fold away in order to create more interior space in a vehicle. They are particularly useful for accommodating passengers with wheelchairs, but may be used whenever more interior space is needed.

Freedman also owns the '389 patent, titled "Stowable Seat." The figures shown below are representative of the stowable seat claimed in the '389 patent.

U.S. Patent

Feb. 20, 1996

Sheet 1 of 3

5,492,389

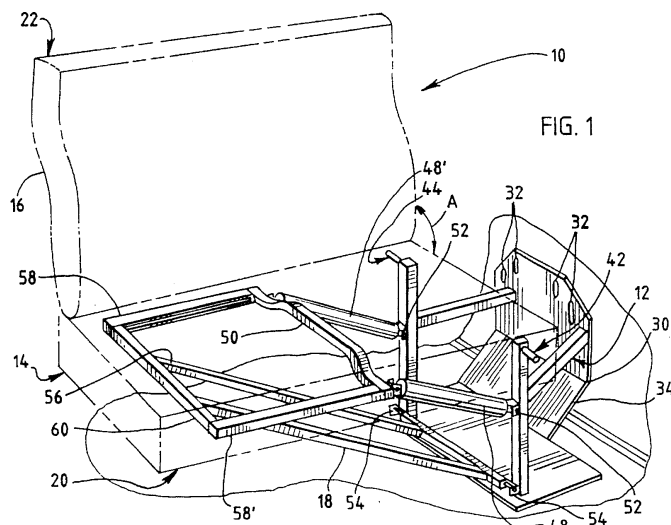
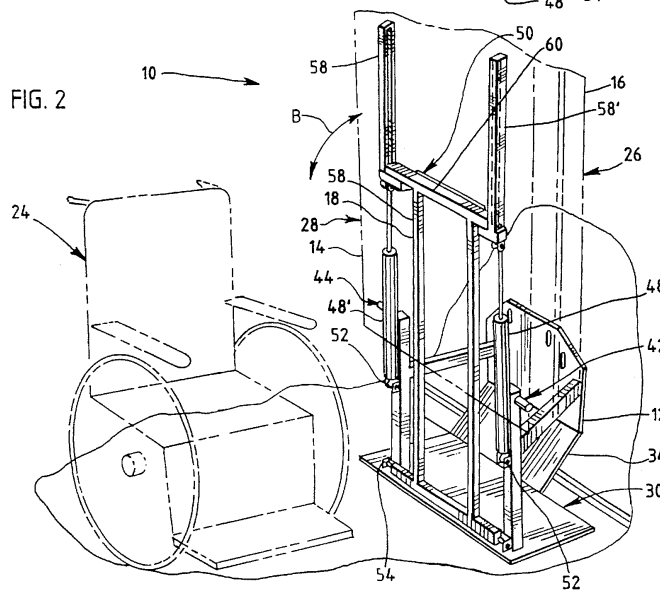


FIG. 2



U.S. Patent No. 5,492,389, Stowable seat

Figure 1 shows the stowable seat (10) in the horizontal (or deployed) position, while figure 2 shows the stowable seat in the vertical (or stowed) position. Moving the seat from its horizontal to vertical position involves “folding the seatback (16) flat against the seatbase (14), unlocking the seatbase from its horizontally deployed position and raising the seatbase to its vertically stowed position where it is locked in place.”

As shown by figure 1, the invention of the '389 patent does not use an aisle leg to support the seat when in the horizontal position. Rather, the invention is based on a cantilever design, which uses a diagonal truss (18), also referred to as a support member, to support the aisle-end of the seat when in the horizontal position. This design, according to the '389 patent, avoids difficulties attendant with stowing and deploying seats that have a separate aisle leg.

In addition to providing aisle support, the diagonal truss allows for translational movement of the seatbase between the horizontal and vertical positions. This is due to the truss having a fixed end that is attached to the seat's frame (12) at a pivot point (54), and a movable end (56) that is “slidably mounted” in a runner track (58). When stowing the seat, the movable end of the diagonal truss slides on the runner track toward the middle of the seatbase, while the fixed end of the diagonal truss rotates upward until the seat is in the vertical position. Similarly, when the seat is deployed again, the movable end of the diagonal truss slides toward the aisle end of the seatbase, while the fixed end rotates downward until the seat is in the horizontal position. This folding mechanism created by the slidably mounted movable end is known in the field of mechanical engineering as a “slider crank,” which is a particular type of “four bar mechanism.”

Claim 1 is representative of the claims asserted against American Seating; it reads:

A stowable seat for mounting to support member of a vehicle wherein a space may be selectively provided for positioning an article adjacent to the stowable seat, when stowed the seat comprising:

- a frame attached to a support member;
- a cantilevered seatbase having a free end, a pivotable end including a pivot mounted thereto for rotatably associating said pivotable end with said frame and for providing said seatbase with a range of motion extending from a horizontally deployed position to a vertically stowed position, a support member for supporting said seatbase in said deployed position including a moveable end **slidably mounted** to said seatbase and a fixed end journalled with said frame, and a first lock near said free end for releasably

emphasis added

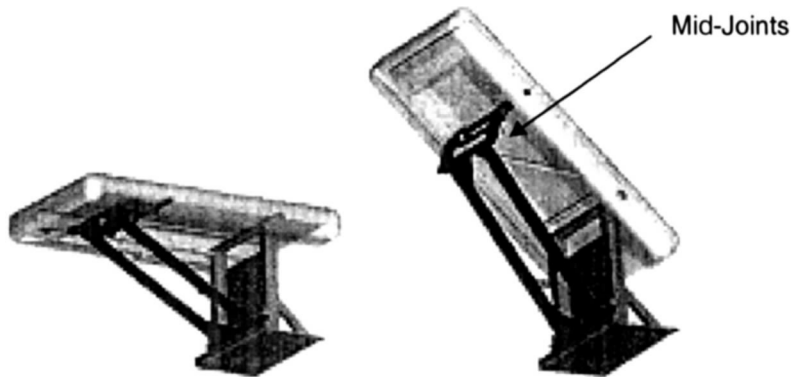
locking said movable end to maintain said seatbase in said deployed position; and

a seatback having a pivot for rotatably associating said seatback with said seatbase and for providing said seatback with a range of motion extending from an unfolded position to a folded position, said range of motion of said seatback being perpendicular to said range of motion of said seatbase, said seatback in said unfolded position adapted to be a predetermined angle with respect to said seatbase in said deployed position to provide seating and said seatback in said folded position adapted to be adjacent said seatbase for stowing to provide the space for the article.

American Seating Company and Kustom Fit also manufacture and market seating products for the transportation industry. One particular seat is the Horizon EZ Fold (“EZ Fold”), which is a stowable seat. The EZ Fold is in many respects similar, if not identical, to the invention claimed in the ‘389 patent. Most notably, neither device has an aisle leg. However, and important to this case, the two products use different types of support structures in lieu of the aisle leg. The invention claimed in the ‘389 patent, of course, uses the slider crank, which is described in part by the “slidably mounted” limitation. The EZ Fold, on the other hand, uses what is known as a “fourth link.”

Like the slider crank, the fourth link is also a specific type of four bar mechanism. However, the two mechanisms differ in that, where the moveable end of the ‘389 patent’s support member is slidably mounted to the seatbase, the moveable end of the EZ Fold’s support member is rotatably mounted to the seatbase. Therefore, the moveable end of the EZ Fold’s support member does not slide or otherwise move along the seatbase. Rather, its only range of motion consists of rotation throughout its revolute joints. That said, the EZ Fold’s fourth link mechanism still provides the seatbase with fluid translational motion, and thereby allows the seat to fold between the deployed and stowed positions. It does this through an extra set of revolute joints located in the midsection of its support member (“mid-joints”). These mid-joints are shown below in two representative illustrations of the EZ Fold product.

The illustration on the left shows the seat in the fully deployed position, and the illustration on the right shows the device in transition between the deployed and stowed positions.



In due course, both parties filed motions for summary judgment on the issue of infringement. The parties generally agreed that the EZ Fold literally meets all of the limitations of claim 1 except for the limitation requiring that the movable end of the support member be “slidably mounted” to the seatbase. The accused product does not literally meet this limitation because the EZ Fold’s support member is rotatably mounted, not slidably mounted, to the seatbase.

American Seating argued that its support member and moveable end were not equivalent to the corresponding structure claimed by the ‘389 patent because its system used a fourth link, which created a substantially different support structure than the slider crank of the ‘389 patent. In particular, American Seating argued that the support structures of the two devices created substantially different distribution forces. The district court disagreed. As an initial matter, the court stated that force distributions were not claimed in the ‘389 patent and were therefore of minimal relevance. In addition, the court found that any difference in force distributions was insubstantial, and that Freedman’s “slider-crank and [American Seating’s] fourth link perform substantially the same function in substantially the same manner to achieve substantially the same result.” The court therefore granted Freedman summary judgment of infringement by equivalence.

DISCUSSION

Patent infringement is a two step inquiry. First, the court must construe the asserted claim. Second, the court must determine whether the accused product or process contains each limitation of the properly construed claims, either literally or by a substantial equivalent.

Under the doctrine of equivalents, a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is ‘equivalence’ between the elements of the accused product or process and the claimed elements of the patented invention.” *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.* The doctrine evolved in recognition of the fact that

The language in the patent claims may not capture every

nuance of the invention or describe with complete precision the range of its novelty. If patents were always interpreted by their literal terms, their value would be greatly diminished. Unimportant and insubstantial substitutes for certain elements could defeat the patent, and its value to inventors could be destroyed by simple acts of copying.

Festo. At the same time, the doctrine of equivalents necessarily adds uncertainty to the scope of patent claims, and thereby detracts from the public-notice function of patent claims and risks deterring non-infringing and potentially innovative endeavors. See *Festo* (“If the range of equivalents is unclear, competitors may be unable to determine what is a permitted alternative to a patented invention and what is an infringing equivalent.”); *Warner-Jenkinson* (“There can be no denying that the doctrine of equivalents, when applied broadly, conflicts with the definitional and public-notice functions of the statutory claiming requirements.”). In recognition of this risk, and in an effort to strike the proper balance between protecting patentees while also providing sufficient notice to the public, various rules of law have emerged to constrain when and how the doctrine of equivalents is to be applied.

Of relevance to this case is the “all limitations” rule. The rule holds that an accused product or process is not infringing unless it contains each limitation of the claim, either literally or by an equivalent. This principle has two primary implications for the doctrine of equivalents. First, the all limitations rule requires that equivalence be assessed on a limitation-by-limitation basis, as opposed to from the perspective of the invention as a whole. Second, an element of an accused product or process is not, as a matter of law, equivalent to a limitation of the claimed invention if such a finding would entirely vitiate the limitation.

There is no set formula for determining whether a finding of equivalence would vitiate a claim limitation, and thereby violate the all limitations rule. Rather, courts must consider the totality of the circumstances of each case and determine whether the alleged equivalent can be fairly characterized as an insubstantial change from the claimed subject matter without rendering the pertinent limitation meaningless.

In *Sage Products, Inc. v. Devon Industries, Inc.* we affirmed the district court’s grant of summary judgment of non-infringement under the doctrine of equivalents. One of the asserted patents described a container for discarding syringes and other like materials and claimed, among other things, “an elongated slot at the top of the container body” and a barrier means comprised of “a first constriction extending over said slot.” We agreed that the district court prop-

erly interpreted “top of the container body” to mean “highest point, level, or part of.” The accused product differed from the claimed invention in that the slot was located in the interior of the container rather than at the top of the container.

We concluded that finding infringement under these circumstances would vitiate the “slot at the top of the container body” and “extending over said slot” limitations. We reached our conclusion based on several considerations, including the simplicity of the structure, the specificity and narrowness of the claim, and the foreseeability of variations at the time of filing the claim with the PTO:

The claim at issue defines a relatively simple structural device. A skilled patent drafter would foresee the limiting potential of the “over said slot” limitation. No subtlety of language or complexity of the technology, nor any subsequent change in the state of the art, such as later-developed technology, obfuscated the significance of this limitation at the time of its incorporation into the claim. If [the patentee] desired broad patent protection for any container that performed a function similar to its claimed container, it could have sought claims with fewer structural encumbrances. . . . Instead, [the patentee] left the PTO with manifestly limited claims that it now seeks to expand through the doctrine of 1361*1361 equivalents. However, as between the patentee who had a clear opportunity to negotiate broader claims but did not do so, and the public at large, it is the patentee who must bear the cost of its failure to seek protection for this foreseeable alteration of its claimed structure.

Compare *Hughes Aircraft Co. v. United States*, 140 F.3d 1470, 1475 (Fed. Cir. 1998) (“This is a case in which a ‘subsequent change in the state of the art, such as later-developed technology, obfuscated the significance of [the] limitation at the time of its incorporation into the claim.’”).

In *Tronzo v. Biomet, Inc.*, we similarly concluded that a finding of equivalence would vitiate the claimed limitation. The asserted claims related to an artificial hip socket and included a limitation requiring that the prosthesis’s body have “a generally conical outer surface.” In finding infringement, the jury concluded that the hemispherical shape of the accused product’s hemispherical cup was equivalent to the “generally conical outer surface” limitation. We reversed, finding no infringement as a matter of law. We were particularly troubled by expert testimony submitted by the plaintiff, Tronzo, stating that “when either a hemispherical cup or trapezoidal cup or any other shape cup is successfully implanted into the body, it functions almost

Tronzo: 156 F.3d 1154 (Fed. Cir. 1998)

Asyst Techs.: 402 F.3d 1188 (Fed. Cir. 2005)

Moore: 229 F.3d 1091 (Fed. Cir. 2000)

exactly the same way.” We stated that, according to this theory of infringement, “any shape would be equivalent to the conical limitation.” “Such a result,” we concluded, “is impermissible under the all-elements rule of *Warner-Jenkinson* because it would write the ‘generally conical outer surface’ limitation out of the claims.” See also *Asyst Techs., Inc. v. Emtrak, Inc.* (holding that, under the “specific exclusion” principle, “the term ‘mounted’ can fairly be said to specifically exclude objects that are ‘unmounted’”); *Moore U.S.A. v Standard Register Co.* (“[T]o allow what is undisputedly a minority (i.e., 47.8%) to be equivalent to a majority would vitiate the requirement that the ‘first and second longitudinal strips of adhesive ... extend the majority of the lengths of said longitudinal marginal portions.’”).

In the instant case, we think the district court’s finding of infringement under the doctrine of equivalents had the effect of entirely vitiating the “slidably mounted” limitation. The parties agree that all of the claims require a support member having “a moveable end slidably mounted to” the seatbase. It is also not disputed that the moveable end of the EZ Fold’s support member is rotatably mounted, not slidably mounted, to the seatbase. Therefore, while the moveable end of the EZ Fold’s support member has the ability to rotate, it cannot slide or otherwise move along the seatbase. It is confined to a fixed location. We think that this structural difference in the mounting of the moveable end to the seatbase is not a subtle difference in degree, but rather, a clear, substantial difference or difference in kind.

Freedman argues that the slider crank claimed in the ‘389 patent and the fourth link mechanism used in the EZ Fold function in the same way to produce identical results. Freedman asserts that this is because “both the infringing seat and the claimed structure of the ‘389 patent provide the moveable end of the support member with both translational and rotational motion relative to the seatbase.” The problem, however, is that taken to its logical conclusion, Freedman’s argument would mean that any support member capable of allowing translational and rotational motion would be equivalent to a support member “slidably mounted to said seatbase,” which reads “slidably mounted” completely out of the claims. This is the precise type of overextension of the doctrine of equivalents that the claim vitiation doctrine is intended to prevent.

Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.

535 U.S. 722 (2002)

Petitioner Festo Corporation owns two patents [4,354,125 (Stoll) and 3,779,401 (Carroll)] for an improved magnetic rodless cylinder, a piston-driven device that relies on magnets to move objects in a conveying system. The device has many industrial uses and has been employed in machinery as diverse as sewing equipment and the Thun-

der Mountain ride at Disney World. Petitioner's patent applications, as often occurs, were amended during the prosecution proceedings. Both amended patents added a new limitation—that the inventions contain a pair of sealing rings, each having a lip on one side, which would prevent impurities from getting on the piston assembly. The amended Stoll Patent added the further limitation that the outer shell of the device, the sleeve, be made of a magnetizable material.

Prosecution history estoppel requires that the claims of a patent be interpreted in light of the proceedings in the PTO during the application process. Estoppel is a rule of patent construction that ensures that claims are interpreted by reference to those that have been cancelled or rejected. The doctrine of equivalents allows the patentee to claim those insubstantial alterations that were not captured in drafting the original patent claim but which could be created through trivial changes. When, however, the patentee originally claimed the subject matter alleged to infringe but then narrowed the claim in response to a rejection, he may not argue that the surrendered territory comprised unforeseen subject matter that should be deemed equivalent to the literal claims of the issued patent. On the contrary, by the amendment the patentee recognized and emphasized the difference between the two phrases and the difference which the patentee thus disclaimed must be regarded as material.

A rejection indicates that the patent examiner does not believe the original claim could be patented. While the patentee has the right to appeal, his decision to forgo an appeal and submit an amended claim is taken as a concession that the invention as patented does not reach as far as the original claim. Were it otherwise, the inventor might avoid the PTO's gatekeeping role and seek to recapture in an infringement action the very subject matter surrendered as a condition of receiving the patent.

Prosecution history estoppel ensures that the doctrine of equivalents remains tied to its underlying purpose. Where the original application once embraced the purported equivalent but the patentee narrowed his claims to obtain the patent or to protect its validity, the patentee cannot assert that he lacked the words to describe the subject matter in question. The doctrine of equivalents is premised on language's inability to capture the essence of innovation, but a prior application describing the precise element at issue undercuts that premise. In that instance the prosecution history has established that the inventor turned his attention to the subject matter in question, knew the words for both the broader and narrower claim, and affirmatively chose the latter.

We agree with the Court of Appeals that a narrowing amendment made to satisfy any requirement of the Patent Act may give rise to an estoppel. Estoppel arises when an amendment is made to secure the

patent and the amendment narrows the patent's scope. A patentee who narrows a claim as a condition for obtaining a patent disavows his claim to the broader subject matter, whether the amendment was made to avoid the prior art or to comply with § 112. We must regard the patentee as having conceded an inability to claim the broader subject matter or at least as having abandoned his right to appeal a rejection. In either case estoppel may apply.

On the record before us, we cannot say petitioner has rebutted the presumptions that estoppel applies and that the equivalents at issue have been surrendered. Petitioner concedes that the limitations at issue – the sealing rings and the composition of the sleeve – were made in response to a rejection for reasons under § 112, if not also because of the prior art references. As the amendments were made for a reason relating to patentability, the question is not whether estoppel applies but what territory the amendments surrendered.

Johnson & Johnston Associates v. R.E. Service Co.
285 F.3d 1046 (Fed. Cir. 2000) (en banc)

Johnson and Johnston Associates (Johnston) asserted United States Patent No. 5,153,050 (the '050 patent) against R.E. Service Co. and Mark Frater (collectively RES). [The patent concerned a method for making printed circuit boards by adhering them to a stiff substrate sheet during processing.]

When a patent drafter discloses but declines to claim subject matter, as in this case, this action dedicates that unclaimed subject matter to the public. Application of the doctrine of equivalents to recapture subject matter deliberately left unclaimed would conflict with the primacy of the claims in defining the scope of the patentee's exclusive right.

Moreover, a patentee cannot narrowly claim an invention to avoid prosecution scrutiny by the PTO, and then, after patent issuance, use the doctrine of equivalents to establish infringement because the specification discloses equivalents. Such a result would merely encourage a patent applicant to present a broad disclosure in the specification of the application and file narrow claims, avoiding examination of broader claims that the applicant could have filed consistent with the specification. By enforcing this rule, the courts avoid the problem of extending the coverage of an exclusive right to encompass more than that properly examined by the PTO.

In this case, Johnston's '050 patent specifically limited the claims to "a sheet of aluminum" and "the aluminum sheet." The specification of the '050 patent, however, reads: "While aluminum is currently the preferred material for the substrate, other metals, such as stainless steel or nickel alloys may be used." Having disclosed without claiming the steel substrates, Johnston cannot now invoke the doctrine

of equivalents to extend its aluminum limitation to encompass steel. Thus, Johnston cannot assert the doctrine of equivalents to cover the disclosed but unclaimed steel substrate.

A patentee who inadvertently fails to claim disclosed subject matter, however, is not left without remedy. Within two years from the grant of the original patent, a patentee may file a reissue application and attempt to enlarge the scope of the original claims to include the disclosed but previously unclaimed subject matter.. In addition, a patentee can file a separate application claiming the disclosed subject matter.. Notably, Johnston took advantage of the latter of the two options by filing two continuation applications that literally claim the relevant subject matter

Reissue: 35 U.S.C. § 251 (2000)

Separate application: 35 U.S.C. § 120 (2000) (allowing filing as a continuation application if filed before all applications in the chain issue)

4 Problem

Super Soaker Problem

This is claim 1 from U.S. Patent No. 4,239,129:

A toy comprising an elongated housing [case] having a chamber therein for a liquid [tank], a pump including a piston having an exposed rod [piston rod] and extending rearwardly of said toy facilitating manual operation for building up an appreciable amount of pressure in said chamber for ejecting a stream of liquid therefrom an appreciable distance substantially forwardly of said toy, and means for controlling the ejection.

Does the Super Soaker 50 infringe this claim? Note that to use a Super Soaker, one fills it with water through the orange cap at the back top. Sliding the yellow handle back and forth along the white barrel pumps air into the green part, along with water. Pulling the trigger opens a valve that causes the air to press water forward, resulting in the Super Soaker's famed superior soaking ability. (Conventional water pistols didn't store up compressed air; they drove water out the barrel using the force of the trigger pull itself.)



Super Soaker 50

Based on *Larami Corp. v. Amron*, No. CIV. A. 91-6145, 1993 WL 69581 (E.D. Pa. Mar. 11, 1993)

E Infringement: Prohibited Conduct

Herman v. Youngstown Car Mfg. Co. 191 F. 579 (6th Cir. 1911)

A patent is not the grant of a right to make or use or sell. It does not, directly or indirectly, imply any such right. It grants only the right to exclude others. The supposition that a right to make is created by the patent grant is obviously inconsistent with the well-known fact that a

very considerable portion of the patents granted are in a field covered by a former relatively generic or basic patent, are tributary to such earlier patent, and cannot be practiced unless by license thereunder.

1 Direct Infringement

It is typically said that patent infringement is “strict liability.” That is, “It is, of course, elementary, that an infringement may be entirely inadvertent and unintentional and without knowledge of the patent.” Saurabh Vishnubhakat argues that this is misleading in at least one respect; based on a reading of the (limited) case law, he claims that one who does not even intend to take the actions described by the claims is not an infringer, just as someone who is blown into another by a gust of wind does not commit the tort of battery.

As a corollary, there is no requirement that the defendant copy from the plaintiff, as there is in trade secret and copyright. “Similarly, evidence of copying is of no import on the question of whether the claims of an issued patent are infringed, either literally or by equivalents.”

Patent Act

- (a) Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.

Blazer v. eBay, Inc.

No. 1:15-CV-01059-KOB, 2017 WL 1047572 (N.D. Ala. Mar. 20, 2017)

Carpenter Bee Solutions, of which Mr. Blazer is the sole proprietor, is the owner of United States Patent No. 8,375,624 entitled “Carpenter Bee Traps.” Mr. Blazer originally contacted eBay about products listed on the site he believed infringed his patent.

eBay is an online marketplace. On an average day, just south of a billion items are listed for sale on the website. eBay does not take physical possession of the items listed for sale; the third-party sellers conduct sales and shipping the item to buyers. A seller listing an item on eBay provides the item’s price and description. eBay does not supply this information. When a user creates a listing on eBay’s site, the listing identifies the user as the seller of the item. eBay buyers commonly interact with sellers rather than eBay itself. eBay informs users that other users, and not the company, are the seller of listed items. eBay’s User Agreement emphasizes that when a sale occurs

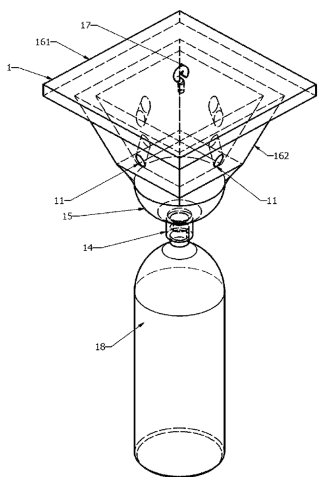
Blair v. Westinghouse Elec. Corp., 291 F. Supp. 664 (D.D.C. 1968)

An Intentional Tort Theory of Patents, 68 Fl. L. Rev. 571 (2016)

Depuy Spine, Inc. v. Medtronic Sofamor Danek, Inc., 567 F.3d 1314 (Fed. Cir. 2009)

35 U.S.C. § 271

Infringement of patent



Bee trap

via the site, “the actual contract for sale is directly between the seller and buyer. eBay is not a traditional auctioneer.”

For a “sale” within the meaning of § 271(a) to occur, a transfer of property or title must occur. In his response, Mr. Blazer concedes that eBay does not “sell” the allegedly infringing bee traps. Therefore, eBay cannot be liable under § 271(a) for selling a patented invention.

An “offer to sell” under § 271(a) is given the same meaning as in contract law. An entity “offers to sell” a patented invention when it communicates a manifestation of willingness to enter into a bargain, so made as to justify another person in understanding that his assent to the bargain is invited and will conclude the transaction.

Here, eBay’s website contained descriptions of the allegedly infringing products and a price at which the items could be obtained. As Mr. Blazer observes, eBay tells users that bidding on a product creates a contract that obligates the bidder to purchase the product. Undoubtedly, an offer existed. The question is who made the offer. eBay? The user who created the listing? Both? In this case, the context of an exchange on eBay demonstrates that no reasonable consumer could conclude that by bidding on an eBay listing, he was accepting an offer from eBay itself.

Telectronics Pacing Systems v. Ventritex, Inc.

982 F.2d 1520 (Fed. Cir. 1992)

The language of § 271(a) clearly specifies only the making, using or selling of a patented invention as infringing activities. All of the other Ventritex activities that Telectronics complains of – presenting clinical trial data at a cardiology conference, reporting clinical trial progress to investors, analysts and journalists, and describing clinical trial results in a private fund-raising memorandum – fall under the category of dissemination of the data developed for FDA approval. This disclosure of clinical trial data cannot, in and of itself, constitute an infringing activity.

Section 271(e) provides an exemption from patent infringement for certain activities related to obtaining FDA approval. See the Biotechnology chapter.

Akamai Technologies, Inc. v. Limelight Networks, Inc.

797 F.3d 1020 (Fed. Cir. 2015) (en banc)

In 2006, Akamai Technologies, Inc. (“Akamai”) filed a patent infringement action against Limelight alleging infringement of U.S. Patent No. 6,108,703 which claims methods for delivering content over the Internet. The case proceeded to trial, at which the parties agreed that Limelight’s customers – not Limelight – perform the “tagging” and “serving” steps in the claimed methods. For example, as for claim 34 of the ’703 patent, Limelight performs every step save the “tagging” step, in which Limelight’s customers tag the content to be hosted and delivered by Limelight’s content delivery network.

Direct infringement under § 271(a) occurs where all steps of a

claimed method are performed by or attributable to a single entity. Where more than one actor is involved in practicing the steps, a court must determine whether the acts of one are attributable to the other such that a single entity is responsible for the infringement. We will hold an entity responsible for others' performance of method steps in two sets of circumstances: (1) where that entity directs or controls others' performance, and (2) where the actors form a joint enterprise.

The jury heard substantial evidence from which it could find that Limelight directs or controls its customers' performance of each remaining method step, such that all steps of the method are attributable to Limelight. Specifically, Akamai presented substantial evidence demonstrating that Limelight conditions its customers' use of its content delivery network upon its customers' performance of the tagging and serving steps, and that Limelight establishes the manner or timing of its customers' performance. Therefore, Limelight is liable for direct infringement.

2 Indirect Infringement

Patent Act

35 U.S.C. § 271

Infringement of patent

- (b) Whoever actively induces infringement of a patent shall be liable as an infringer.
- (c) Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

Limelight Networks, Inc. v. Akamai Technologies, Inc.

134 S. Ct. 2111 (2014)

Neither the Federal Circuit nor respondents dispute the proposition that liability for inducement must be predicated on direct infringement. This is for good reason, as our case law leaves no doubt that inducement liability may arise if, but only if, there is direct infringement.

One might think that this simple truth is enough to dispose of this appeal. But the Federal Circuit reasoned that a defendant can be liable for inducing infringement under § 271(b) even if no one has committed direct infringement within the terms of § 271(a) (or any

Watch the dates! This is from an *earlier* stage of the case. In this 2014 opinion, the Supreme Court reverses a 2012 Federal Circuit opinion. Does seeing this history change your view of the Federal Circuit's 2015 opinion on remand?

other provision of the patent laws), because direct infringement can exist independently of a violation of these statutory provisions.

The Federal Circuit's analysis fundamentally misunderstands what it means to infringe a method patent. A method patent claims a number of steps; under this Court's case law, the patent is not infringed unless all the steps are carried out. This principle follows ineluctably from what a patent is: the conferral of rights in a particular claimed set of elements. Each element contained in a patent claim is deemed material to defining the scope of the patented invention, and a patentee's rights extend only to the claimed combination of elements, and no further.

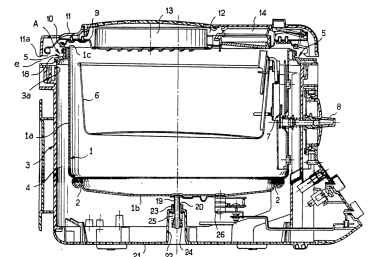
The Federal Circuit seems to have adopted the view that Limelight induced infringement on the theory that the steps that Limelight and its customers perform would infringe the '703 patent if all the steps were performed by the same person. But we have already rejected the notion that conduct which would be infringing in altered circumstances can form the basis for contributory infringement, and we see no reason to apply a different rule for inducement.

Global-Tech Appliances, Inc. v. SEB S.A.

131 S. Ct. 2060 (2011)

[SEB held [U.S. Pat. No. 4,995,312](#) on a deep fryer whose exterior surface remained cool to the touch. Pentalpha cloned an SEB fryer it purchased in Hong Kong (which did not bear U.S. patent markings). It sold infringing fryers to Sunbeam, Fingerhut, and Montgomery Ward, which resold them in the United States. Pentalpha argued that it did not "induce" these sales under § 271(b) because it did not know about the patent.]

[W]e now hold that induced infringement under § 271(b) requires knowledge that the induced acts constitute patent infringement. We nevertheless affirm the judgment of the Court of Appeals because the evidence was plainly sufficient to support a finding of Pentalpha's knowledge under the doctrine of willful blindness, [under which] (1) the defendant must subjectively believe that there is a high probability that a fact exists and (2) the defendant must take deliberate actions to avoid learning of that fact. Pentalpha's belief that SEB's fryer embodied advanced technology that would be valuable in the U.S. market is evidenced by its decision to copy all but the cosmetic features of SEB's fryer. Even more telling is [a Pentalpha executive's] decision not to inform the attorney from whom Pentalpha sought a right-to-use opinion that the product to be evaluated was simply a knock-off of SEB's deep fryer.



SEB's "cool-touch" fryer

Commil USA, LLC v. Cisco Systems Inc.

135 S. Ct. 1920 (2015)

The question the Court confronts today concerns whether a defendant's belief regarding patent validity is a defense to a claim of induced infringement. It is not.

Invalidity is an affirmative defense that can preclude enforcement of a patent against otherwise infringing conduct. An accused infringer can, of course, attempt to prove that the patent in suit is invalid; if the patent is indeed invalid, and shown to be so under proper procedures, there is no liability. That is because invalidity is not a defense to infringement, it is a defense to liability. And because of that fact, a belief as to invalidity cannot negate the scienter required for induced infringement.

Lucent Technologies, Inc. v. Gateway, Inc.
580 F.3d 1301 (Fed. Cir. 2009)

In December 1986, three computer engineers at [Lucent's predecessor] AT&T filed a patent application, which eventually issued as the Day patent. The patent is generally directed to a method of entering information into fields on a computer screen without using a keyboard. A user fills in the displayed fields by choosing concurrently displayed, predefined tools adapted to facilitate the inputting of the information in a particular field, wherein the predefined tools include an on-screen graphical keyboard, a menu, and a calculator.

Lucent asserts that certain features of Outlook, Money, and Windows Mobile, when used, practice the methods of claims 19 and 21. For instance, Outlook includes a calendar tool that allows the user to enter dates in a form when preparing a record of an appointment. The tool displays a monthly calendar as a grid of numbered dates, along with graphical controls that allow the user to scroll to adjacent months or skip directly to a different month and year. Once the user defines a date with the tool, the software enters the numerical day, month, and year into the corresponding field in the appointment form. Similar to the number pad tool illustrated in the Day patent, Outlook's calendar date-picker tool enables the user to select a series of numbers, corresponding to the day, month, and year, using graphical controls. This date-picker calendar tool is incorporated in a few of Outlook's features. Microsoft Money and Windows Mobile have similar functionalities.

According to Microsoft, Lucent did not prove contributory infringement [under § 271(c)] because the products have substantial noninfringing uses. Lucent counters that the date-picker tool does not have any noninfringing uses. Thus, as framed by the parties, the main issue reduces to whether the "material or apparatus" is the entire software package or just the particular tool (e.g., the calendar date-picker) that performs the claimed method. If the former, then Microsoft prevails because the entire software package has substan-

tial noninfringing uses. If the material or apparatus is the specific date-picker tool, then Lucent wins because that tool was “especially made or especially adapted for” practicing the claimed method.

One example illustrates the problem with Microsoft’s approach. Consider a software program comprising five – and only five – features. Each of the five features is separately and distinctly patented using a method claim. That is, the first feature infringes a method claim in a first patent, the second feature infringes a method claim in a second patent, and so forth. Assume also that the company selling the software doesn’t provide specific instructions on how to use the five features, thus taking potential liability outside the realm of § 271(b). In this scenario, under Microsoft’s position, the software seller can never be liable for contributory infringement of any one of the method patents because the entire software program is capable of substantial noninfringing use. This seems both untenable as a practical outcome and inconsistent with both the statute and governing precedent.

Similarly, if, instead of selling Outlook with the date-picker, Microsoft had offered the date-picker for sale as a separate download to be used with Outlook, there would be little dispute that Microsoft was contributing to infringement of the Day patent.

In *Hodosh v. Block Drug Co.*, the patent at issue claimed “a method for desensitizing teeth with a composition containing an alkali metal nitrate.” The accused infringer sold toothpaste, e.g., “Sensodyne-F,” containing potassium nitrate, an alkali metal nitrate. The accused infringer argued that the sale of the toothpaste, which itself was not patented, could not constitute contributory infringement because the toothpaste contained a staple article, i.e., potassium nitrate. The court rejected this argument. While potassium nitrate, when sold in bulk form, was “a staple article or commodity of commerce suitable for substantial noninfringing use,” it was suitable only for the infringing use when sold as an ingredient in the toothpaste specially made to perform the patented method of desensitizing teeth.

Hodosh: 833 F.2d 1575 (Fed. Cir. 1987)

Here, the infringing feature for completing the forms, i.e., the date-picker tool, is suitable only for an infringing use. Inclusion of the date-picker feature within a larger program does not change the date-picker’s ability to infringe. Because Microsoft included the date-picker tool in Outlook, the jury could reasonably conclude, based on the evidence presented, that Microsoft intended computer users to use the tool—perhaps not frequently—and the only intended use of the tool infringed the Day patent.

Questions

1. Suppose that the Plano Bait Shop is selling empty open-topped rectangular aluminum boxes, with a length slightly less than the

width of a bait box, lips at each end that are the right shape to attach to the top edges of a bait box, and a detachable plastic cover. Some buyers take the boxes, fill them with sharp-grained sand, and use it to immobilize earthworms. Others take the boxes and fill them with fish hooks, washcloths, or other items. Who, if anyone, is infringing on the Lukehart patent? Does it matter if Plano includes instructions with the boxes explaining how to fill them with sand to immobilize earthworms?

F Defenses

1 Invalidity

Microsoft Corp. v. i4i Ltd. Partnership 131 S. Ct. 2238 (2011)

Under § 282 of the Patent Act of 1952, “[a] patent shall be presumed valid” and “[t]he burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.” We consider whether § 282 requires an invalidity defense to be proved by clear and convincing evidence. We hold that it does.

2 Exhaustion

Impression Products, Inc. v. Lexmark International, Inc. 137 S. Ct. 1523 (2017)

When a patentee sells one of its products, the patentee can no longer control that item through the patent laws – its patent rights are said to “exhaust.” The purchaser and all subsequent owners are free to use or resell the product just like any other item of personal property, without fear of an infringement lawsuit.

We conclude that a patentee’s decision to sell a product exhausts all of its patent rights in that item, regardless of any restrictions the patentee purports to impose.

I

The underlying dispute in this case is about laser printers – or, more specifically, the cartridges that contain the powdery substance, known as toner, that laser printers use to make an image appear on paper. Respondent Lexmark designs, manufactures, and sells toner cartridges to consumers in the United States and around the globe. It owns a number of patents that cover components of those cartridges and the manner in which they are used.

When toner cartridges run out of toner they can be refilled and used again. This creates an opportunity for other companies – known

as remanufacturers – to acquire empty Lexmark cartridges from purchasers in the United States and abroad, refill them with toner, and then resell them at a lower price than the new ones Lexmark puts on the shelves.

Not blind to this business problem, Lexmark structures its sales in a way that encourages customers to return spent cartridges. It gives purchasers two options: One is to buy a toner cartridge at full price, with no strings attached. The other is to buy a cartridge at roughly 20-percent off through Lexmark’s “Return Program.” A customer who buys through the Return Program still owns the cartridge but, in exchange for the lower price, signs a contract agreeing to use it only once and to refrain from transferring the empty cartridge to anyone but Lexmark. To enforce this single-use/no-resale restriction, Lexmark installs a microchip on each Return Program cartridge that prevents reuse once the toner in the cartridge runs out.

Lexmark’s strategy just spurred remanufacturers to get more creative. Many kept acquiring empty Return Program cartridges and developed methods to counteract the effect of the microchips. With that technological obstacle out of the way, there was little to prevent the remanufacturers from using the Return Program cartridges in their resale business. After all, Lexmark’s contractual single-use/no-resale agreements were with the initial customers, not with downstream purchasers like the remanufacturers.

Lexmark, however, was not so ready to concede that its plan had been foiled. In 2010, it sued a number of remanufacturers, including petitioner Impression for patent infringement with respect to Return Program cartridges. Lexmark argued that, because it expressly prohibited reuse and resale of these cartridges, the remanufacturers infringed the Lexmark patents when they refurbished and resold them.

Eventually, the lawsuit was whittled down to one defendant, Impression Products, and one defense: that Lexmark’s sales exhausted its patent rights in the cartridges, so Impression Products was free to refurbish and resell them.

II

A

We conclude that Lexmark exhausted its patent rights in Return Program cartridges the moment it sold them. The single-use/no-resale restrictions in Lexmark’s contracts with customers may have been clear and enforceable under contract law, but they do not entitle Lexmark to retain patent rights in an item that it has elected to sell.

The Patent Act grants patentees the “right to exclude others from making, using, offering for sale, or selling [their] invention[s].” 35 U.S.C. § 154(a). For over 160 years, the doctrine of patent exhaustion

has imposed a limit on that right to exclude. The limit functions automatically: When a patentee chooses to sell an item, that product is no longer within the limits of the monopoly and instead becomes the private, individual property of the purchaser, with the rights and benefits that come along with ownership. A patentee is free to set the price and negotiate contracts with purchasers, but may not, by virtue of his patent, control the use or disposition of the product after ownership passes to the purchaser.

This well-established exhaustion rule marks the point where patent rights yield to the common law principle against restraints on alienation. The Patent Act promotes the progress of science and the useful arts by granting to inventors a limited monopoly that allows them to secure the financial rewards for their inventions. But once a patentee sells an item, it has enjoyed all the rights secured by that limited monopoly. Because the purpose of the patent law is fulfilled when the patentee has received his reward for the use of his invention, that law furnishes no basis for restraining the use and enjoyment of the thing sold.

We have explained in the context of copyright law that exhaustion has “an impeccable historic pedigree,” tracing its lineage back to the “common law’s refusal to permit restraints on the alienation of chattels.” *Kirtsaeng v. John Wiley & Sons, Inc.* As Lord Coke put it in the 17th century, if an owner restricts the resale or use of an item after selling it, that restriction “is void, because ... it is against Trade and Traffique, and bargaining and contracting between man and man.” 1 E. Coke, *Institutes of the Laws of England* (1628); see J. Gray, *Restraints on the Alienation of Property* (2d ed. 1895) (“A condition or conditional limitation on alienation attached to a transfer of the entire interest in personalty is as void as if attached to a fee simple in land”).

This venerable principle is not, as the Federal Circuit dismissively viewed it, merely “one common-law jurisdiction’s general judicial policy at one time toward anti-alienation restrictions.” Congress enacted and has repeatedly revised the Patent Act against the backdrop of the hostility toward restraints on alienation. That enmity is reflected in the exhaustion doctrine.

An illustration never hurts. Take a shop that restores and sells used cars. The business works because the shop can rest assured that, so long as those bringing in the cars own them, the shop is free to repair and resell those vehicles. That smooth flow of commerce would sputter if companies that make the thousands of parts that go into a vehicle could keep their patent rights after the first sale. Those companies might, for instance, restrict resale rights and sue the shop owner for patent infringement. And even if they refrained from imposing such restrictions, the very threat of patent liability would force

Kirtsaeng: 568 U.S. 519 (2013)

Coke: § 360, p. 223

Gray: § 27, p. 18

the shop to invest in efforts to protect itself from hidden lawsuits. Either way, extending the patent rights beyond the first sale would clog the channels of commerce, with little benefit from the extra control that the patentees retain. And advances in technology, along with increasingly complex supply chains, magnify the problem. See Brief for Intel Corp. et al. as Amici Curiae (“A generic smartphone assembled from various high-tech components could practice an estimated 250,000 patents”).

This Court accordingly has long held that, even when a patentee sells an item under an express restriction, the patentee does not retain patent rights in that product. In *Boston Store of Chicago v. American Graphophone Co.*, for example, a manufacturer sold graphophones – one of the earliest devices for recording and reproducing sounds – to retailers under contracts requiring those stores to resell at a specific price. When the manufacturer brought a patent infringement suit against a retailer who sold for less, we concluded that there was “no room for controversy” about the result: By selling the item, the manufacturer placed it “beyond the confines of the patent law, and could not, by qualifying restrictions as to use, keep it under the patent monopoly.” [Similarly in *United States v. Univis Lens Co.*]

Boston Store: 246 U.S. 8 (1918)

Univis: 316 U.S. 241 (1942)

It is true that *Boston Store* and *Univis* involved resale price restrictions that, at the time of those decisions, violated the antitrust laws. But in both cases it was the sale of the items, rather than the illegality of the restrictions, that prevented the patentees from enforcing those resale price agreements through patent infringement suits.

Turning to the case at hand, we conclude that this well-settled line of precedent allows for only one answer: Lexmark cannot bring a patent infringement suit against Impression Products to enforce the single-use/no-resale provision accompanying its Return Program cartridges. Once sold, the Return Program cartridges passed outside of the patent monopoly, and whatever rights Lexmark retained are a matter of the contracts with its purchasers, not the patent law.

B

The Federal Circuit reached a different result largely because it got off on the wrong foot. The “exhaustion doctrine,” the court believed, “must be understood as an interpretation of” the infringement statute, which prohibits anyone from using or selling a patented article “without authority” from the patentee. Exhaustion reflects a default rule that a patentee’s decision to sell an item “presumptively grants ‘authority’ to the purchaser to use it and resell it.” But, the Federal Circuit explained, the patentee does not have to hand over the full “bundle of rights” every time. If the patentee expressly withholds a stick from the bundle – perhaps by restricting the purchaser’s resale rights – the buyer never acquires that withheld authority, and the patentee

may continue to enforce its right to exclude that practice under the patent laws.

The misstep in this logic is that the exhaustion doctrine is not a presumption about the authority that comes along with a sale; it is instead a limit on the scope of the patentee's rights. The right to use, sell, or import an item exists independently of the Patent Act. What a patent adds – and grants exclusively to the patentee – is a limited right to prevent others from engaging in those practices. As a result, the sale transfers the right to use, sell, or import because those are the rights that come along with ownership, and the buyer is free and clear of an infringement lawsuit because there is no exclusionary right left to enforce.

The Federal Circuit also expressed concern that preventing patentees from reserving patent rights when they sell goods would create an artificial distinction between such sales and sales by licensees. Patentees, the court explained, often license others to make and sell their products, and may place restrictions on those licenses. A computer developer could, for instance, license a manufacturer to make its patented devices and sell them only for non-commercial use by individuals. If a licensee breaches the license by selling a computer for commercial use, the patentee can sue the licensee for infringement. If patentees can employ licenses to impose post-sale restrictions on purchasers that are enforceable through infringement suits, the court concluded, it would make little sense to prevent patentees from doing so when they sell directly to consumers.

The Federal Circuit's concern is misplaced. A patentee can impose restrictions on licensees because a license does not implicate the same concerns about restraints on alienation as a sale. Patent exhaustion reflects the principle that, when an item passes into commerce, it should not be shaded by a legal cloud on title as it moves through the marketplace. But a license is not about passing title to a product, it is about changing the contours of the patentee's monopoly: The patentee agrees not to exclude a licensee from making or selling the patented invention, expanding the club of authorized producers and sellers. Because the patentee is exchanging rights, not goods, it is free to relinquish only a portion of its bundle of patent protections.

A patentee's authority to limit licensees does not, as the Federal Circuit thought, mean that patentees can use licenses to impose post-sale restrictions on purchasers that are enforceable through the patent laws. So long as a licensee complies with the license when selling an item, the patentee has, in effect, authorized the sale. That licensee's sale is treated, for purposes of patent exhaustion, as if the patentee made the sale itself. The result: The sale exhausts the patentee's rights in that item. A license may require the licensee to impose a restriction on purchasers, like the license limiting the computer man-

ufacturer to selling for non-commercial use by individuals. But if the licensee does so – by, perhaps, having each customer sign a contract promising not to use the computers in business – the sale nonetheless exhausts all patent rights in the item sold. The purchasers might not comply with the restriction, but the only recourse for the licensee is through contract law, just as if the patentee itself sold the item with a restriction.

In sum, patent exhaustion is uniform and automatic. Once a patentee decides to sell – whether on its own or through a licensee – that sale exhausts its patent rights, regardless of any post-sale restrictions the patentee purports to impose, either directly or through a license.

Quanta Computer, Inc. v. LG Electronics, Inc.

553 U.S. 617 (2008)

I

Respondent LG Electronics, Inc. (LGE), purchased a portfolio of computer technology patents in 1999 [relating to the storage of data in computer memory.]

LGE licensed a patent portfolio, including the LGE Patents, to Intel Corporation (Intel). The cross-licensing agreement (License Agreement) permits Intel to manufacture and sell microprocessors and chipsets that use the LGE Patents (the Intel Products). The License Agreement authorizes Intel to “make, use, sell (directly or indirectly), offer to sell, import or otherwise dispose of” its own products practicing the LGE Patents. Notwithstanding this broad language, the License Agreement contains some limitations. Relevant here, it stipulates that no license

is granted by either party hereto . . . to any third party for the combination by a third party of Licensed Products of either party with items, components, or the like acquired . . . from sources other than a party hereto, or for the use, import, offer for sale or sale of such combination.

The License Agreement purports not to alter the usual rules of patent exhaustion, however, providing that, “[n]otwithstanding anything to the contrary contained in this Agreement, the parties agree that nothing herein shall in any way limit or alter the effect of patent exhaustion that would otherwise apply when a party hereto sells any of its Licensed Products.”

In a separate agreement (Master Agreement), Intel agreed to give written notice to its own customers informing them that, while it had obtained a broad license “ensuring that any Intel product that you purchase is licensed by LGE and thus does not infringe any patent

held by LGE," the license "does not extend, expressly or by implication, to any product that you make by combining an Intel product with any non-Intel product." The Master Agreement also provides that "a breach of this Agreement shall have no effect on and shall not be grounds for termination of the Patent License."

Petitioners, including Quanta Computer (collectively Quanta), are a group of computer manufacturers. Quanta purchased microprocessors and chipsets from Intel and received the notice required by the Master Agreement. Nonetheless, Quanta manufactured computers using Intel parts in combination with non-Intel memory and buses in ways that practice the LGE Patents. Quanta does not modify the Intel components and follows Intel's specifications to incorporate the parts into its own systems.

III

A

LGE argues that the exhaustion doctrine is inapplicable here because it does not apply to method claims, which are contained in each of the LGE Patents. LGE reasons that, because method patents are linked not to a tangible article but to a process, they can never be exhausted through a sale. Rather, practicing the patent – which occurs upon each use of an article embodying a method patent – is permissible only to the extent rights are transferred in an assignment contract. Quanta, in turn, argues that there is no reason to preclude exhaustion of method claims, and points out that both this Court and the Federal Circuit have applied exhaustion to method claims. It argues that any other rule would allow patent holders to avoid exhaustion entirely by inserting method claims in their patent specifications.

Quanta has the better of this argument. Nothing in this Court's approach to patent exhaustion supports LGE's argument that method patents cannot be exhausted. It is true that a patented method may not be sold in the same way as an article or device, but methods nonetheless may be "embodied" in a product, the sale of which exhausts patent rights. Our precedents do not differentiate transactions involving embodiments of patented methods or processes from those involving patented apparatuses or materials. To the contrary, this Court has repeatedly held that method patents were exhausted by the sale of an item that embodied the method. In *Ethyl Gasoline Corp. v. United States*, for example, the Court held that the sale of a motor fuel produced under one patent also exhausted the patent for a method of using the fuel in combustion motors.⁴ Similarly, *Uni-*

Ethyl Gasoline: 309 U.S. 436 (1940)

⁴The patentee held patents for (1) a fluid additive increasing gasoline efficiency, (2) motor fuel produced by mixing gasoline with the patented fluid, and (3) a method of using fuel containing the patented fluid in combustion motors. The

vis held that the sale of optical lens blanks that partially practiced a patent exhausted the method patents that were not completely practiced until the blanks were ground into lenses.

These cases rest on solid footing. Eliminating exhaustion for method patents would seriously undermine the exhaustion doctrine. Patentees seeking to avoid patent exhaustion could simply draft their patent claims to describe a method rather than an apparatus. Apparatus and method claims may approach each other so nearly that it will be difficult to distinguish the process from the function of the apparatus. By characterizing their claims as method instead of apparatus claims, or including a method claim for the machine's patented method of performing its task, a patent drafter could shield practically any patented item from exhaustion.

This case illustrates the danger of allowing such an end-run around exhaustion. On LGE's theory, although Intel is authorized to sell a completed computer system that practices the LGE Patents, any downstream purchasers of the system could nonetheless be liable for patent infringement. Such a result would violate the longstanding principle that, when a patented item is once lawfully made and sold, there is no restriction on its use to be implied for the benefit of the patentee.

B

We next consider the extent to which a product must embody a patent in order to trigger exhaustion. Quanta argues that, although sales of an incomplete article do not necessarily exhaust the patent in that article, the sale of the microprocessors and chipsets exhausted LGE's patents in the same way the sale of the lens blanks exhausted the patents in *Univis*. Just as the lens blanks in *Univis* did not fully practice the patents at issue because they had not been ground into finished lenses, Quanta observes, the Intel Products cannot practice the LGE Patents – or indeed, function at all – until they are combined with memory and buses in a computer system. If, as in *Univis*, patent rights are exhausted by the sale of the incomplete item, then LGE has no postsale right to require that the patents be practiced using only Intel parts. Quanta also argues that exhaustion doctrine will be a dead letter unless it is triggered by the sale of components that essentially, even if not completely, embody an invention. Otherwise, patent holders could authorize the sale of computers that are complete with the exception of one minor step – say, inserting the microprocessor into a socket – and extend their rights through each downstream purchaser

patentee sold only the fluid, but attempted to control sales of the treated fuel. The Court held that the sale of the fluid to refiners relinquished the patentee's exclusive rights to sell the treated fuel.

all the way to the end user.

We agree with Quanta that *Univis* governs this case. As the Court there explained, exhaustion was triggered by the sale of the lens blanks because their only reasonable and intended use was to practice the patent and because they "embodie[d] essential features of [the] patented invention." Each of those attributes is shared by the microprocessors and chipsets Intel sold to Quanta under the License Agreement.

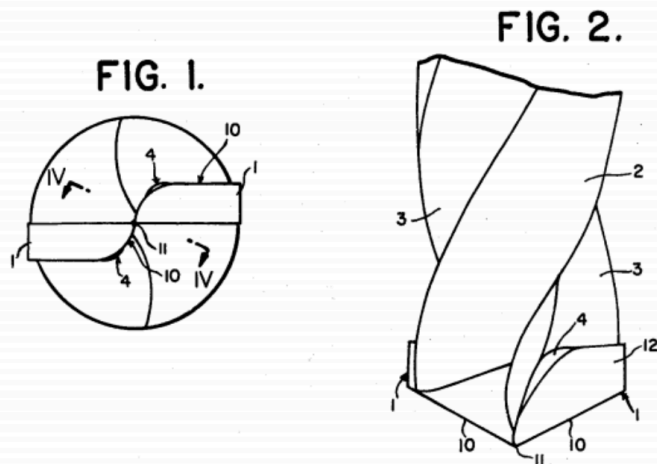
C

Having concluded that the Intel Products embodied the patents, we next consider whether their sale to Quanta exhausted LGE's patent rights. Exhaustion is triggered only by a sale authorized by the patent holder. [The Court held that the sales were authorized.]

Aktiebolag v. E.J. Co.

121 F.3d 669 (Fed. Cir. 1997)

The facts in this case are not in dispute. The patents in suit [4,222,690 and 4,381,162] are directed to a drill with a shank portion and a unique carbide tip geometry that has specially configured cutting edges resulting in a drill suitable for high-feed machining with improved cutting ability especially at its center portion. The drill tip is not separately patented.



As illustrated in the above drawings from the '690 patent, the drill has a tip (1), shank portion (2), twisted grooves (3), projections (4) (these projections bend and break the chips to render them smoothly removable) and a conical end having a center point (11) at the apex of the cone and a pair of cutting edges (10). The drill shank (2) is made of medium carbon steel. The drill tip (1) is made of a more durable carbide and is brazed to the steel shank (2). Brazing is like soldering

but with a much higher melting point. It requires a temperature of 1300 degrees Fahrenheit to join the carbide tip to the steel shank.

Sandvik manufactures a commercial embodiment of the patented drill. Although made of durable carbide, over time and use, the drill tip dulls and may require resharpening. Resharpening, also known as regrinding, involves putting a new edge on the drill tip. Normally, the drill can cut through about one thousand inches of material before needing resharpening, depending, of course, upon the hardness of the material being cut. Sandvik expects the drill tip to be resharpened and, in fact, issues guidelines explaining how to resharpen the tip so as to maintain the specially configured cutting edges. Sandvik does not contend that resharpening constitutes infringement.

E.J. offers a drill repair service which includes resharpening and retipping Sandvik drills. E.J. retips, at the request of its customers, when the tip cannot be sharpened because it chips, cracks or simply wears down after being resharpened several times. According to E.J.'s vice-president, Mr. Robert Hayes, some of E.J.'s customers elect not to have the drill retipped when it cannot be resharpened any longer. E.J. returns the drill to the customer or disposes of it at the customer's request. The parties agree that when the tip is damaged (i.e. chipped, cracked or sufficiently worn down so that it cannot be resharpened), the drill has reached the end of its useful life unless it is retipped.

E.J.'s retipping process includes removing the worn or damaged tip by heating the tip to 1300 degrees Fahrenheit using an acetylene torch. E.J. then brazes in a rectangular piece of new carbide onto the drill shank. After the piece of carbide has cooled, E.J. recreates the patented geometry of the cutting edges by machining the carbide. This process includes: (1) grinding the carbide to the proper outside diameter; (2) grinding the carbide to a point; (3) grinding the rake surfaces of the new point; (4) grinding the center of the new point; and (5) honing the edges. In the final steps of the machining process, E.J. creates the cutting edges by following Sandvik's instructions for tip resharpening.

Sandvik claims that E.J.'s retipping service constitutes an infringing reconstruction of its patented drills. Sandvik does not manufacture or sell replacement drill tips. It contends that it never intended for the drills to be retipped. E.J. contends that its retipping service is a lawful repair of the patented drills.

Direct infringement includes the making of a patented article without authority. 35 U.S.C. § 271(a) (1994). Sandvik contends that E.J. is reconstructing its patented drill and therefore infringing its '690 and '162 patents under § 271(a). However, when Sandvik sold its patented drills to its customers, it granted them an implied license to use the drill for its useful life, see *Aro Mfg. Co. v. Convertible Top Replacement Co.* ("Aro II"), and the implied license to use includes the

Aro I: 365 U.S. 336 (1961)

right to repair the patented drill.

The Supreme Court has taken an expansive view of what constitutes a permissible repair. In *Aro Mfg. Co. v. Convertible Top Replacement Co.* (“*Aro I*”), the Court held that the replacement of the fabric portion of a convertible car top was a permissible repair, not an infringing reconstruction. The Court held: “No element, not itself separately patented, that constitutes one of the elements of a combination patent is entitled to patent monopoly, however essential it may be to the patented combination and no matter how costly or difficult replacement may be.” Therefore, even if E.J.’s retipping service cost almost as much as the drill or if the replacement of the tip is difficult and time consuming, as in this case, these factors are not dispositive of reconstruction.

The Court also rejected the “heart of the invention test.” *See id.* (holding that replacement of the distinguishing part of the patented combination does not amount to a reconstruction because a patent covers the totality of the elements in a combination). Therefore, the fact that E.J. may be replacing the novel features of the ’690 patented invention is also not dispositive of reconstruction.

In *Aro I*, the Supreme Court further explained the test for what constitutes a reconstruction: “The decisions of this Court require the conclusion that reconstruction of a patented entity, comprised of unpatented elements, is limited to such a true reconstruction of the entity as to ‘in fact make a new article,’ after the entity, viewed as a whole, has become spent.” Although we question the district court’s finding that the tip is, in fact, a separate part of the device, we need not reach this issue because the court nevertheless failed to analyze whether the replacement of this “part” constituted reconstruction consistent with *Aro I*.

There are a number of factors to consider in determining whether a defendant has made a new article, after the device has become spent, including the nature of the actions by the defendant, the nature of the device and how it is designed (namely, whether one of the components of the patented combination has a shorter useful life than the whole), whether a market has developed to manufacture or service the part at issue and objective evidence of the intent of the patentee. Under the totality of the circumstances, we hold in this case that E.J.’s actions are a reconstruction.

By E.J.’s own admission, the drill is “spent” when the tip can no longer be resharpened unless it is retipped. In fact, the record reveals that E.J.’s customers may elect not to retip and inform E.J. to discard the drill instead.

Moreover, the nature of the work done by E.J. shows that retipping is more like reconstruction than repair. E.J. does not just attach a new part for a worn part, but rather must go through several steps

to replace, configure and integrate the tip onto the shank. It has to break the worn or damaged tip from the shank by heating it to 1300 degrees Fahrenheit. It brazes to the shank a new rectangular block of carbide and grinds and machines it to the proper diameter and creates the point. Thereafter, the tip is honed and sharpened, grinding the rake surfaces and the center of the point and honing the edges. These actions are effectively a re-creation of the patented invention after it is spent.

This is not a case where it is clear that the patented device has a useful life much longer than that of certain parts which wear out quickly. For example, in *Wilson v. Simpson*, in determining that a repair had occurred, the Supreme Court focused specifically on the fact that the machine was designed so that the knives had to be replaced long before the other components:

The proof in the case, is, that one of [the patentee's] machines, properly made, will last in use for several years, but that its cutting-knives will wear out and must be replaced at least every sixty or ninety days. [If such a] part of the combination is meant to be only temporary in the use of the whole, and to be frequently replaced, because it will not last as long as the other parts of the combination, its inventor cannot complain.

Wilson: 50 U.S. 109 (1850)

See also *Aro I* (noting that the fabric had a much shorter expected life (about three years) than the convertible car top); *Porter v. Farmer Supply Serv., Inc.* ("The useful life of a disk is measured in weeks, that of a harvester is five or six years. The district court found, and it is undisputed, that a purchaser can expect to wear out many disks during the useful life of the header.").

Porter: 790 F.2d 882 (Fed. Cir. 1986)

The drill tip in this case is not a part like the detachable knives in the *Wilson* that have to be replaced periodically over the useful life of the planing machine. The drill tip was not manufactured to be a replaceable part, although it could be resharpened a number of times to extend its life. It was not intended or expected to have a life of temporary duration in comparison to the drill shank. And finally, the tip was not attached to the shank in a manner to be easily detachable.

In *Aro I*, the Supreme Court also noted that "the consequent demand for replacement fabrics has given rise to a substantial industry." Evidence of development in the industry could also be a factor tending to prove that there is a reasonable expectation that the part of the patented combination wears out quickly and requires frequent replacement. In this case, there is no evidence of a substantial market for drill retipping of the sort required for the Sandvik drill. There is no evidence of large numbers of customers retipping these drills or of companies (other than E.J.) offering to retip these drills. No

one manufactures replacement tips for Sandvik's drill and although some customers opt to retip the drill only a small percentage of all drills manufactured are retipped.

Finally, there was no intent evidenced by the patentee that would support E.J.'s argument that replacement of the tips is a repair. *See Sage Products* (evidence that patentee intended the inner containers to be replaced, that it manufactures replacement parts and instructs customers to replace supports holding such replacement a permissible repair); ?? (considering that the patentee sold replacement cutting disks for its tomato harvester). The evidence shows that Sandvik never intended for its drills to be retipped. It did not manufacture or sell replacement drill tips. It did not publish instructions on how to retip its patented drills or suggest that the drills could or should be retipped. Sandvik was aware that the drill tip would need occasional resharpener and instructed its customer on how to resharpen the tip. There is, therefore, no objective evidence that Sandvik's drill tip was intended to be a replaceable part. Although the repair or reconstruction issue does not turn on the intention of the patentee alone, the fact that no replacement drill tips have ever been made or sold by the patentee is consistent with the conclusion that replacement of the carbide tip is not a permissible repair.

Although there is no bright-line test for determining whether reconstruction or repair has occurred, we conclude based on all of the facts in this case that E.J. is reconstructing an otherwise spent device when it retips Sandvik's drills. Accordingly, we hold that E.J.'s drill tip replacements infringe the '690 and '162 patents.

3 Miscellaneous

Patent Act

§ 273(a)

Defense to infringement based on prior commercial use

Even though thousands of patent cases are filed every year, the prior use defense is only rarely asserted. Why might that be?

A person shall be entitled to a defense under section 282(b) with respect to subject matter consisting of a process, or consisting of a machine, manufacture, or composition of matter used in a manufacturing or other commercial process, that would otherwise infringe a claimed invention being asserted against the person if –

- (1) such person, acting in good faith, commercially used the subject matter in the United States, either in connection with an internal commercial use or an actual arm's length sale or other arm's length commercial transfer of a useful end result of such commercial use; and
- (2) such commercial use occurred at least 1 year before the earlier of either –
 - (A) the effective filing date of the claimed invention; or

- (B) the date on which the claimed invention was disclosed to the public in a manner that qualified for the exception from prior art under section 102(b).

Madey v. Duke University
307 F.3d 1351 (Fed Cir. (2002))

[Madey owned a patent on certain laser technology. Duke practiced the patent as part of a research project under a federally funded grant.]

Madey argues, and we agree, that the district court had an overly broad conception of the very narrow and strictly limited experimental use defense. The district court stated that the experimental use defense inoculated uses that "were solely for research, academic, or experimental purposes," and that the defense covered use that "is made for experimental, non-profit purposes only." Both formulations are too broad and stand in sharp contrast to our admonitions in *Embrex* and *Roche* that the experimental use defense is very narrow and strictly limited. In *Embrex, Inc. v. Service Engineering Corp*, we held that the defense was very narrow and limited to actions performed "for amusement, to satisfy idle curiosity, or for strictly philosophical inquiry." Further, use does not qualify for the experimental use defense when it is undertaken in the "guise of scientific inquiry" but has "definite, cognizable, and not insubstantial commercial purposes."

Embrex: 216 F.3d 1343

Our precedent clearly does not immunize use that is in any way commercial in nature. Similarly, our precedent does not immunize any conduct that is in keeping with the alleged infringer's legitimate business, regardless of commercial implications. For example, major research universities, such as Duke, often sanction and fund research projects with arguably no commercial application whatsoever. However, these projects unmistakably further the institution's legitimate business objectives, including educating and enlightening students and faculty participating in these projects. These projects also serve, for example, to increase the status of the institution and lure lucrative research grants, students and faculty.

In the present case, the district court attached too great a weight to the nonprofit, educational status of Duke, effectively suppressing the fact that Duke's acts appear to be in accordance with any reasonable interpretation of Duke's legitimate business objectives. The correct focus should not be on the non-profit status of Duke but on the legitimate business Duke is involved in and whether or not the use was solely for amusement, to satisfy idle curiosity, or for strictly philosophical inquiry.