



Matthew McBride

Casting a wider net in the quest for hidden prior art

Matthew McBride, CAS, continues his discussion on prior art searching, looking more closely at invalidity and rejection of modern patents and prior art resurfaced by digitization of hard-to-find materials.

Last month, we discussed key fundamentals to a thorough prior art search. We touched on several potential pitfalls of an incomplete prior art search, including patent infringement, rejection of a patent application and patent invalidation. This month, we'll be shining the spotlight on invalidity and rejection more closely. We'll discuss recent reforms driving a spike in invalidity claims and take a look at some interesting cases of modern patents invalidated or rejected by prior art, resurfaced by digitization of hard-to-find and obscure sources and materials. Of course, expert patent searchers played a vital role in these examples as well.

Improved turnaround times increase rate of invalidity petitions

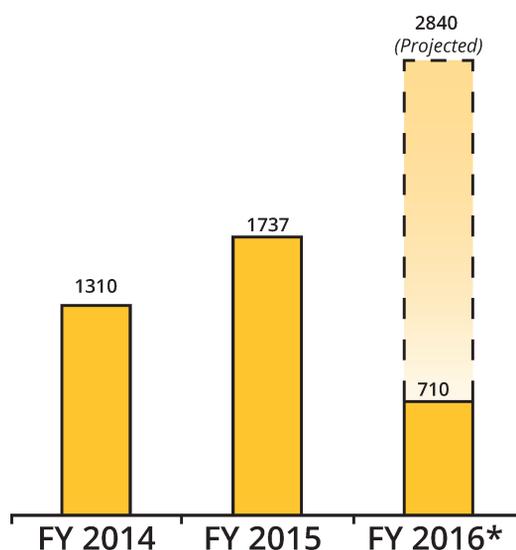
Among other important changes marking the most impactful patent reform in at least 50 years, the America Invents Act (AIA) introduced a new patent proceeding designed to offer a non-litigation outlet for petitioners to challenge claims within a granted patent in the United States. The proceeding, called an *inter partes* review (IPR), is conducted by the Patent Trial and Appeal Board (PTAB) and is available with respect to those patents granted on or after September 16, 2012. IPR proceedings offer a guaranteed turnaround time of one to one and a half years – half the time of the previous incarnation, known as an *inter partes* re-examination. This faster turnaround

serves to speed up the process of invalidation claims and free up time and resources for district courts that would otherwise hear litigation on these claims.

Beyond halving the time required to obtain a decision on an invalidity claim, the availability of IPR proceedings have caused a surge in invalidity petition filings. Not only that, statistics from the USPTO show that, as of March of 2016, some or all of the claims in a patent are invalidated in a whopping 85% of invalidity claims that reach decisions through IPR proceedings. In fact, in most cases, to the tune of 71%, all claims are invalidated.

It is worth noting that a significant portion of IPR trials are never completed. The vast majority of those that are not completed (or 39% of all petitions filed, more specifically), end in a settlement, either before or after a trial is instituted. Another 30% of petitions are denied outright.

Number of *inter partes* review petitions filed by fiscal year



*Data current as of 3/31/2016
Data source: USPTO

Résumé

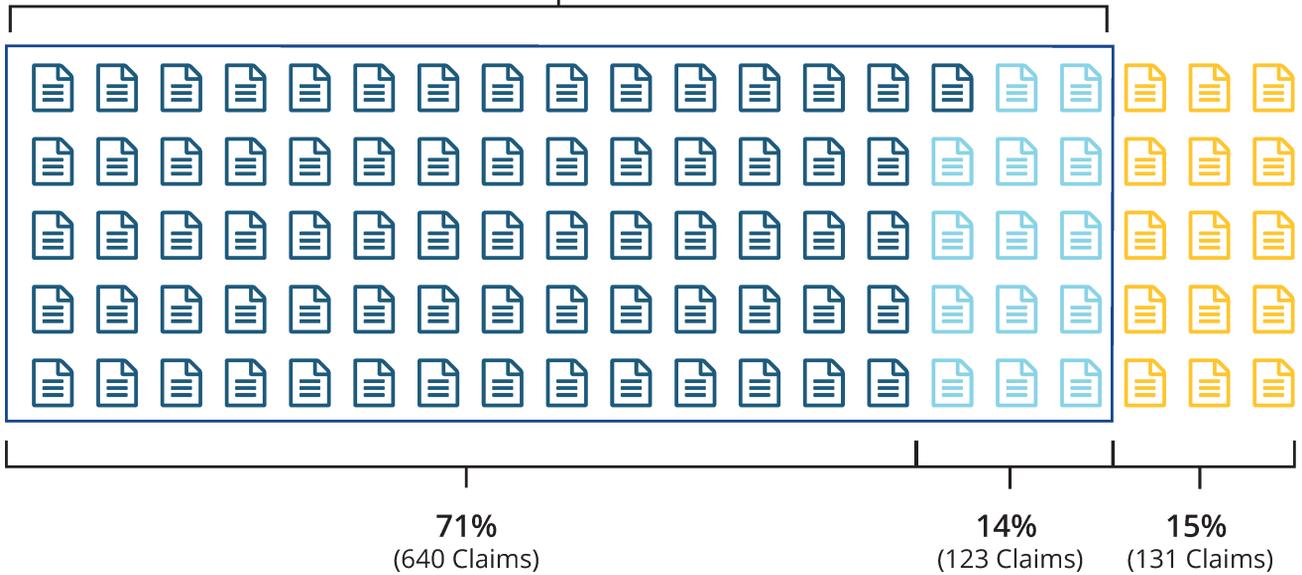
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Breakdown of all completed *inter parts* review trials to date

Represents 85% of Claims



-  All Instituted Claims Unpatentable
-  Some Instituted Claims Unpatentable
-  No Instituted Claims Unpatentable

Data source: USPTO

With the overall success rate of these petitions, it should come as no surprise that more and more of them are being filed every month. While the results outlined above are limited to patent and petition activity in the United States, reviews of statistics from the European Patent Office, State Intellectual Property Office of the People’s Republic of China and Korean Intellectual Property Office also reveal increases (albeit a lower volume) in filings, reviews, and examinations. So, the increase can’t be attributed to patent reforms of the AIA alone: What else might be contributing to this rise?

Digitization broadens reach of global prior art

Hunting is instinctual. We are drawn to it by our nature. Today, freed of the daily need to hunt for sustenance, we have evolved to embark on hunts of a different nature: A retro fashion shop owner spends hours sifting through thrift shop aisles for the next vintage style to bring back; a coin shooter combs the sands of the local beach with her trusty metal detector; an audiophile digs through crate after crate in the basement record shop across town, looking for the next hidden gem to add to an already extensive collection. Similarly, the patent lawyer tasked with an invalidity assignment must search the troves of history for their client’s holy grail – a piece of prior art long since forgotten, whose existence will form the basis of an invalidation claim against a competitor’s granted patent. The increasing availability of once-hidden prior art through digitization has broadened the landscape for the patent treasure hunter, who can now search much further and cast a wider net than in the past.

Dissertation collections are one noteworthy source of overlooked prior art becoming more widely available through digitization. Various resources for dissertation collections are available throughout the web. ProQuest® is one of the more well-known providers of a broad

collection of dissertations and theses information. Their Dissertations Abstracts database is available through STN® from CAS, a division of the American Chemical Society. In fact, the CAS databases contain well over 500,000 dissertations from multiple scientific disciplines, stretching from biology to engineering, materials science and physics. Dissertations are available from numerous countries as well, including the United States, Germany, Russia, Japan, China and more.

From Russia with love

In one recent example of patent busting, just this past October, a Russian dissertation dating from 1994 was used to invalidate US patent 6,896,773, a patent pertaining to the use of plasma for high-deposition sputtering, a method for depositing films on semiconductor substrates. The patent was granted yet another decade later on May 24, 2005. Without the digitization and sharing of otherwise difficult to obtain literature, such a discovery would never have been possible. Even just a decade ago, the likelihood of a dissertation published in the 1990s, stored in a Russian library in Moscow, leading to the invalidation of a U.S. patent was next to nil.

“Dissertation collections are one noteworthy source of overlooked prior art becoming more widely available through digitization.”

In this case, US patent 6,896,773, issued to patent owner Zond, LLC, claimed to be the first documented use of plasma for high-deposition sputtering. The Russian dissertation (D.V. Mozgrin, High-Current Low-Pressure Quasi-Stationary Discharge in a Magnetic Field: Experimental Research, Thesis at Moscow Engineering Physics Institute (1994) (Ex. 1015) (“Mozgrin Thesis”)) cited by the petitioners also disclosed a sputtering technique using plasma. When combined with an entry in the 2000 edition of the Encyclopedia of Low-Temperature Plasma by V.E. Fortov, the prior art rendered the claims in Zond’s patent obvious. There were multiple petitioners named, the Gillette Company, Taiwan Semiconductor Manufacturing Company, TSMC North America Corp, Fujitsu Semiconductor Limited and Fujitsu Semiconductor America, Inc., among them, showing an eagerness for others to enter products of their own into the market.

The Mozgrin thesis disclosed a quasi-stationary plasma discharge with four different stable forms, one of which was a high-current magnetron discharge regime with a plasma density exceeding $2 \times 10^{13} \text{ cm}^{-3}$, a level appropriate for sputtering. This discharge is shown to be generated between an anode and cathode assembly. Zond’s argument relied on the premise that this plasma discharge is generated in a fixed location; but given Mozgrin showing the discharge to be generated at some location between the two assemblies, the patent examiners rejected this assertion based on the evidence presented.

Making the old new again

A patent application filed by DuPont in 2006 presents another interesting example of historical prior art being used to halt claims of a modern patent. In US 2007/0077263, DuPont claimed novel use of substituted pulegamic amides and compositions thereof in topical treatments for skin, particularly as an insect repellent. The patent sought to claim novelty, inventive steps and industrial applicability of the use of N-phenyl pulegamic amide as an insect repellent. Under review, the patent examiner uncovered long lost prior art dating all the way back to 1911 in a German collection of scientific abstracts called *Chemisches Zentralblatt*. The oldest abstracts compendium of chemistry, *Chemisches Zentralblatt* covers scientific literature dating

from 1830 to 1969 and provides a rare, unique look into the early history of chemistry as science.

In the cited volume of *Chemisches Zentralblatt*, the examiner referred to a piece of prior art detailing the anilide of pulegamic acid, which is the same as N-phenyl pulegamic amide. Claim 1 of the DuPont application described the formula of said compound, while claim 4 claimed novelty of the compound in Formula 1 as a single stereoisomer or a combination of stereoisomers. Since the disclosure in the prior art found in *Chemisches Zentralblatt* did not indicate stereochemistry, the examiner found the disclosed formula in the prior art could have referred to either a single stereoisomer or a mixture, and claims 1 and 4 of the DuPont application were thus rejected as not novel.

The examiner went on to reject eight more claims in the DuPont application as anticipated based on the crystallization of the N-phenyl pulegamic amide in the prior art, since this crystallization implicitly disclosed the trivial dissolution of the compound in ethanol. The examiner even found that this solution may be viewed as applicable to skin, hide or any surface, and even sprayable. However, the *Chemisches Zentralblatt* abstract made no claims to the use of the compound as an insect repellent, so another 26 claims were granted as a novel inventive step regarding the compound, and all claims were allowed as new industrial applicability.

Collections like *Chemisches Zentralblatt* are of particular interest to science historians and libraries, and also provide a source of potential prior art for patent lawyers determining IP strategy for new developments or seeking freedom to operate. Recently, the entire collection of *Chemisches Zentralblatt* was digitized as a searchable English translation by CAS. The result is now available as a new solution called ChemZent™. Offerings like ChemZent act as a doorway into the rich history of science and patent literature, and the Society saw a keen interest in the product even before its release. As the scope of the digital world continues to expand, the availability of hard-to-find prior art will grow with it, and so, it is likely invalidation petitions and rejections based on hidden prior art will too.

