Inventors DIGEST

MARCH 2016 Volume 32 Issue 3

Gwen Jimmere
OWNS HER BEAUTY—NATURALLY

An Exclusive Interview with USPTO Director Michelle Lee

I SPY GATHERING INTELLIGENCE ON THE COMPETITION

An Essential Guide
HOW TO DESCRIBE AN INVENTION

Goal Tending
JASON SMITH'S GOT NOTHING BUT NET

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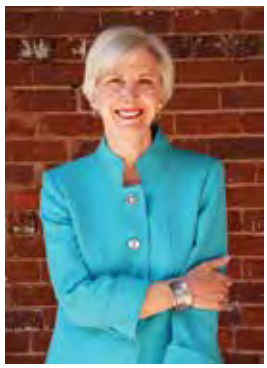
Number Crunching



Long before I became the editor of *Inventors Digest*, I published a women's magazine in Charlotte, N.C. Each March, in honor of Women's History Month, the magazine paid tribute to the generations of female trailblazers whose significant contributions proved invaluable to society. Despite the good intentions of Women's History Month, I always found it a bit disconcerting that a month had to be designated to give these women the recognition they deserved. Yet, when the March issue of *Inventors Digest* rolled around, I couldn't help turning my attention to women innovators—or the lack thereof.

Although women have been innovating since Eve figured out the most practical way to wear a fig leaf, for a variety of reasons, their numbers sorely lag behind those of men. For decades, women were valued more for their ability to rear children and care for the home than they were for their intellect, which made the inventing process much more difficult. Women faced the problems associated with inventing, as well as prejudice and ridicule when they sought help in implementing their ideas.

In addition, property laws made it difficult to acquire patents. Although the Patent Act of 1790 opened the door for anyone, male or female, to protect his or her invention with a patent, only a few states allowed women to own property—including intellectual property. Mary Keis, in 1809, was the first woman daring enough to apply for a U.S. patent under her own name. Keis' patented process for weaving straw with silk boosted the nation's hat industry. Notice, I mentioned "under her own name." To avoid the property-right issue, many women put their initials or their husband's names on patent applications.

Although societal views and laws concerning women have changed drastically in recent years, women are graduating from college in greater numbers than men and form the majority of graduating doctors and lawyers, women are greatly underrepresented in the patent arena.

Patents with women's names did not exceed 2 percent of all patents granted from 1637 to the mid-1900s. Although the share of patents awarded to women has steadily increased over time, it is still less than 15 percent according to a study by several economists published in the working paper "The Lifecycle of Inventors." The participants found that at the current rate of convergence, it will take another astounding 140 years for women to obtain 50 percent of granted patents.

United States Patent and Trademark Office Director Michelle Lee delivered the above remarks during a speech at a University of Texas roundtable, titled "Innovation: Does Gender Matter?" In my opinion, it does. Take a look at the USPTO, where 35 percent of the workforce is female, 31 percent of the leaders are women and Michelle Lee, who is highly qualified, is the first female director since the agency was founded 40 years ago.

Next, let's take a look at the National Inventors Hall of Fame. Founded in 1973, it took almost 20 years for the organization to induct a woman: Gertrude Belle Elion, in 1991. Elion was honored for her pioneering research at Burroughs Wellcome & Co. that led to the development of drugs to combat leukemia, septic shock and tissue rejection in patients undergoing kidney transplants. By the time the 2016 inductees are recognized this coming May, out of 532 total members of the National Inventors Hall of Fame, only 30 women will have their names on the walls.

After Elion broke the glass ceiling, women were inducted into the Hall of Fame for, among other things, condensed milk, the dishwasher, wrinkle-free cotton and a signal for ships, but as the level of global competition escalates, women can and must grasp the golden ring that makes the world go 'round: STEM—science, technology, engineering and mathematics. Only then will we have the perspective and opportunity to help solve the myriad problems and issues the world faces today, and in the process, add our names to the growing list of inventors who have made significant contributions to man—and womankind.

—Cama

INGENUITY IS AMERICA'S MOST VALUABLE RESOURCE.

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America has been on the cutting edge of innovation for over 200 years because of a strong patent system. If Congress passes harmful patent legislation, it will devalue the system that has helped turn America's best thinking into our nation's #1 export. That will mean fewer new ideas brought to market, fewer jobs and a weaker economy. We can't maintain our global competitive edge by undercutting our greatest asset.

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Gwen Jimmere; photograph by Brian Rozman.

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Bright Ideas

Compiled by Eleanor Merrell and Taryn Walls

OMBEE (Office-Mobile-Bee)

PORTABLE STAND-UP DESK

ombee.com

Studies have proven that the absence of movement can lead to heart disease, stroke, diabetes, cancer and even premature death. If you have a desk job, it's important to move around every half hour. Better yet, try standing. OMBEE can help.

Ombee is a suitcase that turns into a modular stand-up desk. Stand-up desks have been shown to relieve back pain, increase productivity and improve overall health. OMBEE's sleek aesthetics combined with durable materials create a versatile, portable workspace that can be set up on an existing desk in two minutes. Ombee is available in two versions: laptop and desktop. The desk weighs less than 13 pounds and can be adjusted with a six- to 18-inch lift, so users of various heights can find personal levels of comfort. To get the greatest health benefits, do your work standing on the OMBEE board, which features two revolving disks topped with anti-fatigue mats to keep your legs moving. The board features the honeycomb pattern found in the desk. Designed for high impact, it can hold 700 pounds.

The basic price for a black or white OMBEE is $199. Included are the case with eight legs and a stand, the OMBEE board and anti-fatigue mats. OMBEE is projected to begin shipping July 2016.

Seed

SMART HYDRATION

moikit.com

The simplest necessity in life—water—has now gone high-tech. Seed, the new smart bottle by the Moikit team, encourages and tracks healthy water consumption, records your water intake to construct a health profile and warns of high water temperatures or staleness.

Seed tracks and uploads real-time data to its app or another smart fitness device. Its water consumption algorithms process your customized hydration needs based on water intake, body composition, activity level and outside temperature. The bottle even vibrates and activates the LED display when you need to drink more water.

Using advanced vacuum insulation, Seed can keep your water cold for 24 hours or hot for 12 hours. The insulation also warns you if the liquid is excessively hot. Seed displays warnings and other data, like intake reminders and hydration progress, through simple commands that involve twisting the lid or pressing the LED screen.

The bottle's 2000mAh battery pack allows a battery life of one to two years. Seed is constructed with imported Japanese stainless steel, copper inlay and nitrogen welding. It comes in 12 oz. (350ml), 14 oz. (420ml) and 17 oz. (500ml) sizes, and is available in a variety of metallic colors.

Seed is available on Indiegogo for $44.

BetterBack

SIMPLE RELIEF FOR BACK PAIN

getbetterback.com

Back pain spares very few of us. According to the American Spinal Decompression Association, over 80 percent of Americans are affected by low back pain during their lifetimes. Countless back relief gimmicks on the market promise miracle relief, yet they rarely deliver. Katherine Krug purchased, tried and ultimately trashed many of these. Her frustration with poorly designed and ineffective products, along with inhibiting back pain, led her to begin experimenting with relief mechanisms. She consulted with spinal doctors to learn the mechanics of the human back and the relationship between back health and posture. After constructing six prototypes, Krug arrived at the design that now characterizes her product, BetterBack.

BetterBack consists of a cushion that wraps around the user's lower back, as well as two flexible straps that extend from the cushion and wrap around the user's knees. These anchor the cushion and draw the lower back forward, thereby improving posture. Simply wearing BetterBack 15 minutes each day can help improve posture; however, the more you wear it, the faster your posture improves and the less back pain you'll endure.

BetterBack comes with a small carrying pouch, which makes for ease of portability. It is available for $59 plus shipping.

Üllo

NO-WORRY WINE

ullowine.com

Üllo is a revolutionary new wine-purification product that removes sulfites, restoring wine to its natural, preservative-free state. Sulfites are artificial chemical preservatives that are no longer needed once the bottle is opened, so why put them in your body? Üllo uses a food-grade polymer to selectively remove sulfites to a more naturally occurring level of less than 10 ppm, while allowing other compounds in wine to flow through unaffected.

Üllo features a stain-resistant, dishwasher-safe silicone cup, an encapsulated polymer filter, an aerator and a silicone base that captures stray drips. Üllo sits comfortably on top of a variety wine glasses or on a specially designed hand-blown borosilicate glass carafe or decanter, which are sold separately.

Üllo is even designed to purify and aerate wine simultaneously. Simply twist Üllo and pour the bottle of wine through it. The purified wine flows through Üllo in a helical shape that allows the wine to breathe. Üllo begins shipping May 2016. The cost for the wine purifier, base and five sulfite filters is $60.

"I tell young people to reach for the stars. And I can't think of a greater high than you could possibly get than by inventing something." —STEPHANIE KWOLEK, INVENTOR OF KEVLAR

Néit

SPACE-SAVING LUGGAGE

neit.life

How many times have you gone on a budget-friendly vacation, booked a tiny room and discovered that your suitcase hogs half of the available floor space? Néit luggage is the solution to this problem. Available in a variety of sizes, Néit is comprised of tough polycarbonate that protects your possessions and an aluminum frame that collapses to a height of three inches. Néit luggage can be stored beneath most beds or hung from a hook using its carabiner-style handle. The luggages' four revolving spinner wheels can also be folded or removed for storage.

Néit even has a GPS tracking system and an accompanying travel app that allow owners to locate their suitcase, should it become lost in transit. The Néit app can also provide up-to-date flight information, process flight and lodging transactions, save copies of your boarding pass and offer information about popular activities at your destination.

Early bird prices start at around $200. Néit luggage begins shipping Dec 2016.

Mothers of Invention

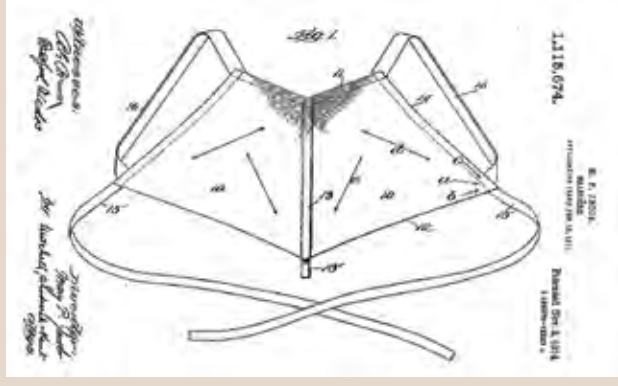
WOMEN WHO SHAPED OUR WORLD

In honor of Women's History Month, *Inventors Digest* pays tribute to just a few of our nation's outstanding female innovators.

KATHARINE BURR BLODGETT, PH.D., in 1926, was the first woman to earn a Ph.D. in physics from Cambridge University. As a scientist and inventor, Blodgett was issued eight patents during her career (two in conjunction with General Electric co-worker Vince Schaefer), but she is best known for U.S. Patent No. 2,220,860, issued in March 1938, for invisible, non-reflective glass. Her research on monomolecular coatings, conducted alongside Nobel Prize-winning Dr. Irving Langmuir, in which she discovered a means to measure the thickness of thin films using a color gauge, led to this revolutionary discovery.

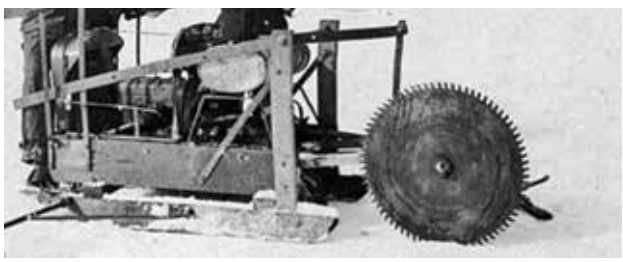
Normal glass reflects a significant portion of light; however Blodgett discovered that if she used a coating of 44 layers of barium at one molecule each (four millionths of an inch), she could get 99 percent of light to pass through the glass. The thin films, which naturally reduced glare on reflective surfaces, when layered to such a minute thickness, completely cancelled out the reflection from the surface underneath. Her "invisible" glass was initially used for lenses in cameras, movie projectors and submarine periscopes. Today, non-reflective glass is essential for eyeglasses, car windshields and computer screens.

Before computer software was patentable, in 1952 **REAR ADMIRAL GRACE HOPPER, PH.D.** developed one of the world's first compilers and compiler-based programming languages for computers. Hopper's belief that computer programs could be written in English led to the development of the B-O compiler, later known as FLOW-MATIC. It was designed to translate a language that could be used for typical business tasks, such as automatic billing and payroll deductions. FLOW-MATIC later became the basis for COBOL, which is short for Common Business-Oriented Language. COBOL is still used today in business, finance and administrative programs. Hopper was also instrumental in standardizing national and international compilers.



New York City socialite, publisher and patron of the arts **MARY PHELPS JACOBS**, later known as Caresse Crosby, was granted U.S. Patent No. 1,115,674 in November of 1914 for the Backless Brassière. She created the bra from two handkerchiefs, some pink ribbon and a few pins after being frustrated that the whalebones from her corset showed through her sheer evening gown. In 1922, Jacob founded the Fashion Form Brassière Company to manufacture and sell her invention, but only a few hundred units were produced. Jacob eventually sold her patent to the Warner Brothers Corset Company for the equivalent of $21,000. The company went on to earn more than $15 million from the patent over the next 30 years.

While working for DuPont, **STEPHANIE KWOLEK** was granted U.S. Patent No. 3,819,587 for Kevlar®, best known as a bulletproof fabric. She first developed the synthetic material in 1965 while searching for a lightweight yet strong fiber to reinforce radial tires. The liquid crystalline substance she discovered was lightweight, stronger than steel and cut, chemical and flame resistant. Today, Kevlar is used in hundreds of products including armor for troops, radial tires and fiber-optic cables. It also shows up on ski slopes, desert terrains and in outer space. Kwolek ultimately obtained 28 patents during her 40-year tenure as a research scientist. When she was inducted into the National Inventors Hall of Fame in 1995 (the fourth woman to do so), she was escorted to the stage by a policeman, whose Kevlar vest had saved his life.

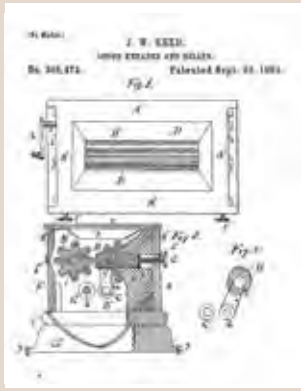


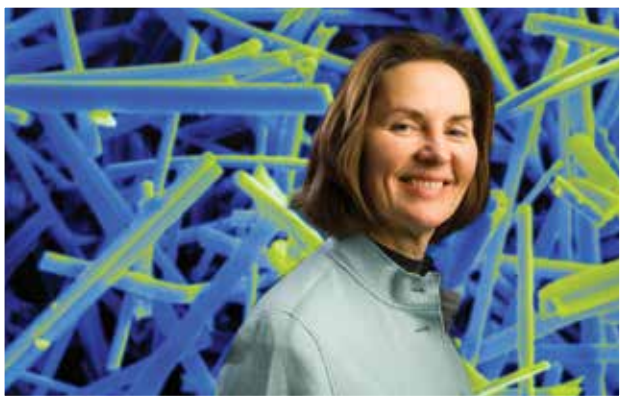
Although **TABITHA BABBITT** never sawed a log, she came up with the idea for a circular saw when she observed two men at a sawmill pulling a whip saw back and forth. Realizing that a round blade would be more efficient, Babbitt devised a prototype with a round metal disc that had sharp teeth on the edges. She attached the blade to the axle of her weaving machine and pumped it at a high rate of speed. The blade easily cut wood and other materials, proving her invention a success.

A larger version of Babbitt's circular saw was first used in a sawmill in 1813, where it was mounted on a table and hooked up to a water-powered machine. Her design eventually became a basic tool in American saw mills.

As a Shaker, Babbitt did not believe in patenting her design. Instead, she shared her idea freely—until 1816, when two Frenchmen, who learned about the saw in a Shaker newspaper—patented her idea. Babbitt is also given credit for inventing a process for manufacturing false teeth and an improved spinning wheel head. She shares the invention of cut nails with Eli Whitney.

JUDY REED is considered to be the first African-American woman to earn a patent. On September 23, 1884, Reed received Patent No. 305,474 for her improvements to a Dough Kneader and Roller. Reed's device allowed the dough to mix more evenly as it progressed through two intermeshed rollers carved with corrugated slats that acted as kneaders. The dough then passed into a covered receptacle to protect the dough from dust and other particles in the air. At a time when women couldn't own property, Reed put only her initials—J.W. Reed—on the patent application.





ESTHER TAKEUCHI, PH.D. has the distinction of holding more patents than any American woman. She is a materials scientist, chemical engineer and professor at Stony Brook University, who mainly works on energy storage systems and power sources for biomedical devices. Most of her approximately 150 patents are for technologies that improve batteries for use in the medical field. In fact, Takeuchi's first big breakthrough came in the type of batteries that are used in heart defibrillators. She led efforts to invent and refine the lifesaving Li/SVO battery technology, which is utilized in the majority of today's implantable cardioverter defibrillators. More recently, Takeuchi's lab at Stony Brook received a grant to conduct fundamental research into how batteries work. The goal is to reduce the amount of heat batteries produce, which, in turn, will increase their efficiency. Takeuchi was inducted into the Inventors Hall of Fame in 2011 for her groundbreaking work in implantable medical devices.

I Spy

HOW TO GATHER INTELLIGENCE ON YOUR COMPETITION

BY JOHN G. RAU

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If you decide to manufacture and sell your new invention on your own, to be successful you need to understand the competitive environment for your new product. Before you can begin to assess and evaluate your competition, you must first define the parameters of your industry and identify the customers who will benefit from your product. Once you have done this, you will have a more thorough understanding of who your competitors might be.

Unless you have a revolutionary product that meets a completely new need, competition is likely. Your business can expect to face the following competitors:

- **Direct competitors:** These businesses, which are easy to identify, offer products or services that are identical or similar to those offered by yours.
- **Indirect competitors:** These businesses offer products or services that are close substitutes, targeting your market with the same or a similar value proposition but delivering a different product. When indirect competitors notice that you are successful with a product or service, they may try to duplicate your offerings and, as a result, become direct competitors.
- **Future competitors:** These are existing companies that are not yet in your marketplace but could move there at any time, directly or indirectly.
- **Game-changing competitors:** These companies have the ability to introduce products or services in your marketplace that will effectively eliminate the need for your products or services. For example, if your business sold only cathode ray tube televisions and parts, the introduction of plasma screen technology would have put you out of business. These competitors are the most difficult to identify without carefully tracking consumer needs and preferences, as well as technology-development trends.

Playing Detective

Identifying every existing and potential source of competition is an impossible task, but once you know who your main competitors are, you can learn from them. In "6 Ways to Find Out What

Business survival depends on conducting intelligence activities and monitoring the broader market for new developments that could affect your company and its products, brands, suppliers and distributors.

Your Competition Is Up To—How to Gather Competitive Intelligence on Your Competitors," About Money's small business expert Susan Ward suggests the following ways to find out what your competition is doing:

- **Pay attention to their ads:** Your competitors' ads can tell you a lot about the audience they're targeting and the products or services they're promoting. This is useful when you're planning your own promotions or advertising campaigns.
- **Visit regularly:** If your competitors have brick-and-mortar stores, make regular visits. Dropping by is a great way to keep your eye on the products or services that are being promoted, check on prices and get display ideas. If your competitors publish newsletters, sign up. Visit your competitors' Web sites on a regular basis.

Look for companies in your industry that provide products and/or services to the same type of customer as yours. An obvious starting point is the Internet. Type into a search engine such phrases as "companies that manufacture products of type X" or "companies that provide services of type Y." These results, which could number in the hundreds or thousands, will get you started. Visiting these sites will help you mine down to more specific information. The more definitive the search criteria, the better the quality of your results.

The Internet search is helpful, but don't stop there. Other sources of competitor information include:

- Magazines, trade association reports and other publications related to your industry.
- Market research reports.
- Public records databases and published government information. Examples include census data for various types of industries, statistical reports from government agencies and Security Exchange Commission filings related to a company's business data and financial performance.
- Subscription to fee-based information services, such as those provided by Dun and Bradstreet and its subsidiary, Hoover's. These, collectively, provide the largest source of business information in the world.

Although many view libraries as relics of the past, public libraries are excellent resources for gathering market research and competitive information. Start there before you spend money to buy reports and subscribe to information services.

Clues for Established Businesses

Gathering information about the competition and analyzing it is an important part of working through your invention commercialization plan, but competitive intelligence is just as important to established businesses. New competitors may move into your market, or existing competitors may change their practices, altering the competitive landscape. The entrance of new competitors is likely when:

- There are high profit margins in the industry.
- There is insufficient supply for demand in the industry.
- There are no major barriers to entry.
- There is future growth potential.
- Competitive rivalry is not intense.
- Gaining a competitive advantage over existing firms is feasible.

Every business has competition, making it necessary to stay abreast of what competitors are doing. Business survival depends on conducting intelligence activities and monitoring the broader market for new developments that could affect your company and its products, brands, suppliers and distributors.

In summary, as intel.com points out, "Business is like a game of chess, where the No. 1 goal is to out-strategize and outmaneuver each of your competitors. You do this by knowing and anticipating your competitors' moves. The more you understand about your competitors, the more often you win. Competitive analysis helps you gain comprehensive insight into all the facets of your competition."

John G. Rau, president/CEO of Ultra-Research Inc., has more than 25 years experience conducting market research for ideas, inventions and other forms of intellectual property. He can be reached at (714) 281-0150 or ultraresch@cs.com.

Keep the Bare Bones Bare

SIMPLE CLAIMS EQUAL A STRONG PATENT

BY JACK LANDER

Lee De Forest didn't understand the full potential of his grid Audion, or "oscillation detector," which led to the development of the vacuum tube. As radio technology advanced, the patent's embellished claims ultimately had no value.

In my February column I wrote: "Technical inventions are nearly always the result of several small increments contributed by many inventors." That's usually true, but not for a programmable mechanical doll that can write messages in ink on paper. This 240-year-old automaton has approximately 6,000 parts, produced without the benefits of abrasive water jet cutting or 3D printing.

We can learn from the work of Pierre Jaquet-Droz, a Swiss clockmaker, who invented the doll—persistence, for example. Each part of the doll had to be conceived, sketched, dimensioned and crafted using a saw and file. There was no CAD to assure perfect fitting assemblies, test complex motions or drive automatic machines in 1776. How many hours must it have taken to develop each function? How many trials and remakes were needed to attain the delicate movements? Even the letters are drawn with the subtle curves of cursive. All the same, Jaquet-Droz profited very little from his doll.

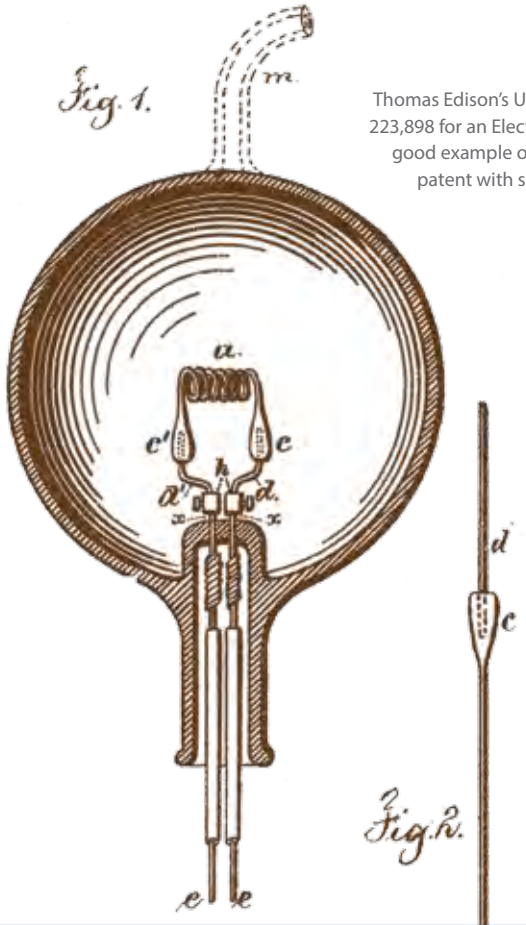
Would there have been a payback if Jaquet-Droz had patented the automaton? It's not likely. The Swiss patent system, which was enacted 113 years after the invention of his doll, had rules similar to those in the current U.S. system. The mere elimination of one key feature would have enabled a copycat to reproduce the doll without infringing.

KISS

The more complex an invention, the easier it is to circumvent its patent protection. Therefore, don't embellish your invention with anything that isn't essential to its function. Inventors love to elaborate, but it can work against us when it comes to the effectiveness of patent protection. Most people are aware of the KISS principle: "Keep it simple, stupid"; yet we still have the tendency to make a Swiss army knife out of an otherwise simple, single blade and handle.

A good case of early simplicity is Thomas Edison's incandescent lamp. U.S. Patent No. 223,898 had only four claims:

1. An electric lamp for giving light by incandescence, consisting of a filament of carbon of high resistance, made as described and secured to metallic wires, as set forth.
2. The combination of carbon filaments with a receiver made entirely of glass and conductors passing through the glass, and from which receiver the air is exhausted, for the purposes set forth.
3. A carbon filament or strip coiled and connected to electric conductors so that only a portion of the surface of such carbon conductors shall be exposed for radiating light, as set forth.
4. The method herein described of securing the platina (platinum) contact wires to the carbon filament and carbonizing the whole in a closed chamber substantially, as set forth.



Thomas Edison's U.S. Patent No. 223,898 for an Electric Lamp is a good example of an effective patent with simple claims.

Robert D. Friedel and Paul B. Israel, the authors of *Edison's Electric Light*, list 22 inventors of the incandescent lamp prior to Edison. Some of these inventors used carbon as the filament material; most relied on a vacuum to reduce the oxidation of the filament material. Edison, on the other hand, invented the *high resistance* carbon filament, which, due to its lower current demand, enabled practical power transmission over a distance of a mile or so. Another advantage of Edison's filament was its coiling, which enabled him to crowd a relatively long filament into a small space within the evacuated bulb. The filament was necessary to endure the higher voltage necessary for practical power transmission.

There is simplicity in the claimed features: essentially a long coiled carbon filament of high resistance and a method for attaching it to metallic conductors—a single feature and a single method.

Less Is More

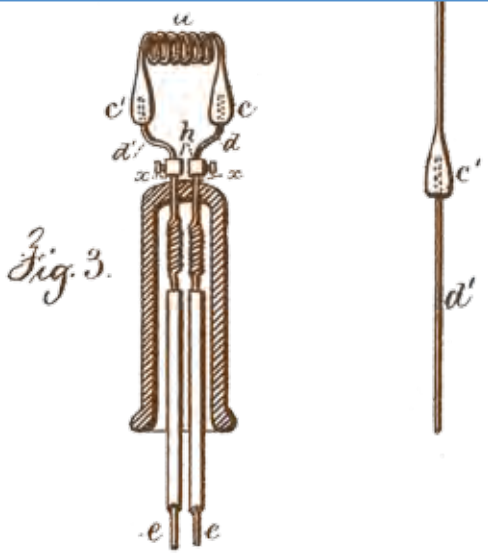
Contrast Edison's simplicity with the 21 claims in Lee De Forest's "oscillation detector," U.S. Patent No. 879,532. This invention, which De Forest also called a grid, was a component of the triode vacuum tube. It controlled the flow of the electric current between the cathode and plate. De Forest's grid was much more than a means to make a better oscillation detector, as future oscillators, amplifiers, detectors and power-output circuits emerged from the grid.

Most of De Forest's claims covered details of a circuit, which was minor in contrast to the true value of the grid—and had no value as the technology advanced. He embellished his basic device with wasted claims because he didn't understand it or its tremendous potential as the key to David Sarnoff's dream of a "music box," or radio, as it is known today.

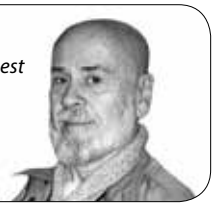
The history of technological invention is rich in intrigue, fictitious credit, jealousy, theft, infringement, lawsuits and even criminal acts. From this history we derive lessons that apply as much today as they did a century ago in the heyday of electronic development.

The most important lesson is that, when it comes to the essential features of an invention, simplicity is preferred over complexity. The ideal invention will have a single broad claim. Remember, a competitor can get around your patent by eliminating just one of what you consider to be essential features. Keep it simple and limit the number of features to the bare bones.

The more complex an invention, the easier it is to circumvent its patent protection. Therefore, don't embellish your invention with anything that isn't essential to its function.



Jack Lander, a near legend in the inventing community, has been writing for *Inventors Digest* for 19 years. His latest book is *Marketing Your Invention–A Complete Guide to Licensing, Producing and Selling Your Invention*. You can reach him at jack@Inventor-mentor.com.



Jason Smith's Blacknet, a portable basketball net, allows recreational players to shoot hoops on courts that are missing nets.

Goal Tending

JASON SMITH'S GOT NOTHING BUT NET

BY JEREMY LOSAW

March Madness has, once again, descended upon us, feeding the frenzy of crazed basketball fans that are betting on their favorite teams to reach the Final Four. As the top college teams in the country, surrounded by thousands of cheering fans, go head-to-head for the No. 1 spot, it's easy to forget that basketball is a simple game: All you need is a ball and a goal to play.

However, unless you're part of an organized team, you're often relegated to basketball courts in public parks, and the goals don't always have nets. They are easy targets for vandalism, and expensive and time-consuming to replace. It is possible to play with a bare rim, but the game is just not the same. There is no distinctive "swoosh," which makes it hard to tell if the ball goes through the hoop.

Toronto native Jason Smith is just one of many recreational basketball players who grew tired of playing without a net. His frustration led to the creation of a portable basketball net called the Blacknet. Ten years in the making, the Blacknet is about to revolutionize the quality of ball for players that use public courts.

Once it is properly in place, the Blacknet can withstand the rigors of the game, including slam-dunks and hanging from the rim.

PHOTOS COURTESY OF BLACKNET; SEQUENTIAL PHOTOS BY DAVID ZELIKOVITZ

Installing the Blacknet is easy. Holding the Blacknet, lower a ball into the net, aim and shoot. To remove the Blacknet, throw a basketball through the bottom of the net to knock it out.

Slam Dunk

The Blacknet is a portable basketball net that can be installed on any permanent basketball rim. The Blacknet resembles a regulation rim and net, but its rim is a large plastic ring that slides over a metal rim. The net is attached to the inside of the plastic ring with a series of clips.

Installation is easy. Holding the Blacknet, lower a ball into the net, aim and shoot: the Blacknet and all. As the ball goes through the hoop, the Blacknet's wide ring comes down over the bare rim and securely attaches—creating a working goal. Once it is properly in place, the Blacknet can withstand the rigors of the game, including slam-dunks and hanging from the rim. Removal is as easy as throwing a basketball through the bottom of the net to knock out the Blacknet.

Long-Range Shot

It may seem unlikely for a basketball innovation to come out of a country whose sporting interests are snow-and-ice centric, but it makes complete sense. Smith grew up in Toronto, which is home to the Toronto Raptors NBA team. The city also has a healthy recreational basketball scene.

Despite living in the shadow of the NHL Maple Leafs, Smith's father, Gene Kirby, passed down his love of basketball to his sons. A Manhattan native, Kirby grew up playing the sport. After he moved to the Toronto area to pursue a career in broadcasting, he taught Smith and his siblings the intricacies of the game.

The problem was that the parks around Toronto where Smith played rarely had nets. His first attempt to find a solution was not innovation; it was civic action. When he was in high school, Smith asked the municipal governments in Toronto and Mississauga (a Toronto suburb) to pay him to replace the nets at local parks. "I guess it was a ridiculous concept based on the reaction of the city," recalls Smith. "They laughed at the idea."

His next thought was to take his own net to the court. This tactic had major drawbacks, as someone had to stand on a garbage can or park bench to install it, and the net was often vandalized by the next day. It was only then that Smith decided to invent his way out of his problem.

Power Forward

Smith's professional background helped him get his first prototypes off the ground. He worked at the family business, a custom

The Blacknet is made from plastic alloy and a high-quality net that prevents tangling.

Blacknet resembles a regulation rim and net, but its rim is a large plastic ring that slides over a metal rim. The net is attached to the inside of the plastic ring with a series of clips.

display and sign company, and had experience working with various plastics. The first prototype was an ABS plastic ring that was thermoformed over a mold made from wood, which was then attached to a standard net.

He tried the prototype on a goal at a public park, and it worked well but had some flaws. It was hard to get the ring to stick well to the existing rim, and the net was prone to getting caught in the ring coils. Smith thought he could remedy the clamping issue by changing the ring to an injection-molded part to have better control over the wall thickness; a custom woven net was the solution for tangling—but both were costly modifications. Meanwhile, life took over. Smith was given more responsibilities at work, he got married and had two children. The net concept was shelved for nearly six years.

When life settled down, Smith got back to work on the Blacknet. The Toronto area has an abundance of factories that do injection-molded plastic parts for the auto industry, which made it an obvious choice to start looking for manufacturing support. Smith found several firms in the area were either too busy with their existing business or were too expensive.

He finally realized that family friend Brian Feeney worked as a product developer and had experience with injection molding and working with overseas vendors. Feeney's connections produced inexpensive prototype molds and samples with different durometer plastics to test the fit and holding power of the design. The prototypes required many iterations because it was difficult to find the right material to stretch over the rim and still have enough stiffness to hold shape. Eventually, the team hit upon a suitable plastic alloy and found an additional factory to make the higher-quality net needed to prevent tangling.

The final work involved developing a way to easily remove the Blacknet once it was installed. During testing, someone had to climb a ladder to remove the net. However, one day Smith forgot his ladder. The only tool he had was a basketball. He figured he could knock the prototype off the rim by throwing it back up through the bottom of the net. Viola! It worked every time.

Game Plan

Smith wanted to protect his idea in both Canada and the United States. Although basketball is growing in popularity in Canada, the U.S. market for basketball gear has a much higher sales potential. Smith hired a patent attorney in Toronto who had an affiliate firm in the United States. This gave Smith the convenience of dealing with one firm locally to file patents in both countries.

Roughly 10 years after Smith's initial idea, the Blacknet is finally ready for launch. Smith received funding from a private investor to help get the product made. As of February 2016, the company was gearing up for a crowdfunding campaign on Kickstarter that was to launch in the first quarter of 2016. Smith hopes that in addition to raising funds for production, Kickstarter will help focus the eyes of the media on the Blacknet, which, in turn, will generate enough demand to drive a push into retail channels. In the meantime, the Blacknet can be purchased for $50 through blacknet.net.

Jeremy Losaw is a freelance writer and engineering manager for Enventys. He was the 1994 Searles Middle School Geography Bee Champion. He blogs at blog.edisonnation.com/category/prototyping/.

Finishing Touches

MY PAINT SAINT IS A MODERN MIRACLE

BY ELEANOR MERRELL

PHOTOS BY BRIAN VOGEL

Mark Lacy designed My Paint Saint to make touch-up painting hassle-free.

A tradition that is as tied to the onset of spring as the appearance of blooms and the nesting of birds is the drudgery of spring cleaning. Inevitably, winter lifts and, like bears emerging from hibernation, we force ourselves to take a hard look at our dwellings. Rooms need cleaning, closets need organizing, and maintenance tasks that have been put off because of cold weather must be addressed. A particularly onerous task is that of paint touch-ups, which can be messy and annoying.

Mark Lacy, inventor of My Paint Saint, knows well the thorns of painting. During his college years, he worked as a maintenance supervisor for an upscale hotel. Each day, rambunctious kids and clumsy guests scuffed the walls and chipped the paint. As Lacy traveled from one end of the hotel to the other, he carted around large cans of paint and brushes so that he could perform touch-ups at any moment. Each time he discovered a flaw, Lacy had to pry open a paint can, touch up the area, find a sink in which to wash his brush, and reseal the can carefully so the paint wouldn't dry out. These were cumbersome and time-consuming tasks.

To make his job easier, Lacy began prototyping a product that would come to be known as My Paint Saint. Instead of carting around full paint cans, he poured small amounts of paint into Tupperware containers and Mason jars. To eliminate the timely chore of cleaning brushes after each use, Lacy began tinkering with methods to safely leave his brushes in the paint.

Lacy graduated from Texas Tech University in 2004 and left his maintenance supervisor job, where he had earned accolades for his work. For the next 10 years, Lacy refined prototypes for his paint can idea (70 to 100 total) while working in the petrochemical industry. He defined the size of the brush, determined the best bristles and adjusted the ledge size to remove excess paint.

My Paint Saint features a built-in brush, screw-on lid and a label for noting the paint color and number.

In Pursuit of Perfection

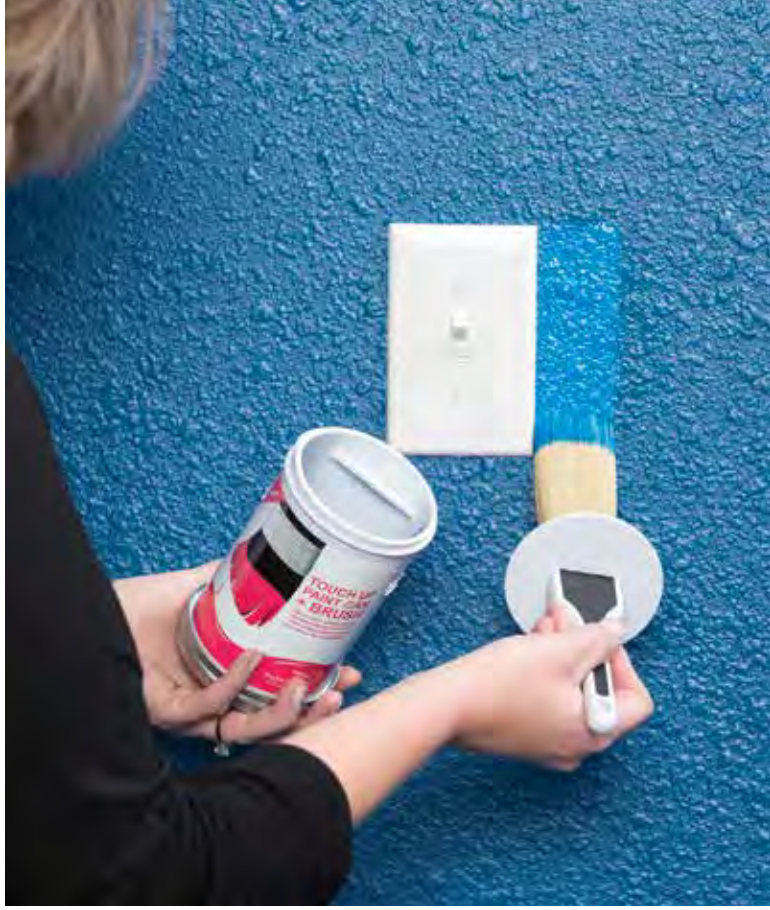
In early 2013, when Lacy's daughter, Kenzy, entered the world, his resolve to take his product to market crystallized. Lacy invested tens of thousands of dollars in his invention, created six molds and filed for a patent.

The final version of My Paint Saint is a far cry from its Tupperware and Mason jar predecessors. "When I decided to make this, I was thinking, *Oh, I can make this for a few dollars*. But what I found about myself is I couldn't sacrifice quality for price. I just wanted this to be a really solid, high-quality product," says Lacy. A solid, high-quality product is exactly what he produced. Over time, Lacy added, removed and tinkered with different features, learning through trial and error what My Paint Saint did and did not need in order to become a household item.

My Paint Saint is now a spiffy-looking can, perfectly sized for storing leftover paint. The lid twists on and off easily (unlike the lids of traditional paint cans, the removal of which requires a screwdriver and a considerable amount of elbow grease) and is airtight, guaranteeing the shelf life of the paint for five to 10 years, depending on the type of paint. The lid also functions as a drip catcher and handle for the high-quality brush that is attached to its lower surface. This brush holds a high volume of paint that can be adjusted using one of the two ledges built into the rim of My Paint Saint. Lacy also worked to make sure the size of the paint brush perfectly fit the size of the can, searched for the highest quality paint brush bristles, attached threads on the bottom of the can so the lid could be screwed on while the brush was in use and added a blank label to the outside of the jar for the paint color and code.

I'm a Believer

Once Lacy developed a design that satisfied his high expectations for quality, he used a 3D printer to create a final version of his prototype. He then researched his manufacturing options. Lacy hoped to work with an American manufacturer but quickly discovered that manufacturers in the United States far exceeded his budget, so he turned his attention to China. He found a manufacturer that could create his product for less than one-fourth of the rate advertised by American manufacturers. Once he settled on a manufacturer, Lacy made his first production run, generating 2,500 My Paint Saints.



With a product available for distribution, Lacy began his Kickstarter campaign in June of 2015. Three days later, he reached his goal of $20,000. The fundraising continued for an additional 57 days and captured the attention of 365 backers.

Lacy strongly recommends crowdfunding to other inventors, but he suggests "doing a lot of research before getting involved," because a successful campaign is "not just about how good the invention is, but about researching and using your platform effectively." If you take full advantage of crowdfunding sites, you can use them not only to raise funds for your project but also to get people talking about your idea.

Lacy also stresses the importance of timing when it comes to crowdfunding ventures. He waited until the end of his first production run for My Paint Saint to launch his product on Kickstarter. In hindsight, Lacy believes most inventors would be better off launching crowdfunding campaigns after developing a prototype but before making a production run. Doing so allows inventors to use donated funds to absorb the costs of manufacturing and gauge interest in their product as they do so.

Spreading the Word

While the Kickstarter campaign was going on, Lacy's wife began to spread the word on social media, eventually attracting the attention of garden and home blogger Kelly Wilkniss. Lacy and his wife sent Wilkniss a free sample of My Paint Saint, which she loved and wholeheartedly endorsed. Wilkniss then put Lacy in touch with 13 DIY decorating and gardening bloggers, all of whom received a free My Paint Saint.

In hindsight, Lacy believes most inventors would be better off launching crowdfunding campaigns after developing a prototype but before making a production run.

In an unusual move, Lacy struck a deal with the bloggers: If they would blog about his product, he would give them a percentage of the revenue they generated. The scheme was cleared by Lacy's lawyer, who instructed each of the bloggers to make it clear to readers that their posts were sponsored.

With the help of the bloggers, My Paint Saint was introduced to thousands of new consumers, and Lacy was catapulted into semi-stardom. He became the subject of articles in the *Bay Area Citizen*, the *Houston Chronicle* and *Real Simple* magazine. He was also interviewed on the podcast *Maker Paradise* and last month appeared on the *Today* show.

Brushing Up on Success

Despite the media attention, Lacy remains humble. He understands that the media buzz surrounding My Paint Saint may die down once the novelty of the product wears off. As this happens, he plans to rely more heavily on his sales representative, Linda Parry of Product Launchers, to keep My Paint Saint on the media's radar. Currently, Parry is working to introduce My Paint Saint to *Better Homes and Gardens* magazine, *This Old House* magazine, and a number of paint and home improvement gurus. Eventually, Lacy hopes to squeeze out shelf space for My Paint Saint at major retail stores, such as Home Depot.

Lacy says the most difficult part of taking his idea to market was the cost. "If you look at My Paint Saint, you will see that I was not focused on how well it fits on shelves or how cheap I could make it; I designed this tool the way it worked best for me despite the costs. We've gotten to this point without any investors (other than crowdfunding)," he says. "This has been very difficult for us to achieve, and it looks like it will be much more difficult this year due to rapid growth."

Although he is looking forward to seeing My Paint Saint on store shelves, Lacy says the product-development experience has given him other rewards. "I have met so many interesting people since deciding to bring My Paint Saint to market," he says. "I believe many of these relationships are going to last throughout my lifetime."

Eleanor Merrell is a recent graduate of Connecticut College, where she earned a BA in English. She aspires to a career in journalism.

What **IS** That?

HOW TO DESCRIBE AN INVENTION IN A PATENT APPLICATION

BY GENE QUINN

One of the biggest problems inventors face when setting out to define their invention is describing what the law refers to as "alternative embodiments of the invention," or simply "alternative embodiments." Whenever you read the word "embodiment" in a patent application or issued patent, the drafter is talking about a particular version of the invention.

Many inventors don't understand why they would have more than one version of their invention. The problem is that if you do not describe it, then it is not a part of your invention. For example, if you describe your invention as always having elements A + B + C + D, and then someone makes virtually the same thing but leaves out D (or any of the other elements), he couldn't possibly be infringing. Why? Because the invention was too narrowly described.

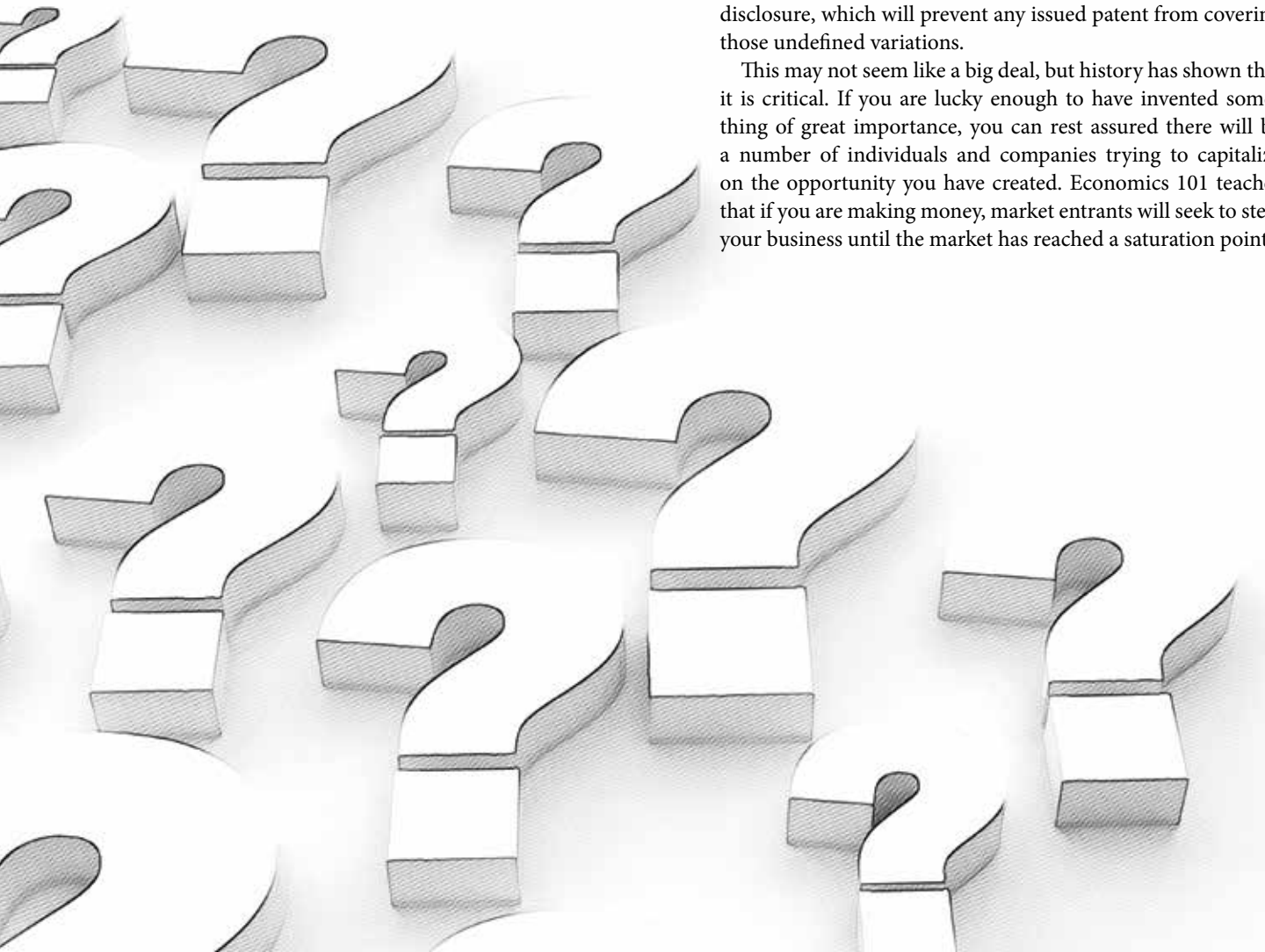
Most inventors are quite good at describing exactly what they invented. The invention is their work, and they know it best, so it is not surprising that most inventors can explain what they view as the best version of their invention—what the law refers to as the "preferred embodiment."

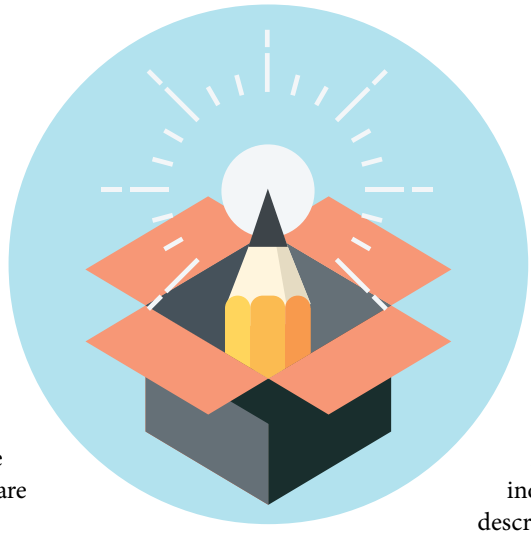
Nevertheless, it is absolutely essential to think outside the box when describing an invention in a patent application. You don't want to simply describe the best version of your invention; you want to describe every version of the invention that can work at all, no matter how crudely.

Variations and Unique Embodiments

I encourage inventors to stop and think about different ways their inventions can be made or used, even if they deem these inferior. Failure to disclose alternatives will almost certainly foreclose the ability to say those alternatives are covered by your disclosure, which will prevent any issued patent from covering those undefined variations.

This may not seem like a big deal, but history has shown that it is critical. If you are lucky enough to have invented something of great importance, you can rest assured there will be a number of individuals and companies trying to capitalize on the opportunity you have created. Economics 101 teaches that if you are making money, market entrants will seek to steal your business until the market has reached a saturation point.





The word "steal" may be harsh, but if you create something, and someone else enters the marketplace to compete against you, rest assured that you will feel like it is stealing. In the business world, the laws of economics are not bound by a moral code.

"Stealing" is the wrong word to use in most cases, but it would be stealing, in my opinion, if someone were to trample on your patent rights. But, what if you don't obtain a patent, or your patent is narrow, weak or defective because you didn't appropriately define your invention? If market entrants do not infringe your patent, then it isn't stealing and wouldn't be considered any type of business grievance or legally recognizable injury. To prevent what will certainly feel like stealing, you need to appropriately describe your invention and its variations to create a buffer—a moat of protection that surrounds your innovation. This will make it more difficult for competitors to encroach on your market and will force them to compete.

The takeaway here is simple: If you dismiss variations or entirely different and unique embodiments, then you are leaving those to individuals and/or companies that would seek to capitalize on a product or process that is similar to your own, but not specifically covered by your patent.

It is absolutely essential to think outside the box when describing your invention in any patent application.

Common Industry Terms

In many instances, inventors start the patent application process with a provisional patent application. Assuming that is how you proceed, before you finalize your provisional patent application, or before you finalize the information you provide a patent attorney or patent agent, you should go back through what you have written and ask yourself if you are using any terms that have particular meanings. Does each term have a commonly understood meaning by those who are skilled in this field? If so, it is absolutely essential that you use the term to mean what others in the industry think it means. Do not get creative.

While patent laws state that a patentee can be his or her own lexicographer, it is important not to take too much latitude. If those in the industry understand a term to carry a certain meaning, the courts will use that meaning when interpreting the scope of the patent disclosure.

When in doubt, it is always the best practice to explain through illustration and description rather than to simply rely upon a meaning that may or may not be understood in the industry. The specification (i.e., written description) you create and ultimately file is the glossary for the invention. It is intended to describe your invention in its full glory and to define any terms or concepts to deflect ambiguity so that everyone understands.

The Enablement Requirement

It is also essential that you look over what you have written to make sure the description is complete. In order for any patent application to be complete, the invention must be enabled. This requirement, aptly named the enablement requirement, is geared toward ensuring that every disclosure places the subject matter of the invention into the possession of the public. This is what is commonly referred to as the *quid pro quo* of patent law. The government will grant a patent, together with exclusive rights for a limited time, provided the inventor explains in specific detail how to make and use the invention covered by the patent. The purpose of the requirement is that when the patent expires, the public has enough information to make and use the invention without having to get more information from the inventor.

In order to satisfy this enablement requirement, you need to specifically and objectively define and describe how to make and use your invention. The quickest way to explain the concept of enablement is by way of example. The popular children's song "Skeleton Bones" explains how all the bones in the body are connected. The leg bone is connected to the knee bone, which is connected to the thighbone, which is connected to the backbone, which is connected to the neck bone, and so on. This very general overview of how the bones in the body are connected is a good first step, but there is a lot more that can be written.

The backbone is made up of many smaller bones. For example, there are seven cervical vertebrae in the necks of all mammals, and these bones together make up a portion of the backbone. Therefore, a more complete description of the backbone would point out that the neck is a part of the backbone. An even more complete description might include saying cervical vertebrae 1 (i.e., C1, which is a part of the neck) is connected to cervical vertebrae 2 (i.e., C2), and so on. The point is that the

more detailed the description the better, but you must have at least an overview of how everything fits together, and how to make and use the invention. Therefore, be sure to disclose, with as much detail as possible, how all the pieces of your invention connect, work together, function and interrelate.

A Picture Is Worth 1,000 Words

An excellent way to make sure you are including an appropriately detailed description that treats many variations and alternative embodiments is to include professional patent drawings. In fact, the single best way to enhance any disclosure is through quality patent drawings, and I am a fan of including more rather than fewer. Whatever is shown in the drawings will be considered disclosed, and drawings that tell a story are worth at least 1,000 words.

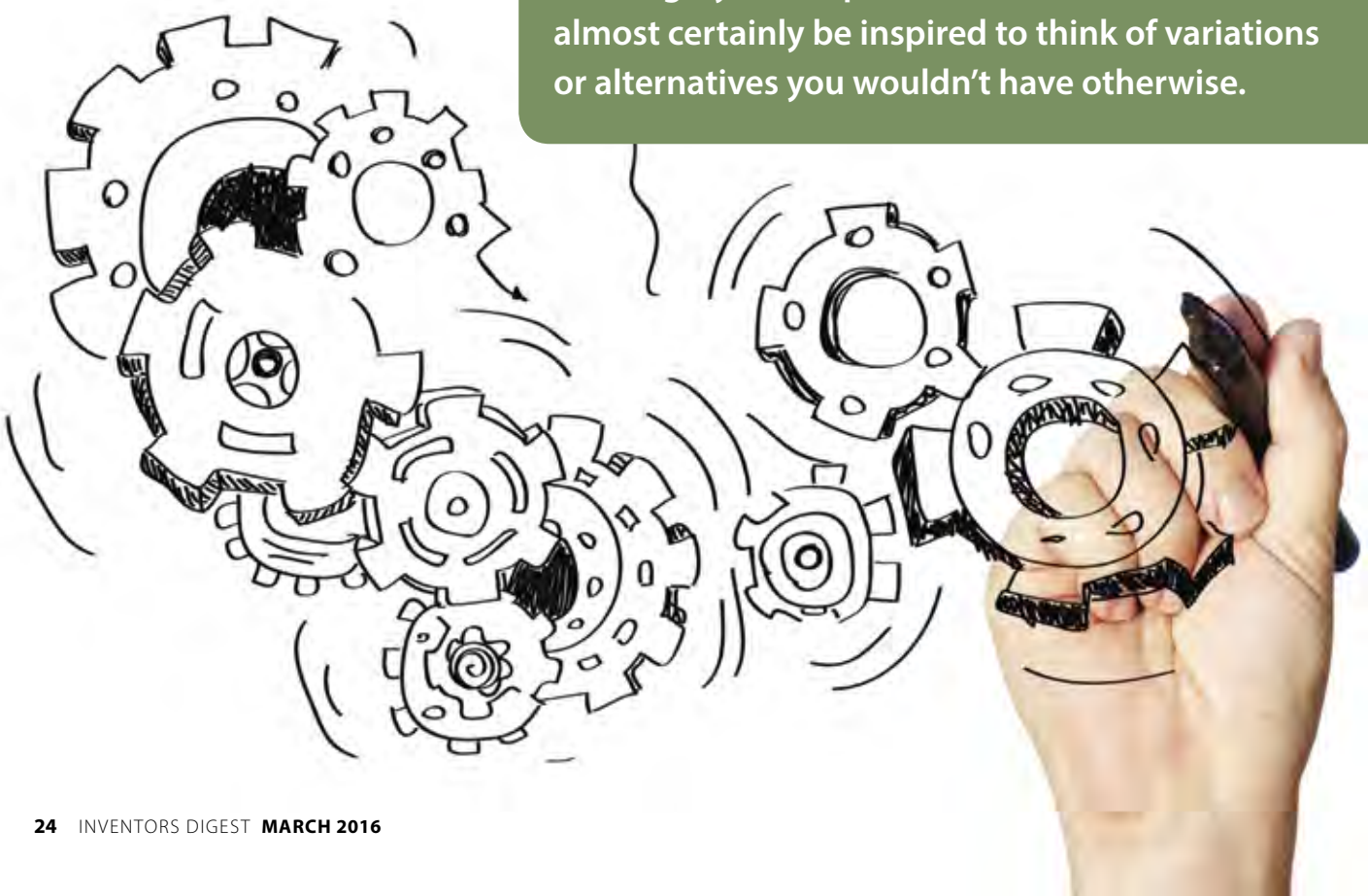
Patent laws require the patent applicant to furnish at least one drawing of the invention whenever the nature of the case requires a drawing to understand the invention, which, in my experience, is almost always. The only real exception is when you claim a chemical compound or method, but even with a method, you can and should find something to illustrate.

The drawings must show every feature of the invention specified in the claims. In order to capture the full benefit of a filing date, a patent application needs to completely cover the invention and all permutations at the time the application is filed. Drawings can and will provide a safety net if you have enough that are detailed.

You can file a provisional patent application without drawings, but that is a huge mistake. It is also possible to get a non-provisional patent application filing date without a drawing, but that doesn't mean drawings aren't required. Unfortunately, because you cannot add disclosure after you file a non-provisional patent application, you may be prevented from filing drawings after your non-provisional filing date, which could ultimately compromise the disclosure and force expensive procedural maneuvers that will result in starting over with a new patent application. Thus, the best advice is to always include lots of drawings when you file a patent application.

The United States Court of Appeals for the Federal Circuit has frequently consulted drawings in order to determine what one of skill in the art would have considered disclosed at the time the application was filed. If you accidentally leave something out of the written disclosure, the drawings you submit may save you in the long run, provided, of course, they are detailed enough to convey nuanced information about your invention, hence the preference for high-quality professional illustrations rather than amateur sketches. In many cases the Patent Office will accept amateur sketches, but given the relatively low price of professional drawings ($75 to $150 a page) and the far greater detail in a professional illustration, you are

You get more disclosure with more drawings and then, if you actually go through and describe the drawings, you will put more meat on the bones and almost certainly be inspired to think of variations or alternatives you wouldn't have otherwise.



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really doing yourself a disservice if you do not have professional illustrations at the time of filing.

Drawings and Disclosure

Why do drawings help so much with the disclosure? In addition to the adage that a picture (or drawing) is worth a thousand words, you are supposed to go through and explain in writing what each of the drawings in a patent application shows. If you have more drawings, that is naturally going to lead to a more textual description. If you go through the drawings one by one and explain what they show, you will invariably find yourself thinking of things that could be discussed but aren't actually shown well in the drawing; perhaps because of the angle or because you want to talk about the materials that could be used for the pieces and parts. That is fine; just write it into the description.

The drawings are there to facilitate understanding and if, as you describe something in the drawing you think of other things, describe them in the text. For example, the drawing might show a do-hickey but instead of a do-hickey, it could be a widget. So you simply explain: "Do-hickey 15, which could be made out of A, B or C, connects to whatchamacallit 10, which, likewise, can be made out of A, B or C. Although not pictured, the do-hickey 15 could instead be a widget."

This low-level illustration shows that you use the drawings and the associated reference numerals to direct the reader to the pieces and parts you are discussing. You get more disclosure with more drawings and then, if you actually go through and describe the drawings, you will put more meat on the bones and almost certainly be inspired to think of variations or alternatives you wouldn't have otherwise.

At the end of the day, you are trying to describe something that, at least in part, has heretofore never existed. After all, that is what is required of an invention. You need to describe not only the specific invention but also all the possible variations and options, because if you don't describe those, they are not part of your invention, and you are inviting competitors to copy you without infringing your patent. One convention that might assist you as you set out to describe your invention is to think about how you would describe your invention to someone who is blind. This is a tough task, no doubt, but the goal of the written disclosure is to provide a verbal description that is much like a step-by-step "how to" manual. If you are describing your invention to someone who cannot see, you will invariably find creative and enlightening ways to verbally get your message across. This is the type of detail that should be in an application, and when combined with good, quality drawings you really have something worthwhile.

Gene Quinn is a patent attorney, founder of IP-Watchdog.com and a principal lecturer in the top patent bar review course in the nation. Strategic patent consulting, patent application drafting and patent prosecution are his specialties. Quinn also works with independent inventors and start-up businesses in the technology field.

GWEN JIMMERE

PHOTO BY BRIAN ROZMAN

TAKES THINGS NATURALLY

HOW OWNING A PATENT HELPED ONE WOMAN "OWN HER BEAUTY"

This article was originally published November 17, 2015 in Innovator Insights, *a blog interview series of the IPO Education Foundation. For information, visit www.ipoef.org.*

AS THE FIRST BLACK WOMAN to own a patent for a natural hair care product, Gwen Jimmere, founder of beauty innovation company NATURALICIOUS, says that it took time for her to gain the confidence to file a patent. "I had no problem getting trademarks, and I had copyrights, but patenting is a whole other beast," she explains.

If not for her mother's cheeky yet encouraging threat to ban her daughter from visiting until she had applied for a patent, Jimmere says she may not even have tried. Many women and minority entrepreneurs set such limitations on themselves, notes Jimmere. "Owning a patent…for a beauty product is similar to literally owning our beauty from a legal and financial perspective, [which] is so important for women and minority-owned businesses," she says.

Jimmere's road to patent owner and entrepreneur was bumpy. After a few failed attempts at starting businesses for which she did not truly have a passion, Jimmere found success when she stumbled upon the solution to a problem that plagues many women with coarse or curly hair. Having written off chemical relaxers when the documentary *Good Hair* opened her eyes to their toxic effects, Jimmere found that, to wear her hair naturally, each week she had to spend two to four hours washing and deep conditioning her hair. "I was finding that all of my friends and family members were also spending this amount of time on their hair. I asked, 'Who has time for that?' "

The solution-driven Jimmere began researching and mixing ingredients in her kitchen with the goal of getting her "wash day" down to one hour or less. Once she found the right formula, friends and family became curious, and soon she was selling her product via word of mouth.

When Jimmere lost her full-time job just one month before her divorce was to be finalized, she almost gave up on her dream. Fortune, however, was on her side. The prospect of caring for her 2-year-old son with a mere $32 in the bank forced Jimmere to do something she had thought about for months: schedule a meeting with representatives from the local Whole Foods Market. Luckily, the meeting went well.

In the following interview, Jimmere discusses her success and the role patents have played in her business's growth. She also has advice for small business owners and entrepreneurs who may not think protecting their ideas is important, or even possible.

Innovator Insights: Describe your invention.
Gwen Jimmere: The patent I have is on my Moroccan Rhassoul 5-1 Clay Treatment, which is part of our OooLaLocks Hair Box. It's a cleanser, a conditioner, a deep conditioner, a leave-in conditioner and a detangler, all at once. It's also the first hair-care product made from Rhassoul clay. All four products in the OooLaLocks Hair Box do the work of 13 different products in just four steps.

Rhassoul clay comes from the Atlas Mountains in Morocco. Cleopatra is known to have used Rhassoul clay to cleanse her hair. There are other clays around, but this is one of the only clays that actually removes all the bad stuff but leaves all the good stuff and adds more good stuff. Other clays remove everything, including the much-needed moisture that your hair needs to look its best. Those who are familiar with Rhassoul clay have to buy it dry and mix it up themselves, which can take hours and is very, very messy. If they don't get the proportions right, they've ruined an entire batch. But

ours is the first ready-to-use Rhassoul clay-based product. You just squeeze it out of the bottle like any other shampoo, and it's already mixed with high-quality oils, deionized water and other vital ingredients for healthy hair.

The OooLaLocks Hair Box contains a cleanser, a conditioner, a deep conditioner, a leave-in conditioner and a detangler. These four products do the work of 13 different products, one of which is the first hair-care product made from Rhassoul clay.

II: How did you progress from coming up with the formula for this product in your kitchen and selling it to friends and family to starting your own business?

GJ: I was in the process of getting a divorce and then ended up getting laid off from my job just one month before my divorce was final. I literally had $32 in the bank. I looked at my then-2-year-old son the day I got laid off and thought, *I can sit here and cry about this, or I can see it as an opportunity to start something new. I'm out of this marriage. I'm out of this job. I can look at the glass as half-full or half-empty.*

There was a Whole Foods Market that was opening in Detroit at the time, and I'd drive by and want to pitch them sometimes, but I didn't know how to approach them or what to say. So I figured out who to talk to and, luckily for me, I got a meeting. I pitched them like my life depended on it, which it did. Ten minutes into the pitch they said, "We love it. We've never seen anything like it. This is great. Let's do it!" That was the first store we got a purchase order from.

II: Why did you feel you should patent the product?

GJ: I truly didn't think that I was able to get a patent. First, I knew it was expensive; I had researched the costs and the lowest attorney fee was $10,000, and that wasn't even with the filing fees. And of course, if you don't get the patent, you don't get that money back.

My mom was really the catalyst for pushing me to get a patent. She said, "Gwen, you're sitting on a gold mine. You have to patent this. Someone else is going to take what you did and make a ton of money, and you're going to be so upset because you created it first." After a few months of coaxing, my mother jokingly said, "You know what, don't even come over [to] my house until you've applied for that patent." She wasn't trying to be mean, she really just saw the potential of what I had created.

II: How did you start?

GJ: I did this all on my own. I didn't have an attorney, so it was extremely intimidating. I looked up the patent law. I spent a lot of time at the library and became best friends with the librarians in my city [Canton, Mich.]. I put in a lot of sweat equity because I didn't want to spend all that money and not actually get the patent. I thought, *If I can learn some of this, perhaps I can do this on my own.*

II: What was that process like?

GJ: It was a lot of reading, learning and looking at case studies. I utilized Sara Blakely as a muse. She's the woman who started Spanx. She owns a patent and filed for her patent on her own, as well. I think she's amazing, and I thought that if she did it on a shoestring budget at the time, I could do this, too.

I didn't know anything about patent law at the time, and it was very intimidating and scary, but I think what really drove me was the fact that I knew I had something that was truly unique. After my company and our products started becoming more popular, I started noticing other companies using Rhassoul clay. Very few others had been using it before I came up with this product, and no other company had created a ready-to-use Rhassoul-clay hair product like mine.

I wanted protection for my business. I also wanted to have leverage. If one day some big conglomerate offers to buy my company, I want to have the option of saying, "Well, you can have the company, but I still own the patent," or "I'll license the patent to you." Perhaps I won't sell at all, keeping the company, along with the patent. Either way, I want to have those sorts of options. Granted, the patent only lasts 20 years, but if you really work it, you can make something happen in that time period.

All in all, it took me six to eight months of research before I even applied for the patent. There's a lot of information available on the Internet about patent filing, but a lot of misinformation, as well.

II: Ultimately, how important was the patent to your success?

GJ: There's been a lot of press around this patent, which in itself has been huge. We've caught the attention of several national media outlets. The *Tom Joyner Morning Show*, which I've listened to since I was in grade school, called and asked me to be featured on their segment "The Little Known Black History Fact." If you're a listener of the show, you know that it's a really big deal—and a huge honor. … None of that would have happened without the patent.

"IN MY CASE, IT GOES TO SHOW YOU CAN START SOMETHING WITH $32 IN YOUR BANK ACCOUNT, LIKE I DID, AND THEN GROW TO THE POINT WHERE YOUR PRODUCT IS IN DEMAND ENOUGH THAT YOU NEED TO PROTECT IT." —GWEN JIMMERE

To be honest, I didn't set out to be the first black woman to do this (have a patent for a natural hair-care product). I didn't know that no one else had done it until I was awarded the patent and then found out. I think for entrepreneurs it's exciting because a lot of times we're creating products in our homes, and a lot of us are really smart and savvy and creative, but we limit ourselves by thinking that we can't qualify or that we're too small to do it. In my case, it goes to show you can start something with $32 in your bank account, like I did, and then grow to the point where your product is in demand enough that you need to protect it.

It's also huge for women entrepreneurs. Statistics show that women and minority-owned businesses take on personal debt in order to fund our businesses rather than taking investment opportunities or raising capital in other non-traditional ways. Since having the patent, I can't tell you how much interest I've had from investors. I'd already had a few people reach out, but the patent puts NATURALICIOUS in a whole new league. It gives me the option of taking on some of these investors, because now we have something proprietary and they see value in that.

II: Have you had to enforce your patent?

GJ: I've only had it since August 2015, so not yet, but I definitely anticipate having to. I've seen others using Rhassoul clay and mixing it with other ingredients. They're mostly small players, but I've spoken to my lawyer and we're seeing how it develops. I definitely have the capacity and plan to be litigious if I need to.

About IPO Education Foundation

Intellectual Property Owners Education Foundation is a nonprofit organization devoted to educational and charitable activities designed to improve intellectual property rights. The Foundation conducts programs to:

- Broaden public understanding of systems for protecting intellectual property,
- Sponsor awards for the purpose of recognizing outstanding achievement in the fields of invention, creativity and IP rights, and
- Publish reports dealing with legal, economic and other aspects of intellectual property.

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II: Some people see using patents to block others from copying inventions as unfair. Why do you think the public is sometimes critical of patents?

GJ: From a business perspective, it's very frustrating to create something and go through all the trial and error, all the hypotheses and the years people spend coming up with an invention, only for someone else to come along and use it and profit off of it. From a business mindset, we see the value in IP. I think it's necessary, important and needs to be enforced.

In any other field, you have to pay to use someone else's property. You can't move into someone else's house without paying rent. IP is also property: It's something that is legally owned, and others should have to pay for it if they want to utilize someone else's creation for profit. If they don't wish to pay for it, they can create their own ideas and profit off of those.

II: What is your advice to other fledgling entrepreneurs who are thinking about patenting?

GJ: If you're feeling intimidated about applying for a patent, and you can't afford an attorney, I'd advise seeking the counsel of an intermediary. You're trading your time for money when you use an attorney or intermediary. By applying on my own, I saved over $8,500, but I also spent six to eight months just learning the law in preparation of the application process, then another 15 months waiting on a decision from the USPTO. You have to decide if you want to save time or if you want to save money. If you know you can be thorough, diligent and consistent in your pursuit of a potential patent, go ahead and apply on your own.

From my perspective, I see having my particular patent as a way of literally owning my own beauty. My company obviously makes a beauty product, so there's a bit of a pun in there. However, owning our ideas—whether beauty related or otherwise—from a legal and financial perspective is so important for women and minority-owned businesses. We need to own our ideas and inventions. A lot of us are creators, but we don't actually own anything. Someone else could come along and see the value in what you do. Why should they pay you when they can just create it themselves for a lot less? So I definitely encourage everyone who feels they've created something viable to pursue patenting.

IPO Intellectual Property Owners Education Foundation

Innovator Insights is IPOEF's forum for inventors and other IP stakeholders to discuss their work and the role IP plays for them, and to help educate the public on the link between strong IP protection and robust innovation. Read more at www.ipoef.org.

Honoring Invention
IN ACADEMIA

2015 Fellows of the National Academy of Inventors

168 PROLIFIC INNOVATORS ELECTED AS NAI FELLOWS

BY LAUREN MARADEI

The National Academy of Inventors announced the election of 168 academic luminaries to the 2015 class of NAI Fellows in December 2015.

Election to NAI Fellow status is a high professional distinction accorded to academic inventors who have demonstrated a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and welfare of society.

Those named to the 2015 class bring the total number of NAI Fellows to 582, representing over 190 research universities and governmental and non-profit research institutes. The 2015 Fellows account for 5,368 issued U.S. patents, bringing the collective patents held by all NAI Fellows to more than 20,000.

Included among all NAI Fellows are more than 80 presidents and senior leaders of research universities and non-profit research institutes, 310 members of the National Academy of Sciences, the National Academy of Engineering and the National Academy of Medicine, 27 inductees of the National Inventors Hall of Fame, 36 recipients of the U.S. National Medal of Technology and Innovation, and the U.S. National Medal of Science, 27 Nobel Laureates, 14 Lemelson-MIT Prize recipients, 170 AAAS Fellows and 98 IEEE Fellows, among other awards and distinctions.

The NAI Fellows will be inducted on April 15, 2016 as part of the Fifth Annual Conference of the National Academy of Inventors at the United States Patent and Trademark Office. USPTO Commissioner for Patents Andrew Hirshfeld will provide the keynote address for the induction ceremony. In honor of their outstanding accomplishments, Fellows will be presented with a special trophy, medal and rosette pin.

A complete list of all NAI Fellows is available at
www.academyofinventors.org

THE 2015 NAI FELLOWS

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Jayakrishna Ambati, University of Kentucky
Iver E. Anderson, Iowa State University
Kristi S. Anseth, University of Colorado Boulder
Allen W. Apblett, Oklahoma State University
Charles J. Arntzen, Arizona State University
Harry A. Atwater, Jr., California Institute of Technology
Lorne A. Babiuk, University of Alberta
John M. Ballato, Clemson University
John S. Baras, University of Maryland
Issa Batarseh, University of Central Florida
Ray H. Baughman, The University of Texas at Dallas
Angela M. Belcher, Massachusetts Institute of Technology
Stephen J. Benkovic, The Pennsylvania State University
Shekhar Bhansali, Florida International University
Sangeeta N. Bhatia, Massachusetts Institute of Technology
J. Douglas Birdwell, The University of Tennessee, Knoxville
Kenneth J. Blank, Rowan University
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John E. Bowers, University of California, Santa Barbara
Gary L. Bowlin, University of Memphis
C. Jeffrey Brinker, The University of New Mexico
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Steven R.J. Brueck, The University of New Mexico
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Plastics and Prototypes

WHAT YOU CAN LEARN FROM YOUR RECYCLING BIN

BY JEREMY LOSAW

An aerial view, courtesy of Google maps, shows the proximity of Jeremy Losaw's parents' house (blue) to the West Stockbridge compactor (red).

The house I grew up in is next to the town dump—at least that is what we called it. To be honest, it was a compactor and recycling transfer station for a town of roughly 1,500 people. It was only open Tuesdays, Thursdays and Saturdays: Drive up, chuck the garbage bags in the compactor, watch the grumpy old guy in the shack push the control knob to compress the garbage into the trailer, and off you go. Many people work in office complexes that produce more tons of garbage weekly than the amount that goes through the West Stockbridge, Mass., compactor.

In my teen years, living next to the dump was like wearing a scarlet letter, but when I was a kid, it was considered an extension of my backyard. The dump's looping driveway provided a convenient place to ride bikes and drive remote control cars, and we used to catch frogs in the adjacent swampy area. On Saturday mornings, my sister, Jennifer, and I would strap grocery bags filled with the weekly garbage to the handles of our bicycles and ride over to launch them into the compactor. Today, urban planners would reap high praise on such an eco-friendly arrangement.

At some point, the compacting center added recycling bays. My sister, a budding conservation enthusiast, was delighted by this new opportunity. We dutifully separated paper and plastics marked with the accepted recycling numbers, and added those to our handlebars each week.

All we knew at the time was that certain numbers on the containers indicated the plastic was recyclable, while other numbers meant the plastic was not. I gave very little thought as to why or how they were different. It was not until I became a degreed engineer that I had any idea what the numbers meant and understood the magic behind the formulations of the plastics that are now part of our daily lives. The following is a guide to the plastics behind the recycling numbers and an explanation of how they can be used in your next prototype.

PHOTOS BY JEREMY LOSAW

Polyethylene Terephthalate (PET)

Polyethylene terephthalate, often abbreviated PET, is very popular in the food industry. Most beverage bottles are made from PET because it is naturally clear and does not leach into the liquids it contains. It is also important in the garment industry as a primary ingredient in polyester fibers. In fact, most fleece jackets are made from non-woven polyester fibers, which are noted for their water-resistant properties.

PET is a first-rate prototyping material, if only because of its availability. Soda bottles are tough and are excellent for prototypes, especially if there is a fluid-handling component in the innovation. The greatest drawback to PET is that many super glues will not adhere to it, which makes it difficult to bond. However, hot glue is usually effective. PET can also be heat formed with an industrial heat gun if special shapes are needed. PET is accepted by most recycling programs.

Products ranging from detergent to Parmesan cheese are sold in PET containers.

High-Density Polyethylene (HDPE)

HDPE is another plastic that is commonly used for bottling. Its natural color is a hazy white, which makes it less suitable for packaging liquids that need to be seen. However, it is used in milk jugs, laundry detergent containers and shampoo bottles. HDPE also gets a lot of industrial use as the result of its high strength-to-weight ratio, toughness and resistance to chemicals. It is used to make pipes, hard hats and even fuel tanks.

HDPE is suitable as a prototype material for products that hold corrosive fluids, since fuels and chemicals can be housed safely in HDPE. Its slick surface also makes it practical for producing gears and bearings.

HDPE containers.

Vinyl and PVC

For music buffs, the word "vinyl" brings back fond memories of the smell of old record jackets and the unmistakable scratch of record needles. As an engineering material, vinyl and its sister, polyvinyl chloride, or PVC, create a versatile family of plastics.

Vinyl is not typically used in its virgin form; rather it is polymerized with other chemicals, such as chloride, to make PVC, which is much tougher. PVC can be rigid or flexible, depending on the formulation, and so offers wide-ranging applications. In its flexible form, PVC is manufactured into adhesive wraps, signs and clothing. In its rigid form, PVC is used for pipes, plastic fencing and gutters.

PVC is inexpensive and widely available, which makes it one of the best prototyping materials. Special PVC cutters make it easy and mess free to cut, although PVC should never be burned or laser cut, as it will release toxic chlorine gas. PVC pipe and fittings can be used as modular building systems, and they are easily locked into place with PVC cement. Just be sure to use low VOC cement and wear a mask when applying PVC cement.

PVC tube fittings are used on an early concept model for the SockSync.

Low-Density Polyethylene (LDPE)

Low-density polyethylene is not as strong as HDPE, and it is harder find. It is most commonly used as a film to make bags and plastic wrap. Its flexibility lends itself to use in sports water bottles and other squeezable bottles.

LDPE has limited use as a prototyping material. In general, PET and polypropylene have better properties and are often substituted in its place.

Despite its amazing properties and widespread use, prototyping with polypro is difficult.

Polypropylene (PP)

Polypropylene, or polypro, is inexpensive, strong, flexible and tough. It has widespread use—from food packaging to furniture to toys. Since it tends to be hazy, PP is not suitable for high-visibility packaging. However, it is food safe, which makes it a popular option for reusable food storage containers like Tupperware. Polypropylene is resistant to fatigue and is used in applications that require a living hinge, such as the top of a Parmesan cheese container.

Despite its functional properties and widespread use, prototyping with polypro is difficult. The material is hard to drill, which can result in polygonal holes. Polypropylene also has a high molecular surface energy, which makes it nearly impossible to glue. Painting the surface requires a special primer, which still may not get the paint to stick.

Polystyrene (PS)

Polystyrene is hard to recycle and slow to biodegrade, so many municipalities exclude it from their recycling programs. Foamed styrene, more commonly known as Styrofoam, is found in food packaging, such as egg cartons or the trays on which meat is packed. At one time, Styrofoam was a popular option for fast-food packaging, but it has largely been phased out by paper, as has polystyrene.

Styrene sheet is tough and flexible. It flows well in a mold, so it is used to achieve high surface detail, such as in plastic model kits.

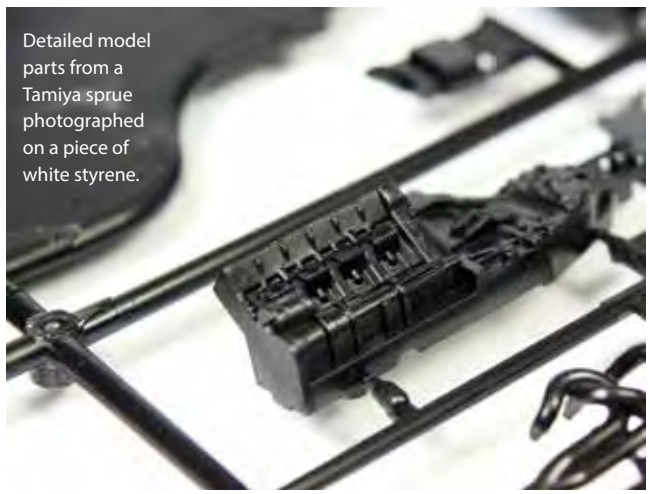
Styrene is a popular prototyping material because sheets are inexpensive, and pieces up to .060 inches thick can be cut with regular scissors. Styrene bonds easily with super glue or model cement, and it holds paint well. In addition to prototyping, a sheet can be used as a backdrop for taking photos of prototypes.

Polycarbonate (PC) and others

The recycling symbol "7" is most often used to indicate polycarbonates, but "7" also serves as a catchall for other uncategorized plastics, such as some nylons and bisphenol A, or BPA. Polycarbonate, which is known for its impact resistance, is used in remote control car bodies, sunglasses and water bottles, including the popular Nalgene brand. Thicker forms are used to make bulletproof glass.

PC is a useful prototype material. Thin sheets can be cut with scissors, and it can be bonded with super glue. PC bottles can be cut with a Dremel or saw, and they can even be threaded to accept pipe fittings. Since they are popular for remote-control applications, small sheets of PVC are found at local hobby stores. Specially formulated remote-control paint sticks well to it, and the inside surface can be painted to yield a glossy outer finish.


The Perky Collar was molded from polycarbonate for its toughness and impact resistance.


Detailed model parts from a Tamiya sprue photographed on a piece of white styrene.

It is difficult to comprehend the value of the plastics we recycle without understanding their properties and potential applications. Hopefully, this guide will help you upcycle your waste into a successful new innovation. Remember: "One man's trash is another man's treasure."

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An Exclusive Interview

GENE QUINN GOES ONE-ON-ONE WITH USPTO DIRECTOR MICHELLE LEE

BY GENE QUINN

PHOTO BY GENE QUINN

This past January, patent attorney and IPWatchdog founder, Gene Quinn, had the opportunity to go on the record with Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office Michelle Lee. Topics discussed included the release of the Commerce Department's White Paper on copyrights, Lee's recent visit to the Consumer Electronics Show, the power outage that brought down USPTO electronic filing systems in December, the Office's patent quality initiative and the new patent classification system. The following is an edited version of the interview.

Gene Quinn: I know from talking to you previously that you have a number of priorities for 2016. Can you share those? What would you like to accomplish in the remainder of the year?

Michelle Lee: I have so many priorities. They would certainly include the timely issuance of high quality patents, ensuring that the Patent Trial and Appeal Board conducts fair proceedings and issues high quality rulings within the statutory deadline—especially given the increases in the petitions filed that we have been seeing—and integrating all four regional offices in Dallas, Silicon Valley, Denver and Detroit to achieve the USPTO's core mission. These offices provide a great vehicle for education and outreach on the many services the USPTO offers to support innovators and educate a much broader segment of the population on the value and uses of intellectual property. Another priority is to continue to consider meaningful and balanced patent reforms that take into account changes occurring in the patent ecosystem—whether legislatively, judicially and/or administratively, including through the USPTO. And on the copyright front, it would include the release of the White Paper on remixes, first sale doctrine and statutory damages, and the ratification of the Beijing and Marrakesh treaties.

… We are very excited about the upcoming release of the White Paper, as it will be the first major administration policy proposal on changes to copyright law since the 1990s. And the goal, of course, is effective and balanced copyright protection in an increasingly digital world. … The key change is that the report recommends amending the Copyright Act to provide more guidance and flexibility to courts in awarding statutory damages. … We believe the proposed amendments continue to ensure meaningful protection of intellectual property but also preserve the dynamic innovation that has made the digital economy so important to our society.

GQ: Do you sense there's any real chance that over the next year the Copyright Act could be amended, or is this just the beginning of what could likely be a multi-year process?

ML: We know that Chairman Goodlatte is focused on these issues. I'm not the best prognosticator and predictor of the timing at which Congress moves, but as the principal advisor to the president through the Secretary of Commerce on intellectual property policy matters, including copyrights, I thought it was our job to provide appropriate input and guidance based upon extensive stakeholder conversations on some pretty important issues, and now we have done so through the White Paper.

GQ: When you started your first answer you mentioned the Board and some changes. … It seems that over the past several months...that the Board has turned a corner to some extent. It seems the Board is not instituting as many IPR cases as it was initially. I was wondering if you've noticed that as well and what you may think is going on with that dynamic, if anything.

ML: I don't spend a lot of time fixating and concentrating on the numbers of cases accepted. After all, no one knows what "the right number" is. ... The PTAB looks at the cases as they come in the door—the facts presented, the legal arguments made and the case law cited—and then makes decisions on an individual basis guided by the facts, arguments and law, allowing the cards to fall where they may. And it may very well be if the trend that you identified is true, that everybody is getting used to these proceedings and what to expect out of them. So I like to think that we're all settling down, but it's a priority of mine to work with the public and the stakeholders to further strengthen and improve these PTAB proceedings.

They have proved popular, if you base popularity on the number of filings. We've had more than three times the number of filings expected, with over 4,000 filed to date. And the opinions that have gone up on appeal have, for the most part, been affirmed by the Federal Circuit, and that's the most important for the agency, as well as making sure that we issue high-quality opinions that are consistent. You know we've got a great team of PTAB judges with strong patent law and technical backgrounds. That said, we recognize that as with any relatively new proceeding, there are improvements that can be made.

One of the first things I did when I began leading the agency was to say, "Look, we have a couple of years of experience under our belts with these proceedings. Let's go out to our stakeholder community and ask them what we can and should be doing to further improve the effectiveness and fairness of these proceedings." It was really a very wide open inquiry. We asked for input in all areas through a series of roadshows throughout the country. After that period of time, we requested written comments. This past August, we published some proposed rules to the PTAB proceedings. We're looking to refine and strengthen the effectiveness and fairness of these proceedings. The comment period closed in November, and we are looking at the comments very carefully to get some final rules out as soon as possible. This will be the first set of revisions since the proceedings started, except for some quick fixes that I think we issued earlier last year.

We are very excited about the upcoming release of the White Paper, as it will be the first major administration policy proposal on changes to copyright law since the 1990s.

But it's not just the rule making that we are focused on. Obviously, changes can occur through and have occurred through the PTAB issuing opinions clarifying their procedures and their rules. You saw that, for example, in *Master Image 3D*, which explained that motions to amend need only discuss prior art of record, but also reminded patent owners of their duty of candor. By clarifying the art that must be distinguished over that already of record, the PTAB stopped the speculation that its *Idle Free* decision required a prior art search. PTAB never meant to cause additional searching by patent owners. … Keep in mind the proceedings are relatively new, and we will clarify, iterate and refine as many times as needed based upon experience and stakeholder input, and where there is consensus, and provided it's within our Congressional mandate, we'll make improvements.

GQ: And you think those rules will be coming out within the next year?

ML: Oh, yes. Absolutely. Sooner rather than later, but this is an ongoing process.

GQ: Let's move back to your priority for 2016 of patent quality. That is a term that carries different meanings, but as I understand it, the meaning that the Patent Office is exploring at the moment is to try and create a better prosecution history, a clearer record, so that everybody can understand what happened and why. Two questions: Is that accurate? Will these quality initiatives you're working on be completed over the next year?

ML: Some of our quality initiatives are shorter term; others are longer term. We have undertaken about a dozen in our initial effort. What I will say is that it's not just the clarity of the record, the prosecution record, but it's also accuracy of the patents that issue. So stepping back, we all know that there is a cost to society if we issue a patent or a claim that should not have issued, just as there's a cost to society if we do not issue a patent or a claim that should have issued. Issuing patents accurately is extremely important. By accurately, I mean in compliance with Title 35 and the relevant case law.

But issuing patents clearly is also important. When the process works properly, the examiner, the applicant and the attorney have a meeting of the minds as to what the invention is. One of our goals is to make sure this is reflected in the record, helping to ensure that our issued patents are strong, will be upheld in later challenges if they are challenged, and provide clear notice.

Another critical piece of enhancing quality is continuing the collaboration with foreign patent offices on harmonization and work sharing. We're making good progress in this area. I'd like to take a little bit of time here on three initiatives that I'm particularly pleased about our efforts and our progress. One is the Global Dossier program, which provides stakeholders, examiners and the public with access to dossier information of the participating IP offices through a single online portal. The USPTO

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— MICHELLE LEE

first suggested the idea of Global Dossier at the Trilateral meeting back in November of 2011, and since then all of the five IP offices in IP5 (the European Patent Office, Korean Patent Office, Japanese Patent Office, the State Intellectual Property Office of China and the U.S. Patent and Trademark Office) have developed this together.

You might ask: "Why is that so important?" It's because users no longer have to go through the time-consuming process of searching multiple patent databases to look at patent families. It goes to patent quality, and I would say worldwide patent quality is improved due to examiners and applicants having easier access to relevant prior art earlier in the examination process, including the hard-to-locate foreign prior art. It also lowers costs because of the availability of some machine-translated documents. So this is just the initial phase that we are planning. We are also aiming to allow for automatic cross-filing between the offices and amongst the offices. Global Dossier touches on areas that are very important to me: quality, procedural harmonization and transparency.

And even if you look at our Cooperative Patent Classification system or, CPC, when we converted from the U.S. Patent Classification System to CPC, that conversion, too, supported enhanced quality. The more countries that classify their patents and their prior art using the same classification makes it easier for all examiners across the globe to find the most relevant art quickly and efficiently. We have no fewer than 19 countries participating to varying degrees in the CPC and more signing on each day. So, these are important international initiatives that also increase the quality of patents that not only the USPTO issues but all of the participating countries, and that's critical.

GQ: That last piece is extremely important. . . . The old-time examiners say one of the reasons they think that examination used to be so much better was that the system for classification was better. It wasn't electronic, but all the examiners knew where to look to find the things that were relevant, and if they didn't know where to look, they could ask colleagues, and somebody could tell them which bin to find exactly what they were looking for. That seemed to get out of control when the system couldn't keep up with new classes of innovation. I think that is one of the most important initiatives that the patent system has undertaken over the last handful of years.

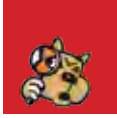
Another critical piece of enhancing quality is continuing the collaboration with foreign patent offices on harmonization and work sharing.

ML: I couldn't agree with you more. Our U.S. Patent Classification System had not been updated in decades. You and I know how quickly technology changes, right? So we were certainly overdue for an update and a refresh of the categories and the buckets into which we classify. But I think the power of the Cooperative Patent Classification system is that we now have so many countries signing on. If, collectively, we all work toward the same classification system, you can imagine the efficiencies and advantages gained—accessing the most relevant prior art, especially foreign prior art that's hard to get your hands on. That's very powerful.

GQ: What is your definition of patent quality?

ML: The quality initiative is not meant to issue fewer patents; it's meant to issue claims that should issue and not issue claims that should not issue. It does not at all go to the valuation of the patent claim. I come from the private sector, and I have valued, bought and sold many patents, sometimes for very large sums of money. Let me tell you, it's very difficult to assess the value of a particular patent. Market forces define the value of the patent. Patent quality does go to what I would say is the accuracy of the examination based upon Title 35 and the case law, and making sure that the agency applies the statute and case law accurately. I think the agency has done a pretty good job, especially recently, in that area.

But I think it also goes to the clarity of a patent and the public notice provided. Is the patent that issues out of the United States Patent and Trademark Office useful for its intended use? Businesses, inventors and innovators need to be able to look at a patent and say, "Okay, I understand what is within the scope and what is outside of the scope of the patent," because they make business decisions based upon that information. They invest precious R&D dollars, and you want them to have the most efficient use and application of their R&D dollars and not spend in areas that somebody else has already innovated. So I would say that the quality certainly goes



Michelle Lee
UP CLOSE AND PERSONAL

Favorite hobby: In no particular order, cooking, camping, hiking, catching a great classical ballet performance at the Kennedy Center and fishing. I still haven't caught that "really big one" yet, but it doesn't stop me from trying.

Favorite sport: I'm more into doing sports than watching, to be honest. I enjoy skiing and also yoga and working out at the gym, if those count as sports.

Favorite reading material: I'm a news junkie and take it in from all types of sources. As far as books, I'm more inclined to read biographies over novels.

Favorite author: John Steinbeck. Of course, it's hard to grow up where I did, in the northern California region, and not be taken in by Steinbeck's stories.

Favorite movie: I have nothing against modern movies, but I still love some of the classics the most. You have to put *Casablanca* on the list, of course. I'm a big fan of the *Godfather*, and I have to admit that I absolutely love *The Sound of Music*.

Favorite bands or singers: It's hard to go wrong with The Beatles or Simon and Garfunkel. And I love anything by Tchaikovsky. I spent many years training in classical ballet, and before deciding I wanted to be an engineer, I dreamed of becoming a ballerina. I find classical ballet moves choreographed to Tchaikovsky's music to be pure magic.

Best fictional inventor: Q from James Bond, of course!

If you could meet one champion inventor, who would it be and why? I would have to say Grace Hopper. … Dr. Hopper was not only a pioneering computer programmer, but her legacy continues as an inspiring role model for generations of young women computer programmers. We mentioned before how the world would benefit from a few more geeks. I want to see a world with more Grace Hoppers.

Which historical figure would you most like to meet? Mahatma Gandhi, whose selflessness and passion transformed a country and provided a role model for positive change.

to both the accuracy and clarity of a patent. I would say it does not so much go to the valuations. I leave that to the market forces. That's not the job of the United States Patent and Trademark Office. Again, the goal of the enhanced patent quality initiative is not to issue fewer patents. We're an incredibly innovative society. We will have patents. We're fortunate that way. But the goal of the Enhanced Patent Quality Initiative is to issue patents or claims that should issue and not issue claims that should not, and to do so clearly.

GQ: Is everything back to normal after the power outage the USTPO experienced in December?

ML: We are fully up and running as before, and we have been for a while. No data was lost. It was really an unprecedented outage of our online systems caused by an electrical failure to the data center that was owned and operated by contractors. It was not a failure of our IT systems or the result of foul play.

I have to say, the dedicated team of USPTO employees mobilized and immediately stabilized and restored the systems. They worked around the clock when the outage occurred during the holidays to restore customer service, and we were fully operational within a matter of days. That's a real testament to the incredible hard work and dedication of so many employees at the USPTO. ... And we're conducting careful forensics and looking to incorporate what we learn into further improvements to our system. Actually, not our systems, but the third-party systems that feed our systems. So it's not a lost opportunity, but we're glad to have it up and running, and I give all the kudos to the team.

GQ: What were some of the most interesting things you saw at the Consumer Electronics Show that caught your imagination as a scientist and somebody who is an innovation connoisseur?

ML: I consider myself a tech geek, and I'm sort of proud of it. I actually think the world needs a few more geeks. As you know, I am trying to get more girls interested in studying STEM and to spark their interest in invention, creation, intellectual property and entrepreneurship. I think our economy and society will be better off for it. Part of the mission of the USPTO is to promote American innovation through intellectual property, I believe, across all geographic regions of the United States and across all demographics.

But getting back to the CES, it was incredible. The level of innovation, the spirit of innovation. It reminds us of why we do what we do at the USPTO. I had the opportunity to walk the miles of exhibits and talk to the innovators, hear their stories and ask them how they're using intellectual property to achieve their business goals.

I saw some incredible innovations in the area of virtual reality. You can look all around as if you're in the environment. Drones and the applications of drones. Driverless cars. 3D printing. If I had to highlight some of the top amazing innovations, I think those would be some very exciting areas that we have to look forward to.

I was the first USPTO director to attend, and it was a real pleasure, but I also think it was great for the agency to be there with a booth to get out the message of intellectual property and the importance of intellectual property for innovators to help get their inventions to the marketplace.

The Inadequacy of Trade Secret Law

WHY CONGRESS SHOULD PASS THE DTSA

BY JAMES POOLEY

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U.S. trade secret law emerged in the 19th century to accommodate the shift from agrarian and cottage production to larger-scale industry, in which the secrets of production had to be shared with workers or business partners. Court decisions sought to enforce the confidence placed in those who were given access to valuable information about machines, recipes and processes. At the core of every case was a confidential relationship. Protecting this trust, the courts explained, was a simple matter of enforcing morality in the marketplace.

The common-law origins of trade secrets—in contrast to the federal patent statute—meant that the majority of cases were heard in state court. Even when there was a special basis for jurisdiction, such as diversity of citizenship or a separate federal question, federal courts applied state common law. At first there was little variation, with most states looking to the Restatement of Torts § 757 as a guide. But as industrial development continued through the middle of the 20th century, legal foundations shifted, and the reporters of the Second Restatement dropped the subject completely.

Meanwhile, a school of thought had developed among commentators that trade secret law should be abolished altogether because it was inconsistent with, and therefore preempted by, federal patent law. This argument was famously rejected by the U.S. Supreme Court in *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974). Two important public interests, the Court explained, were served by trade secret law: the "maintenance of standards of commercial ethics and the encouragement of invention." Without guaranteed secrecy, businesses would be left to expensive self-help security measures that would disadvantage smaller competitors and discourage dissemination of information through sharing. As a practical matter, there was no conflict between the two systems because they operate so differently: Patent law is strong, providing an exclusive right "against the world;" while trade secret rights are "weaker," because they do not protect against reverse engineering or independent development.

Uniform Trade Secrets Act Failed to Produce Uniformity

By the time of the *Kewanee* decision, U.S. commerce was increasingly interstate and global. Some leaders in the IP community voiced concern that trade secret law would become too fractured and inconsistent for modern business. Therefore, in 1979 the National Conference of Commissioners on Uniform State Laws issued the first of two versions of the Uniform Trade Secrets Act, proposing harmonized rules on establishing and enforcing trade secret rights.[1] Measured by adoption rates, the UTSA has been a great success, with 47 of the 50 states so far embracing it. However, measured by its objective of uniformity, the law has been a disappointment, because so many states have decided to deviate from the uniform text and customize their own version.

A few examples illustrate the scope of the problem: California dropped the language requiring that a trade secret be not "readily ascertainable," with the result that the defendant is required to specially plead that circumstance as an affirmative defense. Illinois also eliminated the "readily ascertainable" language, and it prohibits royalty injunction orders, sets a different limitations period and allows permanent injunctions. Idaho requires that computer programs carry a "copyright or other proprietary or confidential marking" to qualify for protection. Georgia limits protection of customer lists to physical embodiments, in effect allowing employees to appropriate such information in (human) memory. South Carolina's version of the UTSA requires a court hearing an injunction request to consider "average rate of business growth" in determining the length of an injunction and prescribes very particular rules for discovery of trade secret information.[2]

The problem is not just variations in trade secret law from state to state. Dealing with information theft in the modern world runs up against procedures that were not designed for efficiency in resolving cross-border litigation. If a case in Illinois requires testimony of a witness in California, the plaintiff has to petition its home court to authorize a deposition and then file an action in California based on the Illinois order to secure the required subpoena. During the weeks or months of this process, the witness could easily leave the country with the secrets in her pocket.[3] Clearly, U.S. businesses cannot adequately address the full scope of modern threats to their trade secrets by filing litigation in state court.

Existing Federal Laws Cannot Solve the Problem

Civil claims for trade secret misappropriation can sometimes be brought in federal court, but only in two limited situations. First, if another claim exists under federal law, such as patent infringement, then a related trade secret claim can be asserted in the same case, but only if it is based on the same central set of facts as the federal claim.[4] This is no help to the business owner facing the classic problem of an employee leaving with the company's secrets, because usually there is no other federal law that can be applied to the case. Second, if the theft is in service of an out-of-state competitor, it may be possible to get into federal court with a state law claim by asserting diversity of citizenship. But in a typical case in which the departing employee is a local resident, this can't work because diversity has to be "complete," and the presence of any local defendant will defeat the claim.[5]

Another option may be to ask the U.S. Attorney to bring criminal charges under the Economic Espionage Act.[6] Only a fraction of deserving cases can be accepted because of limited prosecutorial resources and a higher burden of proof. Many companies decline to pursue criminal remedies because of the required surrender of control or the effects on a concurrent civil claim of the defendant's assertion of a Fifth Amendment privilege.[7] Although the EEA provides potentially powerful remedies, it is unrealistic to expect the underlying problem to be solved comprehensively by a criminal statute.

In other words, the time-critical nature of interstate and international misappropriation of valuable digitized data requires an immediate and sophisticated response mechanism, and neither state law nor the EEA criminal framework provides a satisfactory solution. Federal courts, however, can provide the necessary resource. First, under the DTSA, federal courts would operate under a single, national standard for trade secret misappropriation and a transparent set of procedural rules, offering predictability and ease of use. Second, federal courts provide nationwide service of process and a unified approach to discovery, enabling quick action by trade secret owners even when confronted with actors in multiple jurisdictions. Third, as a result of their extensive experience with complex cross-border litigation involving intellectual property, federal courts would be able to resolve jurisdictional issues quickly and applications for injunctions or seizures fairly. Fourth, their generally more predictable discovery procedures will serve the legitimate needs of trade secret plaintiffs, who typically must develop most of the facts to prove their case through defendants and third parties.

Patent law is strong, providing an exclusive right "against the world;" while trade secret rights are "weaker," because they do not protect against reverse engineering or independent development.

The DTSA and the Law Professors' Opposition

The Defend Trade Secrets Act will improve trade secret protection, which will incentivize innovation and benefit companies—large and small—in all industry sectors. The letter in support of this legislation has been signed by the Chamber of Commerce, the National Association of Manufacturers, tech associations and an array of well-known companies in a variety of industries. Small businesses rely on trade secret law far more than patenting to protect their intellectual property, and this legislation will improve their ability to compete.

The DTSA will create a unified, federal civil remedy, similar to what exists for other forms of intellectual property. It maintains the important balance between trade secret owner and alleged misappropriator that exists under state law. It also adds an important, but limited, ability to seize a trade secret that has been stolen before the thief can take it out of the jurisdiction.

The approach of the DTSA is straightforward. It uses existing language of the EEA where appropriate, such as the definition of a trade secret, and where other language is required to define the civil aspects, such as misappropriation and damages, it uses language taken from the UTSA. Indeed, the only meaningful departure from the UTSA is to add a section allowing *ex parte* seizures of the misappropriated property. Even that portion draws from established provisions of the Lanham

Act, tightened up considerably in order to discourage abuse.

The DTSA has received strong support from industry, but has been opposed by a group of law professors who published an "open letter" in 2014 criticizing the previous draft legislation,[8] and who have recently released another letter describing their concerns.[9] Mainly, they argue that we don't need federal legislation because state laws are uniform enough; that the DTSA's seizure provisions are too broad; and that the legislation would burden small companies with higher costs and interfere with the right of individuals to change jobs.

I strongly disagree with these arguments, which either ignore important facts or make implausible assumptions. The need for this legislation is clear; today's technologies and international markets pose threats that cannot adequately be addressed with inefficient state laws designed for a simpler and less risky time. Based on my experience in litigating similar cases, the *ex parte* seizure process is so narrow as to effectively eliminate the risk of abuse; the cost of trade secret litigation is not substantially different in federal court than it is in state court; and the DTSA will not be used to stop employees from changing jobs.

U.S. businesses cannot adequately address the full scope of modern threats to their trade secrets by filing litigation in state court.

The DTSA Will Create More Uniformity

The law professors argue not only that the DTSA is not necessary because the UTSA provides a harmonized legal environment, but also that the DTSA will "undermine" the uniformity that has already been achieved. The most obvious flaw in this argument is that the UTSA has not delivered the uniformity that its drafters had planned, and the state-by-state variations are in some cases worse than those that had existed before the UTSA was proposed. This inconsistency creates a substantial burden for companies—including small businesses—that operate across state lines and increasingly rely on trade secrets to protect their competitive advantage.

The professors point to the five-year statute of limitations in the DTSA as an example of undermining uniformity, but existing state versions of the UTSA already vary in their limitations periods, from three to six years. They also claim that the EEA's definition of a "trade secret" is "broader" than the UTSA's, but this doesn't hold up to analysis. Both the EEA and the UTSA define a trade secret very broadly, but use different examples for illustration.[10] That one definition has more or different examples than the other doesn't matter, since the examples provided by each statute fit equally well under the definition of the other one. Finally, while the DTSA is not preemptive and would allow litigants a choice to sue in state or federal court, the professors fail to explain why having that choice should be deemed undesirable "forum-shopping," any more so than in other areas, such as trademark and securities law, where concurrent state and federal jurisdiction has long existed.

The *Ex Parte* Seizure Provisions Are Narrowly Tailored

In their most recent letter, the law professors admit that the current language on *ex parte* seizure is "more limited in scope" than in the 2014 legislation. For example, only property "necessary to prevent the propagation or dissemination of the trade secret" can be seized, and the court must take possession of the property. These changes were made to a process that was already narrowly drawn to meet the need but go no further. For an application to succeed, it must "clearly appear" to the court from "specific facts" sworn under oath that a restraining order under Federal Rule 65(b) would be insufficient, and the court must make specific findings supporting a balance of harm in favor of the applicant due to an imminent danger of irreparable harm. The order must be written in a way that minimizes interruption to the defendant's related business and avoids any disruption to unrelated business. A hearing must be held within seven days, and during that time the defendant may apply to dissolve or modify the order.

As any lawyer who has practiced in this area can confirm, getting an *ex parte* order under these restrictions will be extremely difficult. The consequences of getting it wrong will be severe: In addition to the usual sanctions that federal judges readily impose on parties and lawyers when they feel they've been misled, the exposure to damages for wrongful seizure are not limited by the amount of the required bond. As a result, only the most seriously aggrieved plaintiff whose trade secrets are in imminent danger will take the risk of applying for an *ex parte* seizure.

The law professors argue that even this extraordinarily narrow remedy will still cause harm because all the defendant's computers and storage media might be seized, and because the defendant will be unable to immediately challenge the plaintiff's claim. But the first argument ignores the language of the DTSA that limits seizure to that property "necessary to prevent the propagation or dissemination" of the trade secret. The second argument also ignores the bill's clear statement that anyone "may move the court at any time to dissolve or modify the order." In my experience with *ex parte* restraining orders in trade secret cases, any defendant that can show there's been some terrible mistake will bring this to the court's attention promptly, and judges who realize that the plaintiff has misinformed them will have no hesitation in dissolving the order immediately.

In cases in which a trade secret has been misappropriated and is in clear danger of being destroyed or transferred out of

the jurisdiction, companies—including small businesses that rely heavily or exclusively on this kind of intellectual property—need the ability to get protection from a court without giving advance notice to the person who stole it. Of course, such an extraordinary proceeding should be strictly limited to minimize the risks of abuse. Under the DTSA, it is. The legislation achieves this balance by making a seizure very difficult and risky to get, while preventing collateral damage to the maximum extent possible.

Litigation Costs Will Not Be Higher

The recent professors' letter asserts that the DTSA will "increase the length and cost of trade secret litigation." They base this argument only on the threshold requirement that the trade secret be "related to a product or service used in, or intended for use in, interstate or foreign commerce." But experience with other similar jurisdictional standards in federal statutes does not support the fear that discovery or motion practice will be required on this issue. In almost all cases, the fact that the plaintiff's business meets the interstate commerce test will be obvious, the allegation will not be challenged at all, and there will be no impact on the cost or length of the litigation.

The second reason the professors give for their prediction of increased costs is that trade secret litigation is expensive, and the "liberal discovery standards" in federal court are likely to make litigation there more expensive. But federal courts have been handling trade secret cases for decades, under diversity or supplemental jurisdiction, and there is no evidence that costs there are any higher than they are to litigate in state courts. Most states' discovery standards are not materially different in any way that would affect trade secret litigation, and for those that do not employ standards as broad as federal courts, in my experience, can actually increase the cost of litigating in those states, as plaintiffs have to return repeatedly to court to get the evidence they need to prove their case. In January 2016, the revised Federal Rules of Civil Procedure placed a new emphasis on "proportionality" in discovery disputes,[11] and we have no reason to think that federal judges will apply that principle with any reduced rigor in trade secret cases.

The DTSA Ensures Free Mobility Of Labor

Finally, the professors speculate that certain language in the DTSA might be read to embrace the so-called "inevitable disclosure doctrine," which it claims "typically" leads a court to stop a departing employee from taking a new job. In fact, the "doctrine" is simply a label affixed by some commentators to a selection of court decisions applying the common-sense UTSA provision that "actual or threatened misappropriation may be enjoined." The vast majority of courts do not dwell on the "inevitable disclosure" label, but directly apply the statutory language about "threatened" misappropriation by thoughtfully considering the circumstantial evidence in individual cases. When a court grants relief against threatened misappropriation, the result is only rarely to entirely block taking a new job.[12]

In any event, the DTSA does not imply either acceptance or rejection of the "doctrine." Significantly, it uses precisely the same "actual or threatened misappropriation" language as the UTSA. But—and this should have satisfied the professors' concerns—it adds a proviso that limits judicial discretion by prohibiting any injunction that would "prevent a person from accepting an offer of employment under conditions that avoid actual or threatened misappropriation." This provides additional assurance that a court will not interfere with any job offer unless it finds evidence that demonstrates actual or threatened misappropriation. And it is fully consistent with the law in every state that has enacted the UTSA, including California.

The DTSA is sorely needed to fill a gap in remedies available to U.S. businesses that now operate in an information-based, globalized economy.

Conclusion

The DTSA is sorely needed to fill a gap in remedies available to U.S. businesses that now operate in an information-based, globalized economy. This is one of those special circumstances in which parallel federal structures are required to address a critical set of interstate and international problems. The DTSA has been carefully fashioned to deter and punish abuse. Using well-established definitions and norms, it provides businesses a choice to file a familiar claim in an effective forum, and it accomplishes this without creating any new risks for small companies or individuals.

James Pooley, a former successful Silicon Valley trial lawyer, has more than 35 years experience in the intellectual property industry. He currently is an advisor and co-counsel on intellectual property strategy and dispute resolution, particularly regarding patents and trade secrets. He is the author of *Secrets: Managing Information Assets in the Age of Cyberespionage.*

[1] Unif. Trade Secrets Act, available at http://www.uniformlaws.org/shared/docs/trade%20secrets/utsa_final_85.pdf. [2] For a comprehensive collection of state variations, see Sid Leach, Anything but Uniform: A State-By-State Comparison of the Key Differences in the Uniform Trade Secrets Act (2015) available at http://www.swlaw.com/assets/pdf/news/2015/10/23/How%20Uniform%20Is%20the%20Uniform%20Trade%20Secrets%20Act%20-%20by%20Sid%20Leach%20-%20AIPLA%20paper.pdf [3] See R. Mark Halligan, Revisited 2015: Protection of U.S. Trade Secret Assets: Critical Amendments to the Economic Espionage Act of 1996, 14 J MARSHALL REV. INTELL.. PROP. L. 476, 494 (2015). [4] See 28 U.S. C. §1367; United Mine Workers of America v. Gibbs, 383 U.S. 715, 725 (1966); Tech Enterprises, Inc. v. Wiest, 428 F.Supp.2d 896, 902 (W.D. Wis. 2006) (dismissing trade secret claim because it did not share a "common nucleus of operative facts" with a trademark claim). [5] Lincoln Property Co. v. Roche, 546 U.S. 81, 82 (2005). [6] 18 U.S. C. §§ 1831-1839. [7] See Pooley, Lemley and Toren, Understanding the Economic Espionage Act of 1966, 5 TEX. INT. PROP. L.J. 177, 205, 219 (1997) [8] http://cyberlaw.stanford.edu/files/blogs/FINAL%20Professors'%20Letter%20Opposing%20Trade%20Secret%20Legislation.pdf. [9] https://cyberlaw.stanford.edu/blog/2015/11/newprofessors-letter-opposing-defend-trade-secrets-act-2015. [10] The EEA, at 18 U.S.C. § 1839(3), describes the scope of "trade secret" as "all forms and types of financial, business, scientific, technical, economic, or engineering information, including patterns, plans, compilations, program devices, formulas, designs, prototypes, methods, techniques, processes, procedures, programs, or codes, whether tangible or intangible, and whether or how stored, compiled, or memorialized physically, electronically, graphically, photographically, or in writing." The shorter definition of UTSA § 1(4) is "information, including a formula, pattern, compilation, program device, method, technique, or process . . . ." [11] Fed.R.Civ.Pro. 26. [12] See Pooley, Trade Secrets §7.02[2] (Law Journal Press, updated 2014).

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Every effort has been made to list all inventor groups accurately. Please email Carrie Boyd at cboyd33@carolina.rr.com if any changes need to be made to your group's listing.

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It is much easier to apologize than it is to get permission."

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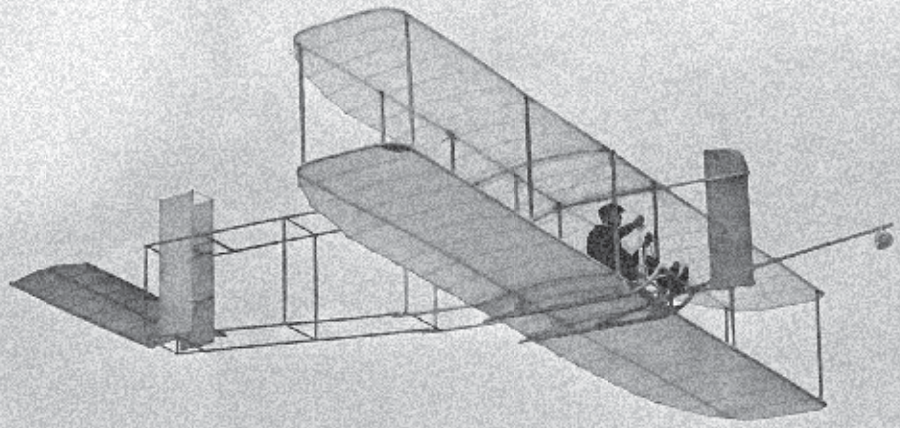

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