

Inventors

SEPTEMBER 2019 Volume 35 Issue 09

DIGEST

Sitting Tall

RORY COOPER'S GROWING LEGACY
IN ASSISTIVE TECHNOLOGY

Teaching the Teachers
LEARNING ABOUT IP
TO EDUCATE STUDENTS

Laser Cutting Tricks
WAYS TO CREATE
POLISHED PROTOTYPES

Inventing at Age 7
A BOY AND MOTHER'S
MUTUAL INSPIRATION

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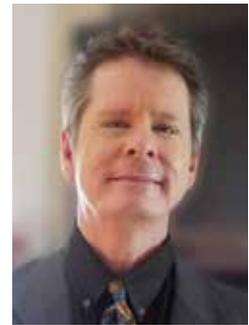
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The Patent I Will Always Love Most

My father would have loved to see me as editor-in-chief of *Inventors Digest*, but he probably would not have loved seeing this Editor's Note.

Dad died in 2013, a few years before I was hired and took over for the June 2016 issue. He was a very private person.

Dad was also a very big deal, in ways that I'm still discovering.

A couple years ago, a sibling who was going through some things in my father's home office stumbled upon a copy of a United States patent with Paul Creager's name on it. Dad never told any of his five sons or three daughters about this.

U.S. Patent No. 3,060,932 was for a sterile surgical drape and method. Basically, it involves an improved surgical technique using a protective and sterile sheet material for covering a wound or incision.

Dad wasn't a doctor, although he certainly knew a lot about the medical field. He spent much of his career leading the medical/surgical products division at Parke-Davis.

Patent No. 3,060,932, issued Oct. 30, 1962, also lists Louis Pereny and Eric G. Gibbs. The patent was assigned to Protective Treatments of Dayton, Ohio, a little more than two years after the application. The language has all the hallmarks of Dad's clear, no-nonsense writing.

Because I wasn't sure how my mother would react to my writing about Dad, I tucked the patent copy—illustrations and all—into a drawer and let it sit. But she died last November, and I knew that eventually I would tell the world about this facet of my amazing father.

When I made the decision to write about this, I did further research and determined that my dad's name was on at least seven other patents.

Four of the eight total patents were assigned to Protective Treatments, the other four to Parke-Davis. They spanned 1962-68, all involving improvements for protecting wounds and incisions.

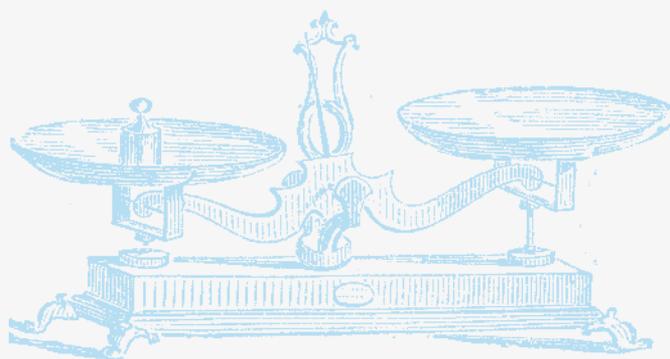
However, Dad's impressive knowledge of the medical world couldn't help him as he dealt with his oldest son's courageous fight against AIDS. My father saw to it that my brother had the best possible care, and even helped him with his final arrangements before my brother died in 1992.

My father was fiercely proud of all of his children. He took great delight in bragging about us whenever he could. He was extremely generous, often secretly; worked hard to ensure his children and their children remained close; and would quietly call relatives from his office during holidays. One of my cousins, a loyal subscriber to this magazine, still talks about how he benefited from my father's professional advice.

Behind every name on every patent is a world of stories, hopefully positive. But few people accomplished more than my dad, whose innovations helped others and whose love for his family lives on.

—Reid
(reid.creager@inventorsdigest.com)

American innovation needs to hit the gym



Weakened patent protections have reduced the value of American inventions. To strengthen American innovation, support the STRONGER Patents Act—legislation designed to restore strong Constitutional patent rights, limit unfair patent challenges, and end the diversion of USPTO fees.

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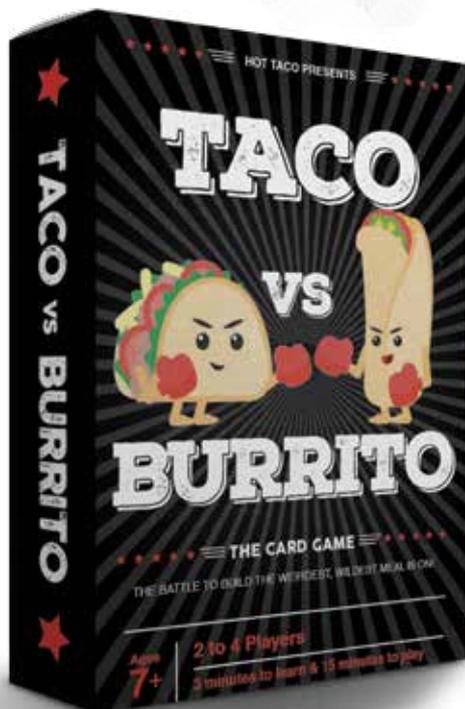
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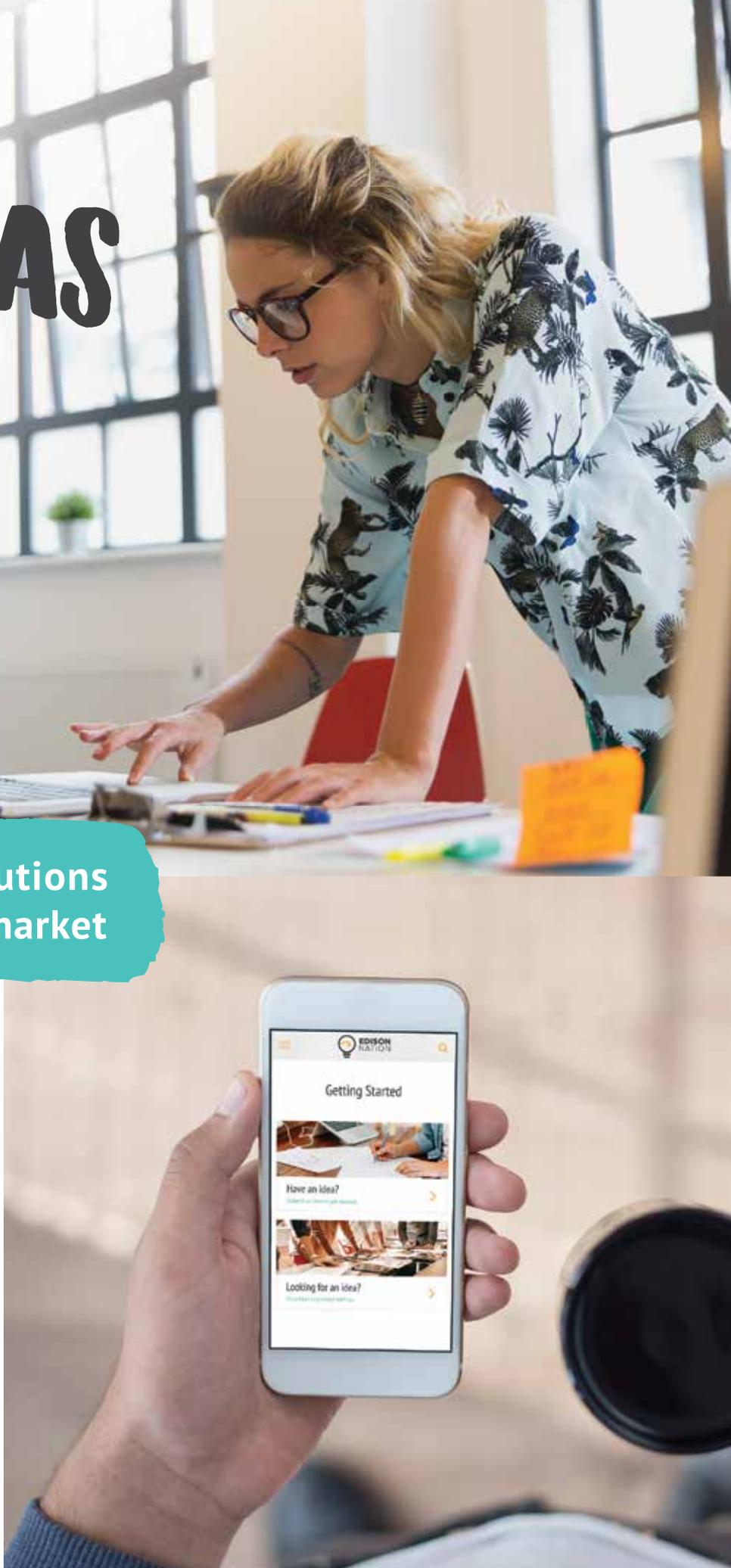
Rory Cooper sits in his creation, the Mobility Enhancement Robotic Wheelchair (MeBot); photo by Aimee Obidzinski, University of Pittsburgh

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Letters and emails in reaction to new and older **Inventors Digest** stories you read in print or online (responses may be edited for clarity and brevity):

I want to express my appreciation to your terrific publication. I have been both a devoted reader and contributor for several decades.

The California Invention Center and my sister organization, Licensing Executives Society—Silicon Valley Chapter, has been promoting and handing out copies at les-svc.org monthly luncheon meetings and our jointly sponsored educational sessions with the USPTO, Silicon Valley office.

I want to endorse and continue to promote your publication, especially since it is the only one that provides a creative individual, of any age, the hope and inspiration that is needed to make a positive contribution to the future.

Please let me know how I can continue to be a supporter.

—LAWRENCE J. UDELL

FOUNDER, CHAIRMAN, CALIFORNIA INVENTION CENTER

“Just Imagine” (April 2019):

I think the drive to invent is a love born into us at a young age. To visualize a solution to a problem is a gift. Yes, many children have that drive. To identify and nurture them is key.

It’s my understanding the best feeling in the world an inventor can experience is seeing the public using the invention.

—CHRISTOPHER R. WALTER



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‘DARK HORSE’ KICKS KATY PERRY

A half-million dollars might not be a lot of money for Katy Perry to lose, but it’s still a significant development in copyright infringement circles.

On July 30, a Los Angeles jury found that Perry’s 2013 hit “Dark Horse” copied the 2009 Grammy-nominated Christian gospel song “Joyful Noise.” Marcus Gray, better known as Flame, was awarded \$2.78 million in damages. The Associated Press reported that Perry is responsible for a little more than \$550,000, with Capitol Records on the hook for most of the payout.

Perry’s lawyers said her “Dark Horse” earnings were \$3.2 million, minus \$800,000 in costs. But jurors were told during the damages phase of the trial that the song earned \$31 million from sales of the single, album and concert DVD.

Gray had sued Perry in 2014, as well as producer Dr Luke and rapper Juicy J (the latter also featured in the song).

A prominent similarity in “Joyful Noise” and “Dark Horse” are four C notes followed

by two B notes. Dr Luke told a jury that prohibiting the use of a common and brief arrangement of musical notes would be the same as prohibiting an author from using the words “the,” “and” or “a.”

He also said neither he nor his songwriting associates had heard of “Joyful Noise” when they wrote their song—a key issue in any music copyright infringement case. Perry also testified she had not heard of Gray or his song.

IP blog IPKat reported that as of August 2018, there were at least five videos of “Joyful Noise” online with a collective total of 1,365,041 YouTube views, among other online showings.

When the defendants filed for a summary judgment last year—an attempt to avoid a trial—they hired a musicologist who said “Dark Horse” does not share any



significant structural, harmonic, rhythmic, melodic, or lyrical similarities, individually or in combination, with “Joyful Noise.”

However, a musicologist hired by the plaintiffs testified that the two songs are “substantially similar.”

According to IPKat, the musicologist claimed the “most obvious, pervasive, and substantial similarity” between the two songs is a “descending ostinato 8 figure which serves as the primary formal building block for both tracks.” It added that the ostinatos in both songs are identical, both ostinatos are nearly identical in pitch content and melodic contour as is the mechanical style, and that the timbre of the upper and primary voice are remarkably similar.

The defendants’ motion for summary judgment was denied, resulting in court proceedings.

BRIGHT IDEAS

CleanseBot

BACTERIA-KILLING
TRAVEL ROBOT

venturstudio.com/cleansebot

CleanseBot is a pocket-sized, smart robot with artificial intelligence and 18 sensors. It uses four UV-C lamps to blast away 99.99 percent of germs and bacteria on any surface.

The device is particularly useful in hotel rooms, which are known to contain many germs—especially on light switches, the TV remote and beds. Just set the CleanseBot on the bed, engage the wheels, turn it on for either 30 or 60 minutes, and it sanitizes and disinfects bed sheets and blankets. It can also be used in handheld or power bank mode.

CleanseBot retails for \$259.



Elephant in a Box

EASILY ASSEMBLED, FOLDABLE SOFA

producthype.co/elephant-in-a-box-sofa/

Billed as the strongest, most comfortable foldable sofa, this furniture collapses into one box that can be shipped via UPS or by car.

Elephant in a Box can be assembled in fewer than five minutes and disassembled in fewer than 2 minutes (no tools are needed), making it ideal for people who relocate often.

The sofa's honeycomb structure used in its base and back support is expandable and recovers its shape quickly after pressure is applied. It can hold up to 1,000 lbs.

Elephant in a Box, which will retail for \$899, is scheduled to ship this month to crowdfunding Rewards backers.



3:AMs

2-IN-ONE INDOOR, OUTDOOR SHOE

muvez.co

This stylish, lightweight footwear combines the functionality and detail of an athletic shoe with the comfort and convenience of casual house slippers.

Among the features: a zero-gravity insole; removable, shock-absorbing EVA (Ethylene-vinyl acetate) outsole; and a collapsible neoprene heel. The removable outsole prevents you from tracking dirt into your home. 3:AMs are machine washable.

The product, which will retail for \$110, will ship to crowdfunding Rewards backers in January.

“Keep in mind that imagination is at the heart of all innovation. Crush or constrain it, and the fun will vanish.”

— ALBERT-LÁSZLÓ BARABÁSI



Coosno

FUTURISTIC, SMART COFFEE TABLE

coosno.com

Highlighted by a refrigerator that pops up from the table via voice command, Coosno is a table/fridge/entertainment center all in one. It features Bluetooth speakers, an LED tabletop, wireless charging and two power outlets.

The built-in fridge, which can hold 68 cans of beer, features adjustable cooling temperature. Speakers have 360-degree surround sound. The tabletop and night-light have 160,000 colors. Lower drawers hold magazines, remotes and more.

Coosno will have a retail price of \$799 and ship to crowdfunding Rewards backers in February.



GAMING Greatness

ICONIC GAME BOY TRANSFORMED AN ESTABLISHED BUT STRUGGLING JAPANESE COMPANY **BY REID CREAGER**

IT WAS A LONG WAY from hanafuda playing cards.

Few noticed when Nintendo released a home video game system called Game Boy in 1989 during the 100th anniversary year of the company's founding as Nintendo Koppai in Kyoto, Japan. Nintendo originally produced the hanafuda (translation: flower) cards and was still best known for them well into second half of the 1900s.

The company also was in the taxi, food manufacturing and toy business at different junctures into the 1970s, with modest success. Then the video arcade game craze began.

Nintendo was ahead of the electronic curve. According to *Business Insider*, in 1967 engineer Ralph Baer had conceived the first video game to be played on a TV screen.

The game, called the Brown Box, was eventually released to the public as the Magnavox Odyssey video game unit in

1972—and an intrigued Nintendo bought distribution rights for it in Japan in 1975.

From college campuses to neighborhood arcades, early hits such as Space Invaders, Asteroids and Nintendo's Donkey Kong were mainstays in the late 1970s and early '80s.

The trend soon moved inside homes via video game consoles. The Nintendo Entertainment System (1985) became almost ubiquitous, led by its iconic flagship game, Super Mario Bros. Another classic game, the Legend of Zelda, was released in early 1986.

Ex-janitor's idea

The development of the handheld video game began innocently enough. One day in the late 1970s during his train commute, Nintendo employee Gunpei Yokoi saw a man playing with an LCD calculator. Gaming history soon changed forever.

A former janitor at Nintendo, Yokoi had impressed company officials by inventing an extended arm toy called the Ultra Hand that sold more than 1.2 million units. The company tasked him with developing a video game.

One day in the late 1970s during his train commute, Nintendo employee Gunpei Yokoi saw a man playing with an LCD calculator. Gaming history soon changed forever.



His idea, according to the website Famous & Popular Japan, was a handheld game for “people (sic) have nothing to do. If it can be played secretly, maybe will become popular.”

This resulted in a series of games about the size of a smartphone called the Game & Watch, a two-screen unit featuring the plus-shaped design that has been imitated since in virtually all video game controllers. The game morphed into Game Boy—the 8-bit, 5-button device that was released in Japan on April 21, 1989; in North America on July 31, 1989; and in Europe on Sept. 28, 1990.

The original weighed about 1.5 lbs. with a screen size of about 2.5 inches. Many of the first games launched simultaneously—Super Mario Land, Alleyway, Baseball, and Yakuman in Japan, and Tetris and Tennis in North America. Game Boy was originally bundled with Tetris in North America.

Spin-off success

The original Game Boy enjoyed steady sales. Its first update came in 1996 via the Game Boy Pocket, which cut the game’s weight by about a half pound.

Two years later, Game Boy Light backlit the screen, a seemingly overdue feature that was only available in Japan. Game Boy came out with a colored monitor, a huge hit, that same year.

The 32-bit Game Boy Advance was next, in 2001. It had the color monitor, as well as two buttons so more functions could be performed. The 2003 Game Boy Advance SP, slightly more than half the size of the Game Boy Advance, protects the screen from scratches and dust in much the same way that the two-screen Game & Watch units did.

Game Boy Micro (2005) is a compact redesign of the Game Boy Advance, which, strangely enough, lacks the backward compatibility for Game Boy or Game Boy Color games that the Advance SP has. Micro was the last console in the Game Boy line.

Game Boy’s 15-year run ended in 2004 with the release of the Nintendo DS, a dramatic leap in game technology. It has two different screens and 10 buttons, twice that of the original Game Boy specs. It has thousands of games and features that include online capability, picture-taking abilities and 3D gaming.

Nintendo says Game Boy has sold more than 150 million systems worldwide, proof of its status as an instrumental force in the development of gaming. 🎮



Recent sales of rare, vintage Game Boys on eBay:

- Amazing Tater: \$250-\$339
- Spud’s Adventure: \$125-\$202
- Mega Man V: \$120-\$139
- F1 Pole Position, USA version (box only): \$480

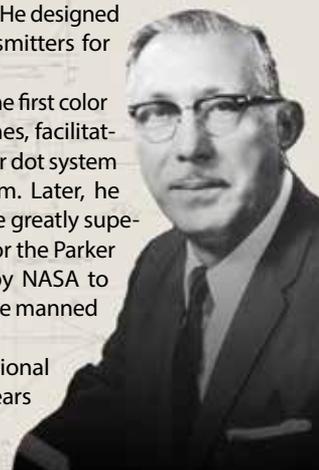
INVENTOR ARCHIVES: SEPTEMBER

Sept. 7, 1948: **Louis W. Parker** was granted a patent for a television receiver—U.S. Patent No. 2,448,908. His intercarrier sound system, the modern basis for coordinating sound and picture, is now used in all television receivers in the world.

Born in Budapest, Hungary, Parker immigrated to the United States as a young man and became a citizen in 1932. He designed and manufactured portable radio transmitters for military use during World War II.

Among Parker’s other inventions was the first color television system using vertical color lines, facilitating a change from the original three-color dot system to the simpler vertical color-line system. Later, he invented electrical instruments that were greatly superior in performance and were the basis for the Parker Instrument Corp., which was chosen by NASA to furnish selected instruments for use in the manned Apollo flights to the moon.

Parker was inducted into the National Inventors Hall of Fame in 1988, five years before he died at 87.



The Pilot Production Run

DETERMINING COSTS FOR YOUR POSSIBLE LICENSEE,
TO PROVE YOUR INVENTION WILL SELL **BY JACK LANDER**

IF YOU'VE watched "Shark Tank," you know that the first question asked by the sharks is, "How many have you sold?"

Even if you aren't seeking an angel investor, a.k.a. a shark, your prospective licensees will be far more willing to read your sell sheet and engage in conversation if you have some sales under your belt. So let's say you agree to produce a pilot run—a short production run to test your sales in an appropriate market channel.

The first step is to select the manufacturing process for each component. The principle involved is: The vast majority of manufacturing processes come with a range of tooling choices. The lowest-cost tooling produces the highest-cost parts. The highest-cost tooling produces the lowest-cost parts.

You should utilize this principle to reduce your costs for the pilot run, and to determine the ballpark cost of volume production that your prospective licensee will encounter.

Starting the math

Let's start with the most important principle: tooling cost vs. part cost.

For example, most of us are familiar with a 90-degree angle bracket used for many purposes, such as mending a wayward table leg. Such a simple part can come from a spectrum of tooling:

- Your work with a hacksaw, vise, hand drill and hammer
- Help from a short-run prototype service provider
- Utilizing a stamping service provider (an automatic hole punching, cutting off, and bending die)

The same holds true for a plastic injection molded part:

- 3D printing (material addition)
- Machining (material removal)
- A single-cavity injection mold made from aluminum
- A single-cavity injection mold made from steel
- A multiple-cavity injection mold made from steel

3D printing requires a digital program to drive the printer. That program is made by amending your digital 3D drawing of the part.

The fee for amending the drawings is generally less than \$100. If you have your own printer or access to one, you can amend the drawing yourself.

Let's say that your cost of amending your drawings is \$75, and the cost per printed part is \$3.25. You anticipate needing 100 parts for your trial, so your total cost will be \$400.

This assumes that your invention is complete with the making of a single component. If you have other components, you'll have to apply the same calculation. Those parts may require methods other than 3D printing, but the principle applies unless the parts are bought "off the shelf."

Machining costs

Machining is sometimes less expensive than 3D printing. It depends on the size and complexity of the part.

A significant advantage of machining may be that once the machine is set up, the finished parts are released automatically. Printed parts may have to be removed manually and the process started again for each part made.

Price comparison of the two methods is the only exact way to know which of the processes is the more economical.

Assume that your market channel is QVC or some other TV direct seller. It will probably place your product in a middle-of-the-night time slot to test response and ask for, say, a 5,000-piece inventory. Your cost will be \$16,350 for your main component alone—and you'll be stuck with a mold that you may never use again, and a lot of inventory, if QVC decides that you didn't sell enough for it to take on the product.

But before you commit to producing 5,000 parts by the essentially short-run processes of 3D printing or machining, you get a couple of quotes for a single-cavity mold made of aluminum.

An aluminum mold is significantly less expensive than a steel mold, because it is so much faster to machine. But its useful life may be only a third of a steel mold's.

Let's say 300,000 parts for aluminum and a million parts for steel. Most of the time you're better off with the aluminum mold until you can forecast lifetime sales of your product.

Suppose the molder's price is \$12,000 for the mold and 40 cents for each part if you purchase no less than 3,000 parts with each order. So, your total cost for 5,000 parts is \$2,000. Thus, your total cost is \$14,000, compared with \$16,350 for printed parts.

Obviously, this is the way to go. But even if the mold option was more expensive by a couple of thousand dollars, the incremental cost is probably worth the investment because you'll have to mold for future production.

However, your cost per part should not be based on your total cost of \$14,000. Your cost per part is 40 cents plus the lifetime cost of your mold. If the mold is predicted to be good for 300,000 parts, $\$12,000/300,000 = .04$, so your cost per part is 44 cents.

Cavity mold costs

Assuming you still plan to license, you should have a fair idea of how much your prospect will have to invest in tooling and the cost of the parts it will produce. Such knowledge enables you to

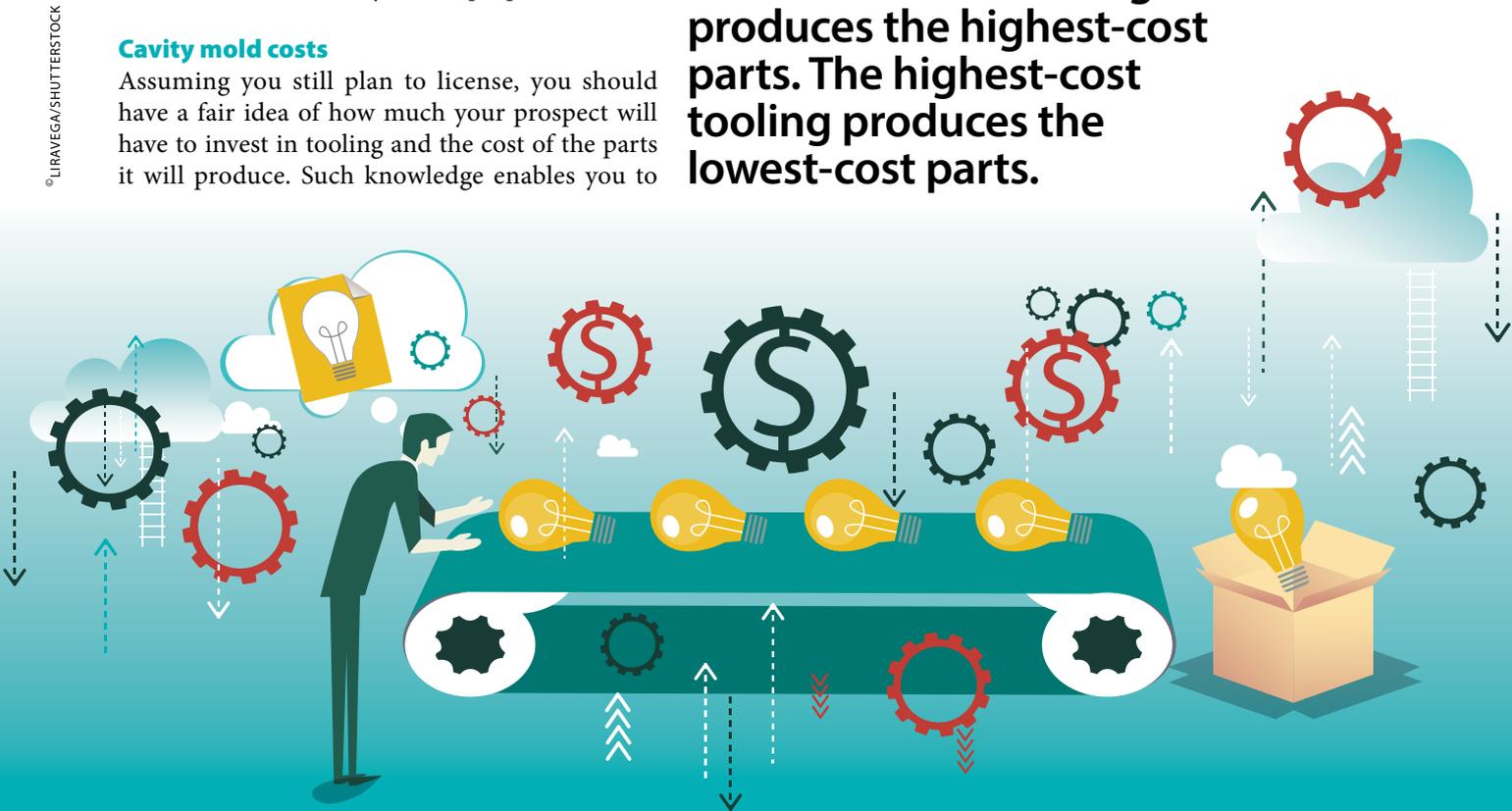
convincingly answer a potential licensee's concern about the product's cost, which ultimately determines his or her profit.

So, while you're asking for a price quote on your aluminum mold, discuss a multi-cavity steel mold cost as well. A cavity is just the hollow part of the mold from which your part emerges after it solidifies.

A four-cavity mold is fairly common. But depending on the shape of your part—let's say it's long and narrow—a six-cavity mold may work to advantage. (I once ordered a 100-cavity mold for a small part about the size of the eraser at the top of a pencil.) The point is to be able to discuss your potential licensee's cost per part based on the kind of mold he or she will probably use.

The obvious advantage of several cavities is that the molding cycle time is substantially the same, whether one part or 16 is molded with each mold cycle. Thus, the mold cycle time part of the cost per piece is reduced to 1/16th.

The lowest-cost tooling produces the highest-cost parts. The highest-cost tooling produces the lowest-cost parts.



So, if the plastic cost is 10 cents per part, and the molding cycle time is 30 cents, the cost per piece will be $30/16 =$ approximately 1.9 cents, plus the plastic cost, and the total cost per part, to equal 11.9 cents. But remember, you should add in the amortized cost of the mold so that you don't fool yourself when you calculate selling price and profit.

If the molder quotes \$55,000 for the mold and it is good for a million parts, the cost per piece is .055. So, you will pay the molder 11.9 cents per part—but your cost, including the mold, is 11.9 plus .055 = 17.4 cents.

Don't forget setup expenses

There is one more cost you should know about, although you don't have to include it in your part's cost. The molder will do that for you. That cost is setup.

If you're going to bake a cake, you need to get out the mixing bowl, the baking pan and all ingredients. When your cake is out of the oven, you take all of the same steps to frost it. And finally, when the cake is frosted and ready to cut, you have to wash the pans and dishes and put them away.

That's called setup. Your molder has to purge the mold so your bright yellow plastic isn't contaminated by the mud-colored plastic he used on the last job, then install your mold, and run several wasted parts to be sure the heat and time formula he or she uses is producing acceptable parts.

All of this time may add up to a couple of hundred dollars, more or less. That cost is spread across (allocated to) the quantity the molder will run. This is why quoted prices drop as quantity goes up.

Traditionally, the molder doesn't charge you for setup as a separate line item. He or she will quote you

a lower price per piece depending on the quantities you may buy—1,000, 5,000, 10,000, etc.

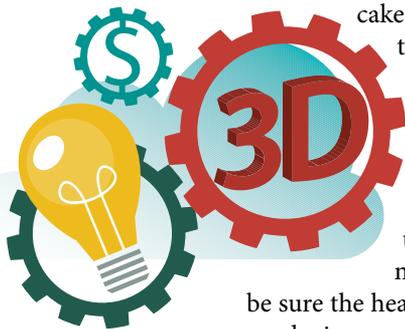
In review

To summarize, the compiling of total *direct costs* (no overhead included), requires patience and the common-sense knowledge of the various kinds of cost that make up that total:

- Which type of process? (Machine the part, print it with a 3D printer, mold it, etc.)
- Which option within the selected process will you use? (3D printing, aluminum mold, multi-cavity mold, etc.)
- How much does the material (e.g., plastic) used for each part cost?
- How much does the cycle time of the process cost?
- How many cavities in the mold? (Your choice. Get quotes on one and four if you are uncertain.)
- How much of the mold cost is allocated to each part (mold cost divided by number of parts made before the mold has to be replaced?)
- Are you willing to lose money to test your product's marketability? Your selling price is based on your customer's perceived value vs. net market price, not some multiple of your cost. In most cases, you'll have to sell your product for less than your cost.

Even if you are roughly estimating cost per part, the above cost factors are real. Don't neglect any of them.

I never said it would be easy. 🤖



Jack Lander, a near legend in the inventing community, has been writing for *Inventors Digest* for 23 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.



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Building Your Team With Social Media

LISTING A JOB ON YOUR WEBSITE IS OFTEN NOT ENOUGH

BY ELIZABETH BREEDLOVE

IF YOU realize your dream of launching your invention into the marketplace and building a full-fledged business from it, you'll eventually need a team of people on your side.

When you're in the early stages of a start-up company, it's important to find quality people who mesh well with your personality and your company culture who are as passionate about your invention as you are and who you can trust to do good work.

To begin, write a job description. Consider the nature of the role, the duties you expect of the new hire, the requirements and qualifications you hope to see in this person, and how you'd like him or her to apply. Then put the job listing on your website.

Putting your listing on your site is a good first step, but it is usually unlikely that the right candidate will find your listing on his or her own.

At this point, many inventors are uncertain where to turn to find the perfect addition to their team. If this is you, have you considered using social media to grow your team?

Advertising your job

Let's start with the obvious. As soon as you decide to hire someone to join your team, post a link to the listing on all your social media profiles.

In the post, include a few key details such as the job title and one or two qualifications, and consider telling people how to apply. This is a great place to begin because those who are following you on social media are likely interested in and emotionally invested in the success of your company. They are familiar with your brand and invention, giving

them an edge over someone who may know nothing about your product.

If you stop here, though, you'll be selling yourself short and may miss out on the perfect candidate.

Facebook has an advantage over most other social networks in that it lets you post job listings directly on your profile. These display differently than regular Facebook posts, so those who see this will know that it's a job listing and not just another post.

Facebook also gives you the option to pay to "boost" the post, which will get it seen by more people. If it's an entry-level job with widely applicable skills, this can be a great option for you.

However, if it's a highly skilled job, this may be a waste of your advertising budget, as Facebook limits boosted job posts targeting to location. There may be a million people on Facebook in your specified location but only 100 with the qualifications you need. If you pay to boost the post, there is a high likelihood none of these 100 people will even see it because the audience is so large.

If you still want to pay to promote your job listing, a better option may be to run a more typical Facebook Ad campaign directing traffic to the listing on your website. Remember that Facebook Ads can get quite expensive if you don't know what you're doing; if you aren't experienced with that tool, you'll be better off working with an advertising expert or not running an ad at all.

Regardless of whether you decide to pay to promote your job opening on Facebook, consider posting in Facebook Groups. The most obvious place to begin would be groups for job seekers in your area. These groups are filled with people looking for work.

A simple search should make these groups easy to find. Look for all active groups and post in each of them. Note that these groups may be closed, in which case you'll have to request to join them.

Once you've posted in your local job offer groups, you can start to look for groups more specifically related to the job itself. For example, if you're hiring a mechanical engineer, look for groups for engineers in your area, or groups for local maker spaces. If you're hiring a marketing professional, search for groups for local marketing experts. You may be surprised by how many relevant Facebook Groups you find!

Facebook has an advantage over most other social networks in that it lets you post job listings directly on your profile.

When you feel satisfied with your job postings on Facebook, you can move on to LinkedIn. LinkedIn also has specific posts for job listings, so be sure to create one of these. You can also use LinkedIn's search feature to find good candidates and then message them directly.

Evaluate your candidates

Once you have a solid group of candidates, it's time to evaluate them. Of course you'll look at each applicant's resume and cover letter, but you can also search for his or her social media profiles to get a better picture.

If the person is active on social media, you can learn more about his or her personality and perhaps determine a possible fit for your company culture. If the person posts frequently, you'll also get a feel for his or her writing style, which may be important.

While researching candidates on social media, see how they've interacted with your content. Do they follow your brand? Do they interact with your posts?

It isn't necessarily a bad sign if they aren't already engaged with you on social media, but if they are, it shows they have a baseline familiarity with your brand and are interested in your invention.

Show off your company

Throughout the hiring process, make sure you're posting frequently to all of your social media profiles. Don't just promote your product or business; this is your chance to make your company appear attractive to potential applicants.

For example, post behind-the-scenes photos or videos that show off your company culture. If you have an interesting office space, show it off! If your company has won awards or achieved something else notable, this makes a great post as well.

Social media is an easy way to highlight the most interesting parts of working for your company so that the top applicants are interested in your business over another who may also be hiring people with their skill set. ☺

Elizabeth Breedlove is a freelance marketing consultant and copywriter. She has helped start-ups and small businesses launch new products and inventions via social media, blogging, email marketing and more.



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So Easy, a 7-Year-Old Can Do It

HOW A CHILD AND HIS MOTHER
TURNED HIS CARD GAME IDEA
INTO A BIG SELLER **BY HOWIE BUSCH**



M EET ALEX BUTLER. He was 7 when he came up with an invention idea.

Since then, with the help of his mother, he raised \$24,312 on Kickstarter in March 2018; launched his product on Amazon at the end of November; and is selling over \$30,000 in product per month on Amazon.

He is now 9 and beginning the fourth grade.

How does a little kid accomplish what most adult inventors can't seem to do?

Put another way: How does a little kid invent a game, launch a successful Kickstarter campaign and become a top card game on Amazon—and make more money than most adults?

To fully appreciate how it happened in this case, you should know a little about the woman who gave birth to him and served as his inspiration.

Meet Alex's mom and my friend, Leslie Pierson.

Reciprocal inspiration

Mom was Alex's inspiration, but Alex was Mom's inspiration, too.

When Alex was 4, he was creating a lot of artwork. His mother wanted to put it up but be able to easily replace it when he created new artwork.

So she came up with a product that would enable her to do that. At the end of April 2015 she launched a Kickstarter campaign for a magnetic hanging system called Good Hangups, raising just over \$28,000. Her funding goal had been \$5,000.

A little over a year later, she appeared on Season 8 of "Shark Tank" and netted herself a deal with her perfect Shark, Lori Greiner. Leslie Pierson has also appeared on QVC numerous times and even won The Next Big Thing contest on NBC's "Today."

Seeing that willingness to go for it, hard work and ultimate success must have rubbed off on her boy. In September 2017, the following conversation took place between mother and son (paraphrased, of course):

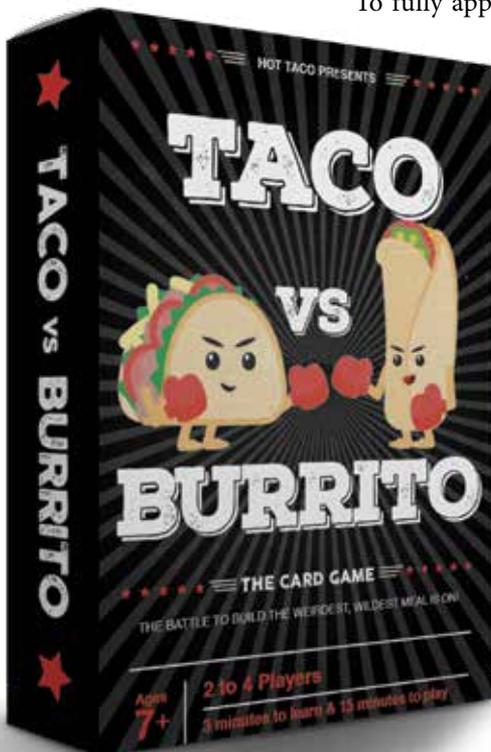
Alex: Mom, I wanna make a card game called Taco vs. Burrito, and I wanna do a Kickstarter.

Mom: OK. How do you play the game?

Alex: I don't know yet, but I wanna make the game and do a Kickstarter.

Just like that, mother and son set out to develop the game and launch a Kickstarter campaign—after she tried to dissuade him by telling him how much

Alex Butler came up with a name for his card game that was funny and catchy.



PHOTOS COURTESY OF LESLIE PIERSON

Through his mother's invention of a magnetic hanging system, Alex Butler witnessed firsthand the hard work and dedication it took to achieve success.

work it would take. In true entrepreneurial fashion, Alex was not easily dissuaded.

Every weekend, they would walk the dog to the coffee shop and play a different game, and then play the latest version of the game Alex had conceived. Each week, he would devise new ways to improve the current version—where players compete to create the weirdest, wildest meal.

Pierson credits that routine they developed as the key to Alex's early success.

Playing their cards right

It's a good lesson for inventors and entrepreneurs to keep momentum going. You have to put in consistent time and effort to get a product to market, even if it's only a couple of hours a week.

Another crucial move was setting their Kickstarter funding goal very low (\$1,000), which helps you move up the algorithm if you hit your goal quickly. They raised their \$24,312 in a month.

Alex also came up with a great name that was funny and catchy—which goes a long way, especially in the game market. He created an engaging video. And as important as anything, he wasn't afraid to fail. I guess that's one of the benefits of being a child entrepreneur.

Of course, the game has to be good, and he created a terrific one.

In fact, the month he launched on Kickstarter, Alex was part of the Indie Game Showcase at Emerald City Comicon. He wore a taco costume and played the game with a number of 40-year-olds.

Alex was lucky to have his mom as his inspiration. He saw her succeed with just an idea and witnessed firsthand the hard work and dedication it took to achieve success.

You may not have a parent or sibling as a model for your behavior or to help you push forward your idea. But as I've said, you can surround yourself with other inventors and product developers, and help push each other toward success.

As for Alex, keep an eye out for his next game, Tokyo vs. Burrito. Something tells me it may be even more successful than his first. 🍌

Howie Busch is an inventor, entrepreneur and attorney who helps people get products to market through licensing, manufacturing or crowdfunding. Possibly the world's least handy inventor, he has licensed many products, run a successful Kickstarter campaign and appeared on "Shark Tank."



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Bridging the Gap

ATTORNEY'S BRA-FITTING ACCESSORY PROVIDES A SLIMMING APPEARANCE **BY EDITH G. TOLCHIN**

I LOVE REVIEWING new women's products. Occasionally, inventors contact me because they saw something featured in my *Inventors Digest* stories that is in a product category similar to their ideas.

In this case, Judith Samson, inventor of the Bra Bridge™, contacted me and said she saw my article on the Ta-Ta Towel by Erin Robertson (*Inventors Digest*, January 2018.) She asked if I'd like to interview her.

Because I feel inventions by women are few and far between in an often male-dominated industry, I was thrilled. Here is Samson's story.

Edith G. Tolchin (EGT): Please tell us about your background.

Judith Samson (JS): My life is very busy and "self induced." I have been married for 23 years and have three amazing children (all boys). I am a criminal defense lawyer by day and an entrepreneur by night.

I love what I do, there's a level of excitement that is undeniable, and I was perfectly happy in my career. I truly had no intention of becoming an entrepreneur until I realized there was a need for the Bra Bridge.

If I needed it, so did other women—although I wasn't sure where this challenging project would take me. After all, I had zero experience with where to start. I am always up for a good challenge, and this was just that.

EGT: What is the Bra Bridge?

JS: The Bra Bridge is a discreet bra-fitting accessory that attaches to your bra cups, lending support, lift, reduces bounce, "side boob," and provides a slimmer appearance by pulling the girls in. I call it my secret "confidence booster."

The Bra Bridge is for women of all ages and sizes. I love this because older women are often forgotten by beauty manufacturers, but they still want to look attractive and young.

EGT: How is it attached?

JS: I recommend standing in front of a mirror, attaching it to one bra cup, then directly across on the other bra cup at the desired height to provide the desired fit.

The Bra Bridge can be left on the bra permanently (I even wash my bra with the Bra Bridge on there). You won't even know it's there, other than from the benefits it will provide. I have worn my Bra Bridge every single day for the past year and cannot go without it.

EGT: What brought about this idea?

JS: As I was walking back from court, I caught my reflection in a window, and saw my breasts bouncing up and down. As soon as I got home that day, I looked at myself in the mirror and noticed I looked wider than I should (my breasts were falling past my ribcage, which most larger breasts naturally do).

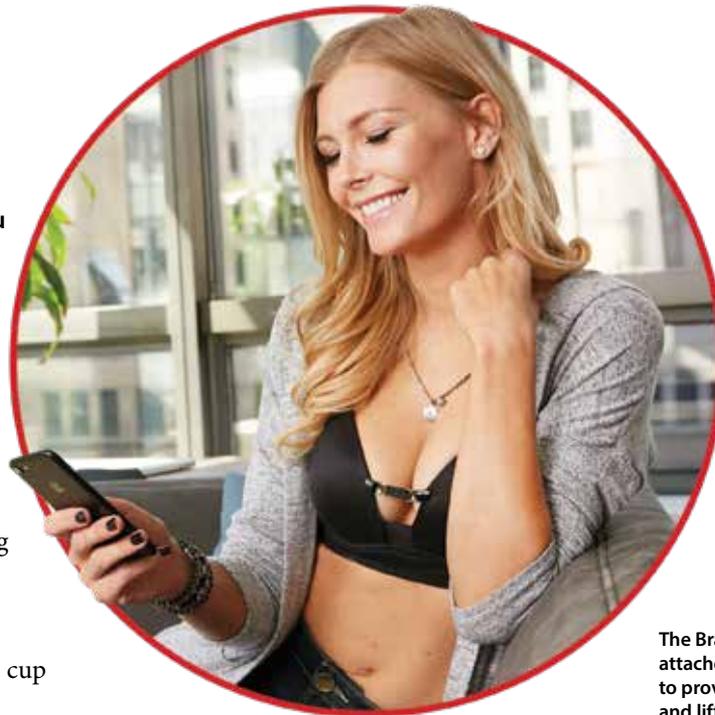
I pulled my bra cups in and immediately noticed a difference. Not only did I look slimmer, but I liked the contained feeling. Having larger breasts has been a point of contention. I found myself slouching to hide them. Now I walk with confidence because of the Bra Bridge.

I never wanted my chest to be the focal point with clients or the judge. Now, I finally like the way I look and feel about myself.

"I had zero experience with where to start. I am always up for a good challenge, and this was just that."

—JUDITH SAMSON





The Bra Bridge attaches to bra cups to provide support and lift.

EGT: How many prototypes did it take until you felt that “aha!” moment?

JS: I immediately began sewing strips of fabric in my bras, giving me the desired look and feel I was after. I mentioned this to my husband (who is a patent attorney), and he said, “I think you are on to something.”

I worked on four or five prototypes before we found the perfect accessory. The fabric had to be soft yet couldn't be a stretch material; the clips had to be as discreet as possible but strong enough to hold heavy breasts.

EGT: Is the Bra Bridge “one size fits all?”

JS: Yes. You can raise it or lower it on your bra cup for the desired fit.

I had a call from the sweetest lady recently who thanked me for inventing the Bra Bridge. She has a fuller-figured daughter and wanted to buy a set for her. She wondered if she needed a larger size. I was proud to tell her she didn't.

EGT: What is it made of?

JS: The clips are made of painted nickel, and the fabric is a non-stretchy poly material.

EGT: Where are you selling the Bra Bridge?

JS: The Bra Bridge comes in a package of three: black, nude and white for \$19.95. We sell them at our website, at Amazon, Evine, and some retail stores.

EGT: Please share your patenting experience.

JS: I am fortunate because my husband is a patent attorney. This is a pricey endeavor. We had to hire someone to prepare the drawings (a skill in itself), and pay the filing fees in several countries. Currently, it is patent pending.

EGT: Are you manufacturing in the United States or overseas? If overseas, have you had any problems?

JS: I reached out to several manufacturers in Minnesota (where I reside). Unfortunately, they were unable to manufacture the Bra Bridge at a competitive price. In fact, they suggested we go overseas.

We ended up finding a wonderful company in China that is compliant with U.S. regulations and very responsive to all our needs. The quality of their work has been impeccable.

However, manufacturing a product in China can become somewhat complicated because not only are you dealing with the manufacturer, you need to hire

an import company as well. They are responsible for bringing the product into the U.S. and taking care of the customs and shipment.

EGT: Any big obstacles during product development?

JS: When you have a product manufactured overseas, it becomes a time issue.

For example, getting samples sent can take weeks. If something needs to be tweaked, which is highly likely, you need to send it back and then wait for the sample again. Ultimately, it took one year from start to finish to have the product delivered to our door.

EGT: Will you be adding to your product line?

JS: Yes, we are excited to have a new line with different patterns, such as animal prints, in the near future.

EGT: What might others expect in developing a similar product category?

JS: It's difficult to introduce an unknown and unique product to the market. There's an education component that we are still struggling with. With the Bra Bridge, I need to educate the consumer why they need and will want this. Until they try it, they won't know they need it. 📧

Details: brabridge.com

Books by **Eddie Tolchin** (egt@edietolchin.com) include “Fanny on Fire” (fannyonfire.com) and “Secrets of Successful Inventing.” She has written for *Inventors Digest* since 2000. Eddie has owned EGT Global Trading since 1997, assisting inventors with product safety issues and China manufacturing.



It's All in the Details

SMART LIGHTING SYSTEM CONTROLS LIGHT TO FACILITATE BETTER PRODUCT PHOTOS **BY JEREMY LOSAW**

THERE ARE 2.71 billion smartphone users in the world, which means there are roughly 2.70 billion bad smartphone photographers in the world.

Although imaging technology continues to improve, photography is still the art of light—which makes controlling light crucial to great photography.

Inventor and photographer Iaroslav Neliubov understood the challenges of creating great photos, even with professional equipment. So he invented a smart lighting system with the goal of allowing professionals and novices to create great product photos.

The Photon Light Module System is a modular light box for product photography. It has three light panels to illuminate the subject from the top and the sides, and has different color backgrounds.

Each of the three light panels has 25 light blocks that can be individually controlled via a smartphone app. This allows the

photographer full control of the light on the subject without having to set up or tune any equipment. The device can be used in standalone form for a DSLR camera, or it can be used to take photos with a smartphone.

An inconvenient truth

Neliubov was a professional photographer in his native Ukraine who was frustrated by photography equipment, because he felt that he could not get the great detail he wanted from his product shots. Studio light setups are expensive and cumbersome; softboxes are great for isolating an object from the background but not for creating beautiful images.

“For the umpteenth time when I faced problems of object shooting, I figured out that all current available equipment is inconvenient, non-practical and not technological,” Neliubov said.

The Photon Light Module System can be used in standalone form for a DSLR camera, or it can be used to take photos with a smartphone.



“...When I faced problems of object shooting, I figured out that all current available equipment is inconvenient, non-practical and not technological.”

—IAROSLAV NELIUBOV



Before spending time prototyping his concept for controlled light panels, he did a computer simulation. He built a 3D CAD model of the system with an object inside it and rendered the scene with different light configurations.

He was able to show how drastically different frames he could achieve with the concept and was encouraged to move forward designing the product.

Primitive prototyping

The first prototype of Photon LMS was made from readily available materials.

LED strips were attached to cardboard and plywood that were painted black. Neliubov found some students to build the circuit and created the prototype app himself. Many of the components were harvested from other products or procured from Asian suppliers.

“The first prototype was very primitive, but in the end we got a not-quite-beautiful but fully working prototype already having our own management application,” Neliubov said. The prototype was shown to fellow photographers, who were excited by the new possibilities the device opened up for them.

After the initial prototype was built, Neliubov entered Photon LMS into the Conceptor Acceleration competition in Kiev. Conceptor is a US/ Ukraine design firm that, with help from the Ukrainian Venture Capital and Private Equity Association, has an accelerator program to help tech start-ups.

Neliubov and Photon LMS won the 2018 competition. This pocketed him \$20,000 and a subsidized trip to this year’s Consumer Electronics Show in January to show off the project.

However, in November CES was just two months away, and the prototype was still unrefined. Neliubov and his engineers went straight to work refining the product for their big launch, as there was plenty to do on the physical, electrical, and app side of the product.

“There were numerous tests with LED, frame details, mounting system, electronics schemes and software,” he said. “Thankfully, we made it.”

A full kit of three panels and three backgrounds is available for pre-order for \$599, or panels can be purchased individually for \$239 at the company website.

Crowdfunding success

After CES 2019, the team pushed to launch the product on Kickstarter. While at CES they met the crowdfunding marketing firm Funded Today and enlisted it to help with the marketing of the campaign.

Crowdfunding went live in June; Photon LMS reached its funding goal of \$25,000 in two days on its way to the \$100,000 range.

Intellectual property and manufacturing development work looks promising, based on the success of the Kickstarter campaign. Photon LMS has European copyrights and design patents. Up to now, funding challenges have been the primary reason it has not applied for U.S. patents.

The company set up this plan for a manufacturer: If pre-order volume was low, the device would likely be made in the Ukraine. If larger, it would be made in China—with the goal in either case to deliver product to crowdfunding backers in the second quarter next year.

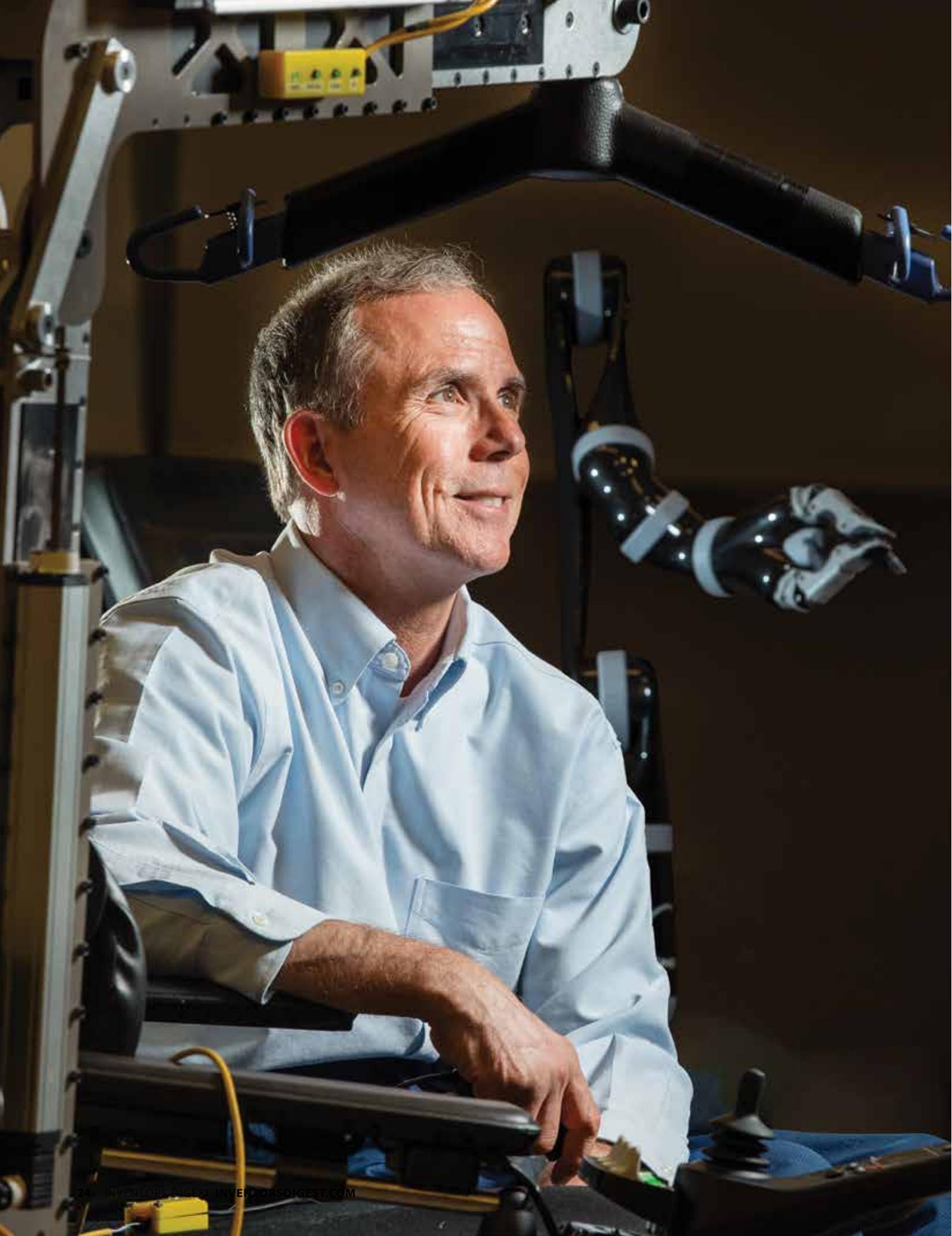
In a little over a year, Neliubov took a concept and turned it into a fully funded Kickstarter campaign. And the journey is not yet over for Photon LMS.

He and his engineering team are looking forward to creating line extensions for the device as well as other photography gear, with the hope that it will lead to a successful company with great products. 📷

Details: photonlms.com

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





RORY COOPER'S GROWING LEGACY:
INVENTOR, LEADER, ASSISTIVE TECHNOLOGY ADVOCATE

Sitting Tall

BY REID CREAGER

RORY COOPER struggled to contain his pinballing emotions from the podium in Seoul, South Korea, while the world watched. The man always in motion had arrived in an almost unthinkable way.

Cooper had won the bronze medal in the 4-by-400-meter wheelchair relay at the 1988 Paralympic Games, his participation the culmination of an impossible dream—“thousands of hours of preparation and uncountable sacrifices by me, my families, and friends. It took tremendous discipline, effort and focus to get to the Paralympics. Winning a medal is a wonderful reward.”

But there was another, perhaps deeper, layer of joy.

“To me, the best part was the opportunity to be on the podium wearing the cloth of my country representing the hopes and dreams of the American people,” said Cooper, who also finished fourth in the 10,000-meter wheelchair race. “Having served in the U.S. Army, it was moving to once again serve and be an ambassador for the USA as a Paralympic athlete.”

Little did he know that his achievement would grow yet more in scope as the years passed.

Mission unstoppable

More than 30 years later, Cooper sat in front of a much smaller audience. The inventor of many advanced mobility devices and assistive technologies as well as a high-profile advocate for people with disabilities, he was a guest speaker at the United States Patent and Trademark Office's National Summer Teacher Institute on Innovation, STEM, and Intellectual Property, at the University of North Carolina at Charlotte.

“It was exciting to meet and interact with the highly motivated and engaging teachers in attendance,” said Cooper, who has 20 patents awarded or pending.

“The USPTO Education team put together an excellent program that is fun, educational and inspiring.”

The appearance was another day in his life's mission that built unstoppable momentum on that day in Seoul. Cooper eventually “came to realize the enormity of the accomplishment, as I had joined an elite international community dedicated to elevating the lives of all, especially people with disabilities.”

His inventions include MEBot, a stair-climbing wheelchair; PneuChair, a wheelchair powered entirely by compressed air; and Virtual Seating Coach, a smartphone app to control power wheelchair seating systems.

But this richly awarded icon in the assistive tech arena derives his greatest pleasure from being part of an enormously talented and dedicated team at the University of Pittsburgh and the U.S. Department of Veterans Affairs, with historically innovative collaborations of their own.

The HERL passion

Cooper is director of the Human Research Engineering Laboratories at Pittsburgh. His excitement is palpable once he begins talking about HERL, which has created innovations in wheelchairs, robotics, adaptive sports, wearable devices, medical instrumentation and accessibility.

“HERL itself is what I would consider my most important accomplishment,” he said. “Next to that, it would have to be the people who have trained

Rory Cooper sits in his creation, the Mobility Enhancement Robotic Wheelchair (MeBot). It tackles curbs, challenging terrains, and even climbs stairs. The seat stabilization system keeps the driver safely upright.

in HERL and have gone on to carry the mission forward”—engineers, physicians, therapists, business professionals and other scientists, many of whom are women, veterans or people with disabilities.

Firsthand understanding of those challenges is crucial, so HERL actively seeks those people.

“Only people with disabilities and their families, related and chosen, know their experiences, goals and needs,” Cooper said. “HERL engages with and employs people with disabilities vigorously in order to be ‘of’ the community of people with disabilities. Because of this, we have some insight into the priorities of people with disabilities.

“Our greatest strengths are the ability to assimilate and integrate differing professional skills, personal perspectives and experiences, and to adapt and integrate knowledge and technologies from diverse fields. The key ingredients are passion and competence.”

Human Research Engineering Laboratories
Director Rory Cooper
(right) meets with U.S. Sen.
Robert Casey (D-Pa.)—
the latter seated in one
of Cooper’s power wheel-
chair seating systems—at
HERL facilities. HERL
researcher Cheng-Shui
Chung is at left.

“Certainly, people with disabilities, especially obvious disabilities, are pervasively underestimated.”

—RORY COOPER

Wheel of impact

Cooper cited HERL’s SMARTWheel as a shining achievement that led to other advances: “It has changed wheelchair biomechanics and ergonomics studies, wheelchair provision and training, and led to breakthroughs that have greatly improved the health and function of veterans who use wheelchairs.

“The SMARTWheel subsequently contributed to many advances—power assist devices, ergonomic pushrims such as Natural Fit and Surge, Americans With Disabilities Act Standards and Guidelines, and improvements in wheelchair design, insurance coverage, provision and fitting and training.”

It doesn’t take a person with a physical disability to understand the toll a manual wheelchair can exact on the human torso, arms and hands. This is perhaps SMARTWheel’s greatest benefit, Cooper said.

“It has driven the incidence of shoulder and wrist injuries to manual wheelchair users from circa 80 percent to around 20 percent,” he said.

“There are several other innovations that have transformed lives, such as the joystick compensation algorithms and methods used on essentially every powered wheelchair in the world. More recently, the virtual seating coach is using machine learning and contextual awareness to dramatically



reduce prevalence of pressure injuries and lower limb swelling.”

Cooper said it would take a book to describe the innovation at HERL.

“We have always wanted to create and encourage advances in technologies that would enable a world where all people with disabilities could fully participate and contribute to the best of their abilities. Medical rehabilitation and technological advances need to at least keep pace with the needs of emerging and persistent disabilities to provide veterans with disabilities—and people with disabilities in general—the opportunity to live fulfilling lives and contribute to their families and communities.”

Driving understanding

Part of the assistive technology movement is educating the uninitiated who falsely assume too many limits for people with disabilities. Cooper has experienced this lack of understanding countless times since he was paralyzed in 1980 while stationed in Germany. He was on a bicycle and was hit by a bus.

He is still surprised by the number of people who ask him whether he drives; how he gets his wheelchair into his vehicle; and how he is able to participate in marathons. (Cooper also participated in the tech-driven Cybathlon power chair race in Switzerland in 2016.)

“Certainly, people with disabilities, especially obvious disabilities, are pervasively underestimated,” he said. “Technology has made it possible for wheelchair users to participate in a wide range of activities at home, in their communities, in work and school environments.

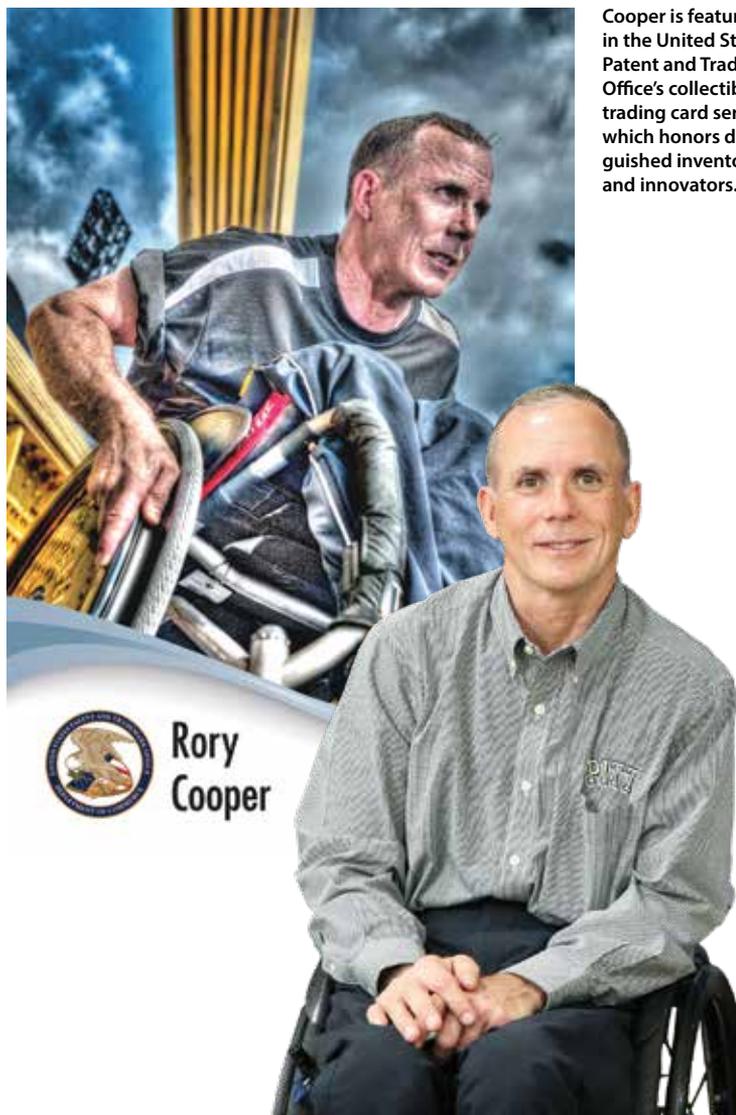
“There is still much room for improvement, but technology enables people to live much fuller lives than just a few years ago.”

As one of the world’s leaders in that discipline, Cooper has received a litany of national and international awards as well as extensive media coverage. In character, he said the greatest benefits of this occurs on a larger scale to benefit others.

“Awards are nice but not really important,” he said. “What is important is the recognition and attention that the contributions receive so that they may help raise awareness, motivate more talented people to enter the field, and bring attention to the abilities of people with disabilities.”

Some of his recognition has a great cool factor: He appeared on Cheerios boxes in 2009, and he is featured in a USPTO Collectible Trading Card series of inventors.

“I am excited by the USPTO Collectible Trading Card, as it is designed to educate, inspire and empower inventors of all ages,” he said. “My card



Cooper is featured in the United States Patent and Trademark Office’s collectible trading card series, which honors distinguished inventors and innovators.

PHOTO BY HANK MACDONALD

DR. RORY A. COOPER

Age: 59

What he does: Director, Human Engineering Research Laboratories, University of Pittsburgh; FISA & Paralyzed Veterans of America professor and distinguished professor of the Department of Rehabilitation Science & Technology; professor of Bioengineering, physical Med & Rehab, and Orthopedic Surgery, University of Pittsburgh; founding director and VA Senior Research Career Scientist of the Human Engineering Research Laboratories; adjunct professor in the Robotics Institute of Carnegie Mellon University; honorary professor at Hong Kong Polytechnic University and Xi’an Jiatong University, where he was awarded an honorary doctorate. Cooper has authored or co-authored more than 350 peer-reviewed journal publications.

Education: Bachelor of Science and Master of Engineering degrees in electrical engineering from California Polytechnic State University, San Luis Obispo in 1985 and 1986, respectively; Ph.D. degree in electrical and computer engineering with a concentration in bioengineering from University of California at Santa Barbara, 1989.



Top: Rory Cooper and Joshua Kanode work on MEBot at HERL.

Inset: Cooper pilots the MEBot in the 2016 Cybathlon.

brings mainstream attention to the potential of technology to expand opportunities for people with disabilities as well as highlight the powerful abilities of people with disabilities.”

A world effort

Cooper is also excited about efforts around the world to further the mission of assistive technology. He ticked off pioneers and leaders such as Hugh Herr of MIT Media Lab; Gregg Vanderheiden at the University of Maryland; Jongbae Kim (Yonsei University, Korea); Urs Schneider (Fraunhofer Institute, Stuttgart, Germany); Maja Matarić (University of Southern California) and Alex Mihailidis (University of Toronto).

When asked about the most important technology in the field, Cooper didn’t hesitate.

“Robotics, robotics, robotics. The breakthroughs changing the landscape are coming from adapting and advancing robotic technologies with physical robots and software robots.

“Robotics in assistive technology are expanding the tent to include more people with disabilities, especially people with complex and severe disabilities. Robotics are providing greater mobility, improved communication and computer interaction, transforming manipulation capability, and expanding social interaction. The other advance is global interaction and collaboration to challenge problems across all continents, and socioeconomic domains to empower people with disabilities.”

More exciting is the apparent eventuality of the next impactful technologies.

“We’re currently working on some breakthrough technologies that (we) are not yet ready to disclose,” Cooper said. “We’ve been working on creating and updating a research and development road map based on consumer demands. We’re working to improve human-machine interfaces, intelligent systems and robotics, wearable and in-home technologies, and better designs for wheelchairs, adaptive sports equipment, and other devices.”

Cooper sees a limitless landscape for assistive technology, with the hope that its advances escalate as rapidly as the world has witnessed in the past few decades.

“Some of the things that lie ahead for assistive technology design are application of origami engineering, new—likely hybrid—power sources, learning technologies, in-home support, caregiver assistance, big data, obstacle and task identification, planning and negotiation, rapid personalized design and fabrication, and simulation tools.

“There will be more users as professionals in the field. Assistive technology will evolve to be more mainstream inclusive.”

BEST OF THE BEST

Some of Dr. Rory Cooper’s highest awards:

- Samuel E. Heyman Service to America Service Medal
- Secretary of Defense Meritorious Civilian Service Medal
- National Guard Bureau Minute Man Award
- U.S. Army Distinguished Civilian Service Medal
- U.S. Department of Veterans Affairs Diversity & Inclusion Excellence Award
- Pennsylvania Military & Veteran Hall of Fame
- DaVinci Lifetime Achievement Award
- Spinal Cord Injury Hall of Fame, inaugural class



TEACHING THE TEACHERS

USPTO, MICHELSON INITIATIVES LEAD INVENTOR EDUCATION EFFORTS

What does a patent application look like? What goes into making an invention prototype? What are the laws involving intellectual property such as patents, copyrights and trademarks?

Those were some of the questions addressed at the United States Patent and Trademark Office's sixth annual National Summer Teacher Institute on Innovation, STEM, and Intellectual Property. It took place July 28-August 2 at the University of North Carolina at Charlotte, where Rory Cooper was one of several standout speakers who included scientists and engineers, entrepreneurs, and representatives from other federal government agencies and nonprofit organizations.

Teachers from throughout the country witnessed presentations and participated in inventing-related workshops with the goal of passing along the knowledge to their students. The program's main emphasis was on the creation and protection of intellectual property.

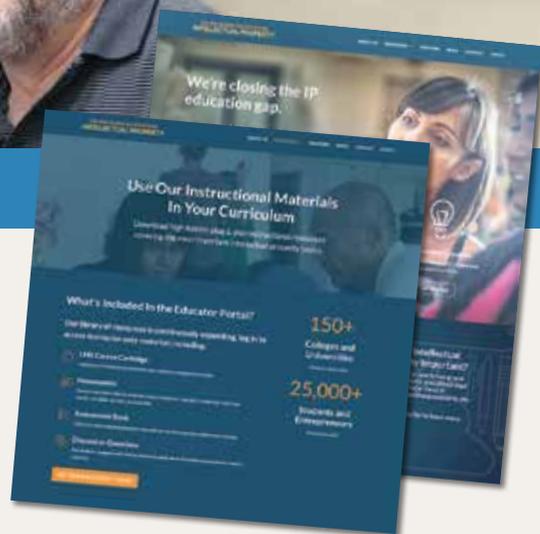
At the event, IP was modeled as both a teaching and learning platform to help inspire and motivate student achievement in science, technology, engineering and mathematics (STEM) disciplines, computer science, and other fields of study such as innovation and entrepreneurship.

The Michelson Institute for Intellectual Property has an ongoing, similar focus. Founded by billionaire inventor and acclaimed spinal surgeon

Dr. Gary Michelson—cover subject for the June 2019 *Inventors Digest*—the institute features an educator portal to help instructors convey essential information involving IP.

The portal allows educators to download high-quality, plug-and-play instructional resources covering IP topics. Instructors can directly upload the institute's IP modules into their learning management system; use customizable slides covering key topics in patents, copyright, trademark and trade secrets; check for understanding throughout the materials via pre-written questions after every section, and utilize discussion questions to facilitate interest by students in IP's role in the world economy.

More than 150 colleges and universities use the educator portal, according to the institute. It has reached more than 25,000 students and entrepreneurs. *Details:* michelsonip.com/teachip/



Rory Cooper addresses teachers at the United States Patent and Trademark Office's National Summer Teacher Institute on Innovation, STEM, and Intellectual Property July 29 in Charlotte.





Mission: Education

A GROUP OF TEACHERS from throughout the United States went back to a classroom setting a little early this summer, for the sake of passing along what they learned about intellectual property and the invention process to their students this fall.

They spent the week of July 28 attending the United States Patent and Trademark Office's sixth annual National Summer Teacher Institute, on the campus of the University of North Carolina at Charlotte. Teachers split into workshop groups and made prototypes, learned from IP experts, and were inspired by speakers who are accomplished in the field.

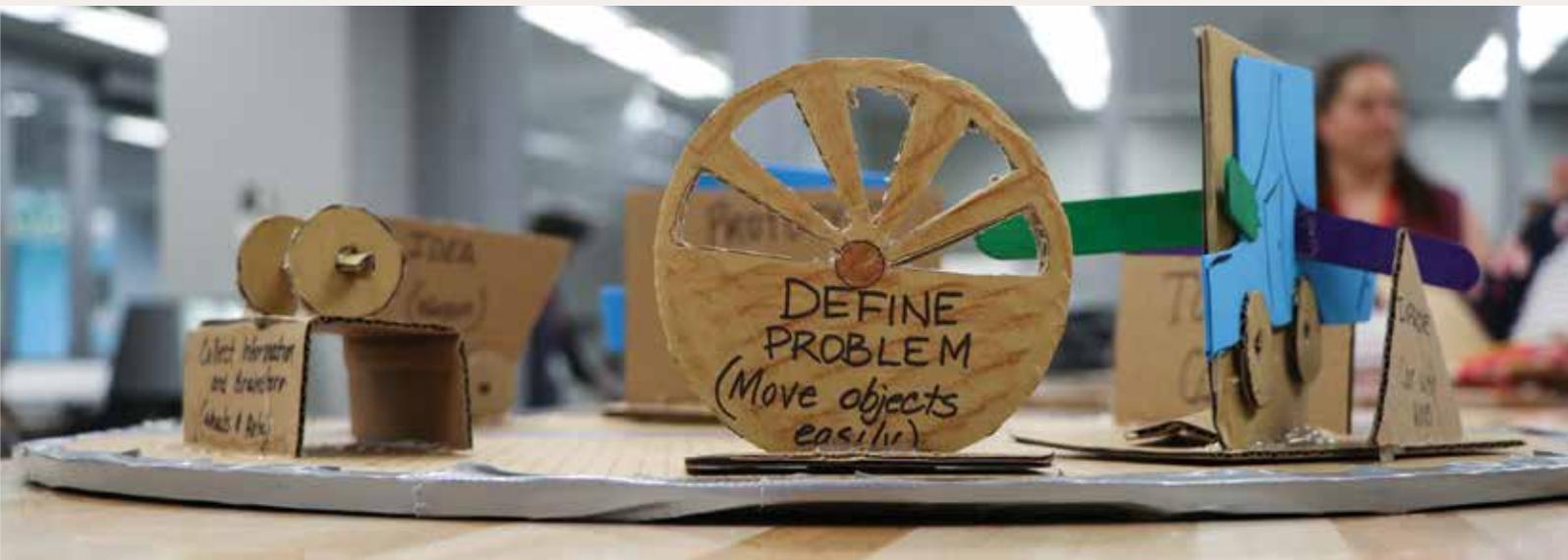
Elementary, middle and high school teachers selected for the event had to meet certain criteria, including at least three years of prior teaching in selected STEM areas.

PHOTOS BY HANK MACDONALD





Clockwise, from above: Louis Foreman, founder of Charlotte-based product development company Enventys Partners, was the opening speaker. After attendees scrutinized completed patents and their drawings, they made some rough prototypes (below) with materials provided by the program, got into the spirit with some fun costumes, and split into groups for a series of workshop exercises. They showed their sense of camaraderie in a couple of group photos, the largest one following an inspirational presentation by serial entrepreneur Tiffany Norwood (left). The event was a time for teachers to engage, take notes and simply observe.



Laser Cutting Tricks

MODEL T PROJECT AN EXAMPLE OF THE MANY WAYS TO CREATE PROFESSIONAL-LOOKING PROTOTYPES **BY JEREMY LOSAW**

SOMETIMES a challenge is so irresistible that you just have to take it on, even if there is no higher purpose than simple fun.

Such a challenge crossed my desk this year when my friend, Eric Gorman, invited me to help him build an awesome demo for a tech symposium in Charlotte. He is the founder of Wily Design in Charlotte.

The End-to-End Festival was at Camp North End, on the grounds of a former Model T factory. To pay homage to that history, we decided to bring the Model T back to life but with a twist.

We wanted to use rapid prototyping technology to build the car, so we decided to make a life-size replica made from laser-cut cardboard. We used the Epilog laser at the Eventys Partners shop to cut the more than 1,000 pieces before assembling them with more than a gallon of 3M Super 77 adhesive.

With help from my interns, Rick Fu and Milan Tomin, we assembled the car in about a week. I finished it with a couple

of Arduino MKR1000 micro-controllers to drive the LED headlights. It was the hit of the symposium and one of the neatest prototypes I have ever had the pleasure to work on.

Laser cutting is an indispensable tool in the Eventys Partners shop. It is versatile, easy to use, and allows designers and engineers to make prototypes very quickly.

Some of my favorite ways to use laser cutters to make great prototypes:

The part is drawn as a series of flat parts, and crenellations—little jut-outs such as at the top of a castle—are added at the end. After the parts are cut, they can be glued together to form the desired shape. This takes advantage of the speed of the laser to build parts in minutes that would otherwise take hours on a 3D printer.

Making curves

Although some flat materials are thin enough to bend into curves, some are too brittle and thick for this to work well. However, with clever design, flat parts can be made to form pleasing curves.

By adding strategically placed cutouts to the flat pieces, the structure is weakened and can be flexed into a curve. Combined with the tongue-and-groove technique, aesthetically pleasing prototypes can be created with this simple method.

Material stacking

Laser-cut material stacked together can be used to create fully solid 3D prototypes. The best way is to split the CAD model into layers that are as thick as the cut material, cut each two-dimensional layer on the laser and bond them together.

This is the technique I used to build the cardboard Model T. It gives a layered look that is reminiscent of the layers of a 3D print but is fully solid.

The parts can be left as is or can be filled with glue or Bondo to smooth the regions between layers. This is also a good technique to build thermoforming molds to make thin plastic parts.

Creating the layers in CAD can be time consuming, especially for a large model with thin layers. Fortunately, Autodesk has Slicer, a free program that makes the layers automatically and even creates the cut files.

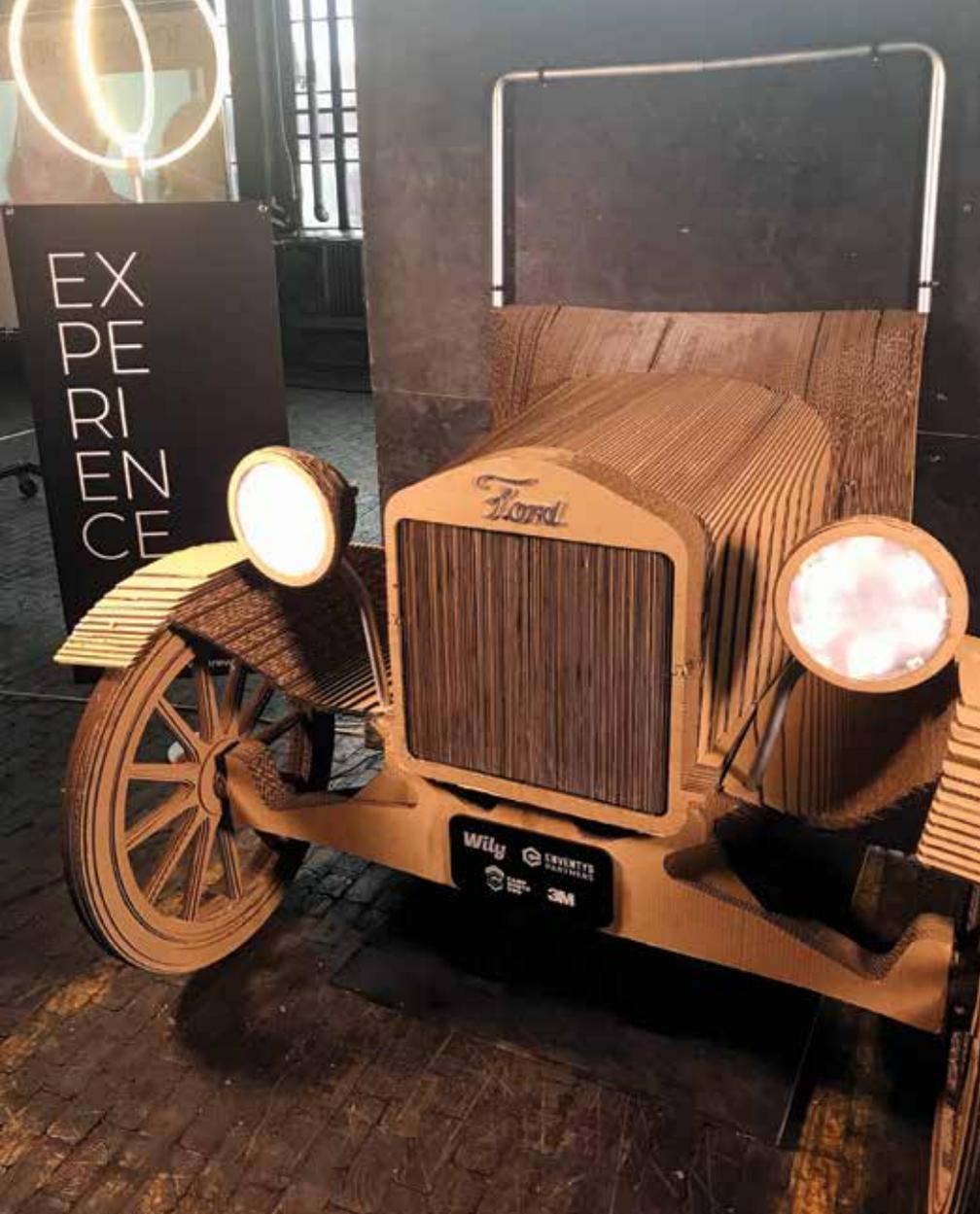
Slicer also can add numbers to each part to identify each piece in the assembly order, and can add holes for dowel pins to make the assembly easy to build and more sturdy. This software was crucial to the success of my Model T build and is highly recommended for anyone who wants to try this technique.



This drawer was made by Patrick Bailey, one of Eventys Partners' engineers, with the tongue and groove technique.

Tongue and groove

Most laser cutters are built to handle sheets of material, so you cannot directly build 3-dimensional prototypes with them. However, by designing parts with a tongue and groove on the edges, multidimensional parts can be made.



Laser cutting is versatile, easy to use, and allows designers and engineers to make prototypes very quickly.

Reverse side etching

Laser cutters can also be used to etch material. In that instance, the laser uses a faster traverse speed and lower power to selectively burn the material to create an image. The burned surface of the image creates a nice contrast between it and the raw material.

One of the most-used applications for this technique is for making LED lighted signs with clear acrylic panels. LEDs are directed toward the etched area, and everywhere the material is etched will glow to form the desired image or logo.

To give these pieces a finished look, it is best to etch the image on the backside of the clear acrylic. This leaves the front of the sign smooth. The trick to making this technique work is understanding that the art for the sign needs to be mirrored on the vertical

axis. It will look upside down during the etch but will read correctly once flipped over.

Pattern etching

Although some laser cutting machines will cut metal, most hobbyists or intermediate-grade lasers will not. However, you can still use them to help make metal parts.

Most lasers will be able to etch through anodized coating, which erases the color of the anodizing and leaves the metal color to create your design. Lasers can also etch away layout fluid (sometimes called bluing dye due to its blue color).

A technique I use from time to time requires coating a piece of metal with layout fluid, then etching a cut pattern in the dyed areas. Follow the etched lines with a saw or grinder to cut the metal to the desired shape. 🔪

Top left: Eventys Partners collaborated with Wily Design to create this full-scale cardboard Model T for the End 2 End tech symposium.

Top right: This cardboard part was cut with a pattern that would allow it to easily bend around a corner instead of a crease.

Above: These signs were made for a booth at this year's Consumer Electronics Show. Reverse etching was used during the build.

The Law and Patent Drawings

ILLUSTRATIONS AREN'T ALWAYS REQUIRED
BUT ARE STRONGLY RECOMMENDED **BY GENE QUINN**

U.S. PATENT LAW requires a patent applicant to furnish at least one patent drawing (sometimes referred to as a patent illustration) of the invention whenever the invention is capable of illustration by way of a drawing.

In other words: Whenever a drawing would assist in the understanding of an invention patent drawings, or at least one patent drawing, is necessary. Based on my experience, I can say that a patent drawing is almost always required.

In fact, the best way to expand any disclosure is through the inclusion of quality patent drawings. Patent illustrations are essential for any application.

However, for the purpose of being completely accurate, patent drawings are not always required. According to the Patent Law Treaty, which became effective in the United States on Dec. 18, 2013, patent drawings are no longer necessary in order to obtain a filing date for a patent application.

But in my opinion, only the most foolish applicants would ever proceed without a patent drawing.

Rules on filing dates

The 2013 change to the law says it is *possible* that a patent drawing could be filed later than the filing date without risk of losing the earlier filing date. But remember: You are never allowed to add new matter into a patent application, period.

If you need to add something you forgot after you filed a nonprovisional patent application, you must file another nonprovisional patent application to get a new filing date. The United States Patent and Trademark Office has cautioned patent attorneys, applicants and anyone else that the ability to secure a filing date without a drawing does not mean that new matter will be permitted at the time a drawing would be filed.

Because drawings almost always add more than the text that would support them, it is difficult to imagine what kind of patent drawings you could

add after the filing date. It is far better for applicants to always file patent applications with patent drawings—as many as feasible.

One circumstance in which patent drawings are not required is when you are claiming a chemical compound or composition. The formula would be enough; a drawing would not be required. Still, you will sometimes see patent drawings even in chemical patents.

Another circumstance in which a drawing may not be required is when you are claiming a method. Having said that, even with methods there is almost always at least some illustration that could assist the reader (and patent examiner). Furthermore, the drawings are a part of the overall disclosure, which helps expand what you have disclosed to help ensure you have adequate support for the invention and the various permutations of the invention you will want to claim.

You can almost always depict something with an image. If you can, you should. You never know when you might need to make a very fine argument that your disclosure shows something and the only support you have is in a drawing. That might not be the best argument to make, but it is one that can and has prevailed in the past.

According to the United States Court of Appeals for the Federal Circuit, which is the chief patent court in the United States, anything that is shown in drawings is a part of the disclosure and can be used to support the claims. Of course, I don't recommend leaving things out of your written disclosure, but if you accidentally leave something out of the text and it is shown in a drawing, you are saved.

Hyper-technical requirements

In reality, you should also not think in terms of a single patent drawing or illustration but in terms of how many patent drawings are necessary in order to demonstrate what you have invented. Most patent applications have at least several sheets of drawings,

with each sheet routinely having multiple views of the invention. You may need to show various views (top, bottom, right, left, etc.), and you may need to break down the invention and show drawings of one or more of the component parts.

The drawings should show every feature of the invention specified in the claims. As you probably guessed, given the peculiar requirements of the patent office, there are specific rules governing nearly every aspect of patent drawings.

That is why you are best served to leave patent drawings to the professionals. They have years of experience, they don't charge that much, and they bring life to an invention.

The patent office specifies the size of the sheet on which the drawing is made, the type of paper, the margins, and many other hyper-technical details relating to the making of the drawings. The reason for specifying the standards in detail is that the drawings are printed and published in a uniform style when the patent issues, and the drawings must also be such that they can be readily understood by people using the patent descriptions.

In reality, however, the drawings need to be electronically reproducible. Given that patent illustrations are line drawings, certain shading conventions must be in place to provide a means for showing depth and various perceptions.

Because the detail of the patent drawing is what saves you, having a professional patent illustrator is wise. Without question, the best way to broaden the scope of any application is to file the application with multiple, detailed and professional drawings. The benefit received from professional patent illustration is well worth the investment.

When dealing with mechanical inventions I am a particular fan of exploded views, which show all the pieces and parts in a state of suspended animation about to collapse backward into the finished product. *Editor's note:* If you have ever tried to put together furniture or a toy using illustrated instructions that show various small, large screws/nuts/dowels and where they go directionally in relation to larger parts, you have an idea of what an exploded view is.

Hire a professional

Now, how do you make the drawings? To be honest, I don't know and don't want to know.

This is the way virtually all patent attorneys and patent agents treat drawings, which is why we turn



Anything that is shown in drawings is a part of the disclosure and can be used to support the claims.

to professional patent illustrators to do drawings for us. The benefit of hiring someone is that these folks know all of the little picky details, and the drawings they make will be accepted by the patent office the first time around.

You will probably be surprised how affordable it is to hire a professional patent illustrator. Typical charges can run between \$75 to \$125 per drawing sheet depending upon the complexity of the invention, with design patent illustrations being more expensive. The cost of patent illustrations is very reasonable in light of the importance of drawings and the peace of mind associated with knowing that a drawing has been done right. ☑

Gene Quinn is a patent attorney, founder of IPWatchdog.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.





‘Help, I Need Somebody.’

SUPREME COURT MISSES ANOTHER CHANCE
TO CLARIFY PATENT ELIGIBILITY **BY LOUIS CARBONNEAU**

PAUL MCCARTNEY is not the only one gradually losing his voice. Sometimes, courts also speak the loudest by what they do not say.

In *Investpic v. SAP America*, the United States Supreme Court had the opportunity—for the 44th time—to clarify the current mess on patent eligibility when the case was placed on its docket for approval. The request for certiorari (an attempt to review a lower court’s ruling) was denied. No questions asked.

The Supreme Court justices must have figured that the United States Court of Appeals for the Federal Circuit was better suited to handle this situation. After all, SCOTUS gave lower tribunals all the guidance they needed in the landmark *Mayo* and *Alice* decisions to deal with such mundane issues, right?

A few days later, that same federal circuit denied an *en banc* (meaning all 12 judges heard the case) rehearing in *Athena Diagnostics v. Mayo Collaborative Services*. The 86-page order from the federal circuit included eight separate opinions—four concurring with the *en banc* denial and another four dissenting from the decision.

Five judges said the federal circuit must find a way to make expensive, often life-saving diagnostics eligible for patenting under the Supreme Court’s framework. But the majority concluded that the Supreme Court had made that impossible. Remarkably, all 12 judges implored the justices—or Congress—to fix the problem.

Finally, some consensus! After this abysmal non-decision, many—such as IP Watchdog CEO Gene Quinn—have suggested that maybe we don’t need the federal circuit after all, as it is doing more harm than good.

Because we now know that SCOTUS is not interested in picking up the pieces of the mess it created and that the federal circuit made even worse, it seems we must now place our faith in Congress. In 2019, this takes a strong stomach.

We saw what happened. Recently, everyone was gung-ho that a bipartisan Congress was going to pass a short surgical amendment dealing with patent law Section 101 (“subject matter”) to remove the cloak of uncertainty currently dragging down patents. A last-minute amendment was introduced that, according to many, opened the door to invalidate patents through Section 112 that had just been rehabilitated via Section 101. Furthermore, some of those who initially supported the bill publicly now oppose it. It is now in limbo, as far as we can tell.

In short, we badly need help, and we are quickly running out of options.

Buyers and sellers

Just when things were starting to slow down for the summer, **Intel** surprised many by announcing it put a huge stockpile of 8,500 of its wireless patents on the block and was going to auction them off to the highest bidder. This announcement came on the heels of Intel’s decision to vacate the 5G chipset space altogether earlier this year.

Without a viable product in that space, it did not make much sense to keep such a large and expensive portfolio on the books. Intel recently announced the portfolio was off the table. Apparently, it received interest from a prospective buyer that probably did not want to see a redux of the infamous **Nortel** patent auction eight years ago, which triggered a bidding war between the tech giants and led to an arms race around mobile patents.

Many speculate this mysterious buyer to be none other than **Apple**, as the Cupertino giant is developing a 5G modem internally and it would greatly benefit from the protection of the broad Intel portfolio in that space. ...

According to RPX (which closely tracks sales of patents), **Intellectual Ventures** continued to rapidly peel off patents in the first half of 2019. Most ended



We must now place our faith in Congress. In 2019, this takes a strong stomach.

up in assertion campaigns soon thereafter. Although the core of those assets is sold to non-practicing entities (someone or some group holding a patent with no intention of developing it), some operating companies such as **Citrix** and **Samsung** have gobbled up some of the IV patents for their own needs.

IV also assigned some patents to **MEC Management LLC**, an NPE “formed under the tribal laws” of the Three Affiliated Tribes of the Fort Berthold Reservation, North Dakota. That tribe was the subject of considerable press in 2017, when it launched a litigation campaign amid a heated public debate over the issue of tribal sovereign immunity. (Pharmaceutical company **Allergan** transferred drug patents to the Saint Regis Mohawk Tribe, then leased them back, to get around an inter partes challenge to the patents.) Such immunity has now been rejected by the courts, and one can only suspect that this transaction occurred prior to the final court determination. ...

New York-based **CTRL Labs**, which is working on a device that can translate electrical muscle impulses into digital signals, acquired the patents for Kitchener-Waterloo-based **North’s** armband technology. The price of the IP acquisition was not disclosed. ...

Following its recent filing for bankruptcy after its CEO dilapidated \$144 million on a gambling spree, the rich patent portfolio (nearly 3,000 families) of Chinese phone manufacturer **Gionee** was to be auctioned by the administrator of the court via **Taobao.com’s** bankruptcy property network auction platform. ...

On a much smaller scale, **GTX Corp.**—a self-described pioneer in the field of wearable GPS, people and asset tracking Location-Based Services and Real-Time Location Systems—announced that it sold two patents, certain other assets and also provided two separate patent licenses to Inpixon in exchange for a combination of cash and shares of Inpixon common stock. I can only assume that the licenses cover more than these two patents, or the transactions would be redundant.

Winners and losers

Since the sudden departure of **Provenance Asset Group** founder and CEO Dan McCurdy to **RPX**, the company has had a difficult time demonstrating that its “rent-a-patent” model can attract interest. It is apparently considering an assertion campaign in a search for alternative ways to generate revenue from its huge portfolio of mainly ex-Nokia patents. Welcome back to earth, guys! I had expressed serious doubts about this business approach when it was first launched, and it appears I was not the only one. ...

Huawei recently announced its intention to monetize its rich patent portfolio in the United States (it specifically asked **Verizon** to pay it \$1 billion in royalties), a move made necessary by its recent ban on selling products in the U.S. market. That announcement immediately triggered an outcry from U.S. Sen. Marco Rubio, who threatened to block Huawei from suing any U.S. company.



I'LL SEE YOU IN COURT

Fresh from its lawsuit wins against D&M Holdings' Denon HEOS wireless multiroom audio system, **Sonos** is suing again. This time the target is **Lenbrook Industries Ltd.**, maker of the Bluesound and BluOS products and platform for wireless audio.

Sonos alleges Lenbrook infringes seven patents, including the two patents that D&M was found (in a jury trial) to have willfully infringed. Two other patent infringement claims in that case – also involved in the Lenbrook lawsuit – were settled out of court. ...

Another NPE that has become more active recently is **Acacia**, whose patents were recently asserted against **Xiaomi**, **Vivo** and **Opko**, to name a few.

That would be a clear intrusion in the independence of the legal system, which everyone who understand patents (he clearly does not) decried as a stupid idea. The last thing anyone wants to do is give the Chinese government an excuse to start favoring the local team in patent disputes brought to that country. It will occur soon enough. The irony is that Huawei has been paying a lot more in patent royalties since its inception than it has received in licensing revenues—\$6 billion versus only \$1.4 billion overall ...

Publicly Traded IP Company (aka 'PIPcos') **VirnetX Holding Corp.** persuaded a U.S. appeals court to toss invalidity decisions on two of its patents, giving the company a chance for a potential billion-dollar payout from **Apple** over secure communications. On the other hand, Ottawa-based **Conversant** (which used to be public when called MOSAID), got a pyrrhic victory when the English High Court delivered a mixed ruling in its ongoing dispute against Huawei and **ZTE**, declaring its standard essential patents (SEPs) to be valid—but not infringed. ...

One would think that **Amazon** would lead the pack in terms of drone related patents. Surprise! Its archrival **Walmart**, which apparently filed twice as many last year. Let's hope they both invested in collision avoidance technology as the two companies start flying their UAVs to your doorsteps. ...

The U.S. government is not often on the receiving end of a patent lawsuit, so it is doubly embarrassing when it loses. This happened to the U.S. Navy, which must pay an additional \$7.4 million in legal fees to **FastShip**, the patent owner, in addition to paying another \$12 million in damages. The court ruled that the Navy wrongly used FastShip's patent information to design a class of littoral combat ships while sidelining it from the design process. ...

Finally, I am the first one to admit that we focus almost exclusively on patents as a transactional asset class, because very few established companies would sell away their brands. And it's no wonder why: According to a recent report, the value of top brands increased last year by 8 percent to a whopping \$2.33 billion. Most of the leaders are U.S. based. Did someone just say GAFA (Google, Apple, Facebook and Amazon)?

Handshakes

Tivo reported its license with Canadian operator **Shaw Communications** for TiVo's i-Guide and its intellectual property license. Meanwhile, **Vestas** and **GE Renewable Energy** settled their multi-patent dispute related to technologies that enable wind turbines to manage grid faults.

From the bench

In another bad day for those claiming they are immune from their patents being challenged in front of the Patent Trial and Appeal Board, the federal circuit ruled that states, just like native tribes, lack immunity from inter partes review. The University of Minnesota lost its appeal of an IPR filed by **Broadcom** and **Ericsson** on the basis that there was no reason to treat states differently from tribes in this context.

Around the world

Intellectual property is generating soaring revenue for **Japan**, jumping by 74 percent over the past five years to a record in 2017, according to the latest government data. Developing and protecting it is a key element of Prime Minister Shinzo Abe's long-term growth strategy, which calls for greater investment in innovation to create wealth as the nation's workforce ages and shrinks.

In **India**, the courts are toying with the idea of reintroducing interim injunctions in patent cases and a Delhi High Court judge says legal "experimentation" has become necessary to protect patent owners. ☛

Louis Carbonneau is the founder & CEO of Tangible IP, a leading IP strategic advisory and patent brokerage firm, with more than 2,500 patents sold. He is also an attorney who has been voted as one of the world's leading IP strategists for the past seven years. He writes a regular column read by more than 12,000 IP professionals.



Don't Forget the Press Release

LONGSTANDING ADVERTISING VEHICLE CAN CONNECT YOU TO KEY INDUSTRY FIGURES

BY DON DEBELAK



MOST trade magazines and websites—which target retailers, distributors and salespeople in a particular industry—have new product sections with press releases. Many consumer magazines and sites dedicated to a pursuit or hobby also feature new product sections full of these releases or “advertorials.”

Press releases are a great tool for inventors because editors may publish information about your product in a new product section that might be read by key industry people. Often you will get inquiries, particularly from manufacturers’ representatives, that might help you promote your product.

The best news is that you typically don’t pay anything to get listed in a new product section of a trade magazine or a product-specific consumer magazine.

You can contact hundreds of newspapers and digital sites through a press release distribution company such as PR Newswire, EIN Presswire, or PR Distribution.

Find the right trade magazine for your product by looking in the Gale Directory of Publications and Broadcast Media at larger libraries, or search the internet for your product category or industry and the term “trade magazines.” After finding the names of the magazines you want to send information to, find the name of the editor on the magazine’s web page and then prepare and send a press release. The website fitssmallbusiness.com/press-release-examples/ has 34 sample releases you can review.

Keys to a good press release

- **Have an angle.** Every good news story has something to get people’s attention: an example of people using the product, improving an existing product, or something fun and exciting.
- **Write a good headline.** This should grab the attention of your audience while giving an idea of what the invention is. Write four or five possible headlines and show them to friends and relatives. Ask if they can think of something better.
- **Focus on your lead paragraph.** This paragraph needs to have a compelling reason for people to read more. Again, it pays to write three or four lead paragraphs and then get input from friends

and relatives about which one they find compelling. Do this before writing the body of the release, as you must know what angle you will follow. Check this site for more details: work.colum.edu/~amiller.leads.htm

- **Add strong supporting details.** Write two to five strong body paragraphs in which you document your points with actual examples of how it works. Focus group testing, consumer tests and real-world examples are the types of documentation you want.
- **Get exciting quotes.** They should be from real users, or from people in the distribution chain. This could dramatically increase the number of publications that will use the press release. Don’t just have the user say the product is great; explain a problem that was solved or the benefit that your product gave.
- **Include quality photos.** Preferably, these should be of your product in use by an actual user. Make sure the photos are high-resolution photos suitable for publication. You can also send lower-resolution photos but refer editors to a website where high-resolution photos are available.
- **Set up a high-quality web page.** Interested editors who go to your site will be turned off by a poor-quality web page.
- **Include contact information.** At the least, this means your name, phone number, email and web page.
- **Include a company boilerplate.** This entails a few paragraphs of text about your company that goes at the bottom of all your press releases. This text describes your company, its purpose, and often its size, presence and chief locations. Go to criminallyprolific.com/company-boilerplate/ for information on writing boilerplate information. ☑

Don Debelak is the founder of One Stop Invention Shop, which offers marketing and patenting assistance to inventors. He is also the author of several marketing books, including Entrepreneur magazine’s *Bringing Your Product to Market*. Debelak can be reached at (612) 414-4118 or dondebelak34@msn.com.





Another PTAB Casualty?

AWARDED WIRELESS MICROPHONE TECHNOLOGY FOR MOVIES, TV COULD BE INVALIDATED **BY JOSH MALONE**

ON OCTOBER 25, the American Intellectual Property Law Association's annual meeting will host a Patent Trial and Appeal Board inter partes review trial to determine the fate of two patents issued by the United States Patent and Trademark Office to Zaxcom for a digital recording wireless microphone.

An inter partes review trial is one in which the validity of a patent is challenged in front of the USPTO.

Zaxcom is a U.S. manufacturer of high-end, specialized wireless microphones and recording equipment for the film and television industries. The company was founded in 1986 by Glenn Sanders, the named inventor on the challenged patents.

I met Sanders recently at the trial on his first patent, held at USPTO headquarters in Alexandria, Virginia. I monitor the PTAB docket in an attempt to help inventors and their novice attorneys navigate the "patent death squad," or at least expose the more blatant examples of abuse. I help them if able, but at the very least I Uber down to the USPTO headquarters from my new home in Alexandria to lend moral support.

The Zaxcom case caught my attention for several reasons. First, this was not a patent troll asserting a stack of vague, overly broad patents but was an inventor-owned company that was producing the invention. Second, Sanders was manufacturing his invention and creating jobs in the United States. Third, the technology has won Engineering Emmy Awards and has been honored by the Academy of Motion Picture Arts and Sciences with a Technical Achievement Award.

How could the USPTO grant a patent, the claimed invention earn Emmy and Academy awards, and then the USPTO decide the patent was likely to be invalid? Especially when USPTO Director Andrei Iancu is traveling throughout the country and testifying in Congress that it is a new day at the USPTO and that he has restored balance at the PTAB?

The Zaxcom patents

The three patents owned by Zaxcom are numbers 7,929,902 (IPR2018-01129); 8,385,814 (IPR2018-01130); and 9,336,307 (IPR2018-00972). They are for the invention of the recording wireless microphone, which is a tiny audio transmitter with an internal micro SD card recorder.

This device is hidden on actors and transmits audio to a larger mixer and recorder, where a sound person mixes all of the actors' performances together to create a single audio track.

The recorder that is built into the actor's transmitter is used to create an identical time-stamped copy of the audio. This allows any problems that occur during wireless transmission to be fixed after transmission by replacing a portion of the main audio recording track with the audio from the SD card.

The crux of the patents is as follows: They teach the use of a novel system of recording audio within a body-wearable unit that is easily concealed on an actor in the production of television and motion pictures. The system uses a time-stamped reference to record audio from a microphone onto a solid-state medium within the body pack while transmitting an RF signal with identical audio content to a separate recorder.

Industry acclaim

During the last 10 years, this invention has been a very successful product for Zaxcom and was instrumental to the growth of the company and its entire wireless product line. At the time of the invention in 2005, this market was dominated by petitioner Lectrosionics. Zaxcom had a very small market share.

The Motion Picture Academy and the Television Academy have both recognized Zaxcom for Sanders' solution to the problem of lost audio that had hindered the production process for decades. Case law recognizes such "industry acclaim ... may often be the most probative and cogent evidence in the record" (*Stratoflex, Inc. v. Aeroquip Corp.*, U.S. Court of Appeals for the Federal Circuit, 1983).

The nexus of the Emmy to the claimed invention is astounding—"Outstanding Achievement in Engineering Development—Digital Recording Wireless."

The essence of the invention is an exact recording of a real-time wireless audio transmission. Why

NeverClip is a product from Zaxcom Inc., founded by Glenn Sanders. It incorporates two separate analog to digital converters that work in conjunction with each other to provide unprecedented dynamic range in Nomad and Zax-Maxx recorders, as well as in Zaxcom TRX wireless and ZFR miniature recorders.





Glenn Sanders won an Engineering Emmy Award in 2016. How could the USPTO grant a patent for his invention, then decide the patent was likely to be invalid?

would the Motion Picture Academy and the Television Academy hand out a prestigious award for a patented technology if it were obvious?

Painful disconnect

Having gone down the PTAB rabbit hole myself and having followed hundreds of other cases, I had a good idea what was in store for Sanders. It is torture for technologists to sit through these hearings.

You want to pull your hair out as the lawyers for the USPTO and the petitioner demonstrate they don't understand the technology and don't really care what you invented, because it is just a word game to them. I had an administrative patent judge (APJ) asking my attorney how he knows that the first drop of water in a balloon would not cause it to expand. I watched while Sanders had to endure an APJ ask why vocal sound waves are different than digital audio data.

As a matter of policy, why does the PTAB insist on accusing inventors like Sanders of claiming the rights to old technology? That is nonsensical. If we wanted to use the old technology, we wouldn't waste our time developing new solutions and filing for patents.

When Sanders and his attorney explained that they were using the same audio for recording and transmission, the dispute was resolved and the petition should have been denied. The public and Lectrosomics would be free to use the inferior prior art of a back-up mic to replace drop-outs without worry of being sued by Zaxcom. But the panel insisted on dragging

Sanders' company through a series of costly trials to jeopardize his business.

I have joined with U.S. Inventor and other stakeholders to ask the USPTO to focus on the tremendous harm that post-issuance reviews cause to the "economy and the integrity of the patent system" when they are used as weapons against small inventor-owned businesses.

For a small company like Zaxcom, the PTAB is a bet-the-company scale threat. AIPLA reports that the average cost for an IPR is \$450,000, and the 90th percentile (the fees for a robust defense) is \$850,000. Sanders did not share with me the precise financial condition of his enterprise, but it is very clear that these sorts of costs were way, way out of reach.

I funded my PTAB trials with \$100 million in product sales, but only a handful of inventors have access to that kind of capital.

I hope that Sanders and his company beat the odds and survive. I hope my article shines the light on his contribution and tips the scales in his favor.

It is a travesty that patent rights have come to this. The merits of the invention carry very little weight. Does he have deep enough pockets and sufficient influence with the government to prevail? That seems to be all that matters. ☹

Josh Malone is the inventor of Bunch O Balloons, a product that was ruled to be patent infringed by U.S. telemarketing firm Telebrands and its subsidiaries. His companies received \$31 million in the settlement but spent about \$20 million in legal fees. He is a Fellow with US Inventor, working to restore the patent system.



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Best wishes, Jack Lander



Honeymoon's Over

DESPITE PROMISES TO THE CONTRARY, IANCU HASN'T REINED IN PTAB ABUSES **BY GENE QUINN**

ABOUT 19 MONTHS AGO, Andrei Iancu became director of the United States Patent and Trademark Office. He took swift action in an attempt to change the perception that the USPTO had become aggressively anti-patent and anti-innovator.

The speeches, policies and inaction of Director Michelle Lee led innovators and observers to fear an environment that championed the viewpoints of infringers, not technology innovators. She abruptly resigned in June 2017 without giving a reason.

Almost immediately after being confirmed as director by the U.S. Senate, Iancu began speaking of the important role patents play for innovators. He backed his words with action, sometimes even drawing criticism for actions that are not within the province of the director of the USPTO.

Under the current system, the patent owner has to win every time, and the fight is not over until the patent owner loses.

For example, is it the prerogative of the USPTO to issue guidance on what the proper test is for patent eligibility, or should the USPTO merely follow the Article III courts? Well, when the Article III courts have made a mockery of the law to the point where the cases are entirely inconsistent and irreconcilable, someone needs to step in and figure out how to make sense of the mess so that 8,000-plus patent examiners, most of whom are not attorneys, can apply a repeatable and fair test that fits within the jurisprudence of the Article III courts.

Iancu did this by pointing out the obvious: Recent landmark cases *Alice* and *Mayo* are very narrow decisions and, if you strictly follow what the Supreme Court said, that does not render software or biotech innovations patent ineligible—regardless of what is ruled by the random, inconsistent panels of the United States Court of Appeals for the Federal Circuit. And since the Supreme Court is supposed to be the final word, the USPTO following the Supreme Court very strictly makes sense.

Misleading stats

Where Director Iancu has failed, however, is with respect to the Patent Trial and Appeal Board.

With great fanfare, Iancu created a Precedential Opinion Panel that purportedly would result in more decisions of the PTAB being declared precedential on the entire PTAB. There was hope that the POP would address the most important issues—such as serial challenges to the same patent over and over again, the use of the same prior art over and over again, and finally require the PTAB to apply the federal circuit view of what it means to be a real party and interest.

But real reform of the PTAB has not happened, despite tinkering with the Trial Guide. In important ways the PTAB is worse, and the efforts that have been undertaken incorrectly form the appearance of reform.

It is true that the PTAB institution rate has decreased, but that statistic is misleading. For example, Apple recently filed six challenges on the same patent. The PTAB denied five and instituted one.

As far as the PTAB is concerned, that corresponds to an institution rate of 1 for 6. As far as the patent owner is concerned, the institution rate is worse than 1 for 1. The patent owner had to respond to six separate petitions on the same patent, which was ultimately instituted anyway.

Under the current system, the patent owner has to win every time, and the fight is not over until the patent owner loses. Worse yet, those claims not instituted can and no doubt will be challenged again and again until they ultimately are instituted.

Finjan follies

Look at Finjan. It has a portfolio of approximately 30 patents and has already fought and won 80-plus times at the PTAB—not including the petitions it has fought off that were not instituted—because its portfolio is so strong and it has the funds to fight. All total it has lost just a few claims, with every other claim either never instituted or withstanding challenge.

Yet its patents—about eight of the most important ones, to be exact—are challenged repeatedly. Where is Director Iancu? He could stop this from happening.

Director Iancu has done much good in many aspects, but enough time has passed to conclude that his efforts relative to the PTAB have been too few and extremely disappointing. 🐕



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IoT Corner

Developing IoT solutions for blockchain just got easier with the launch of the **Elk development board**, which allows an easy route for developers to take advantage of decentralized IoT and create applications for blockchain and crypto currency.

A sample project proposed by the creators is an alarm clock that charges you in Bitcoin every time you hit the snooze button. The device is as easy to program as an Arduino, and applications can be tested in just minutes with a few lines of code.

The device launched on Kickstarter in August and quickly passed its \$20,000 fundraising goal. Early crowdfunding backers could get it for \$69, with shipping set for March. —*Jeremy Losaw*



Wunderkinds

Grace Maloney is an accomplished inventor and entrepreneur as she begins her senior year at Freedom High School in South Riding, Virginia. She co-founded a company called Grow Greenly and helped developed a self-fertilizing plant pot and business model that will

bring the product to market. The goal is to eliminate plastic pollution and the need to use chemical fertilizers. Her team competed at the IncubatorEdu competition this summer and won first place in the National Pitch competition, receiving a grant for \$10,000. Several years ago, her school robotics team developed a life jacket, the Floodie, that won a state championship research award and received a patent.



What IS that?

Ben & Jerry's Pint Lock is a fun, direct message to ice cream poachers at home or work. It's "about as close to Fort Knox as you can get for your frozen treasures," the company says—ignoring the fact that a thief could poke holes into the container or just steal the whole thing, combination lock included.

33%

The rise in new trademark applications in the United States in 2014-2018, from 345,000 to 458,103. It has never been more important to understand intellectual property.



WHAT DO YOU KNOW?

1 True or false: Copyright infringement can be a felony.

2 Which of these celebrities never had a patent?

- A) Steve McQueen
- B) Zeppo Marx
- C) Lawrence Welk
- D) Jamie Lee Curtis
- E) All of them were issued a patent.

3 Which was invented first—AstroTurf, or the Zamboni ice resurfacing machine?

4 True or false: A name or title can be copyrighted.

5 How much does it cost to become a licensed NFL vendor?
 A) \$50,000 B) \$60,000 C) \$80,000 D) \$100,000

ANSWERS: 1. True. It can be a felony or misdemeanor, depending on the extent of the violation. If, in any 180-day period, an infringer has made 10 or more copies of one or more copyrighted works with a total retail value of \$2,500, the standard for felony prosecution has been met. 2. E. 3. AstroTurf was invented in 1965; the Zamboni Co. was founded in 1950. 4. False. A name or title can be trademarked. 5. D. You must secure a minimum of \$100,000 to meet the royalty guarantee required by the NFL. You also must have three years' manufacturing experience and must buy a comprehensive commercial general liability policy, among other requirements.

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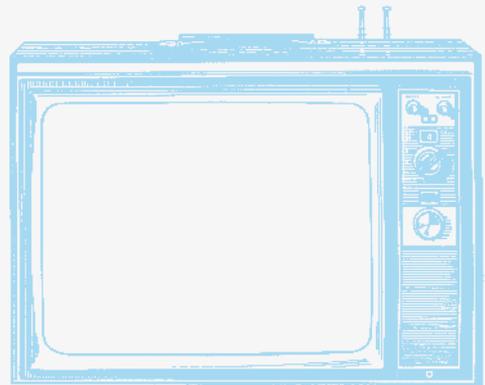
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