

# Inventors

OCTOBER 2019 Volume 35 Issue 10

DIGEST

## STEM SPARK

DR. AYANNA HOWARD ADVOCATES  
FOR STUDENT ACCESS AND SUCCESS

### Cheers for Fears

HAUNTED HOUSES  
RAMP UP INNOVATION

### The ABCs of LEDs

THEIR TECHNOLOGY,  
MERITS, APPLICATIONS

### Get to Know Them

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## Crazy Copyright Law: The Beat Goes On

Sonny Bono probably never figured he would be associated with intellectual *anything*, much less intellectual property.

The frequent butt of jokes from his wife on "The Sonny & Cher Comedy Hour" in the 1970s, the jovial Salvatore Phillip Bono expertly played the fool. Even his stint as a congressional representative in California's 44th district—from 1994 until his death in a January 1998 skiing accident—was largely uneventful.

Yet Bono's name is forever linked to copyright protection that ended this year for many songs, books and movies. Without that late 1998 legislation, many important works of art that had been copyrighted and protected since 1923 would have entered the public domain 20 years earlier.

What a country.

The background: Bono was one of 12 co-sponsors of a House bill that sought to extend copyright protections. That bill never went to a vote in the Senate, but a similar Senate bill was passed nine months after he died—named the Sonny Bono Copyright Term Extension Act, in his memory.

For years, the law said that art became free to everyone to view or use after 75 years in release and renewals. But suddenly, works from 1923 that would have had expired copyrights got another 20 years of protection. Those protections ended on January 1 this year.

So, many well-known works that escaped public domain since the first day of 1999 are now fair game; they can legally be copied, distributed, performed, broadcast and made into new works without payment to their former copyright owner. These works include Jimmy Cox's blues standard "Nobody Knows You When You're Down and Out"; "Who's Sorry Now," a 1923 song better known to many as a hit by Connie Francis in 1957; the book "Tarzan and the Golden Lion," by Edgar Rice Burroughs; and "The Covered Wagon," the No. 1 box office hit of 1923.

Next year, the cycle begins again: All 1924 copyrights that would have expired but got another 20 years are fair game, highlighted by George Gershwin's "Rhapsody in Blue." And there is no legislation planned to reverse this flood of works into the public domain.

Large companies that owned older copyrights, such as Disney and Time-Warner, obviously loved the extra 20 years. And speaking of Disney...

On Jan. 1, 2024, comes the expiration of the copyright for the 1928 animated short "Steamboat Willie"—and Disney's claim to the film's star, Mickey Mouse. However, Disney will still own copyrights for later incarnations of the character, as well as Mickey-related trademarks.

This will get messy. No wonder some referred to the Bono legislation as the Mickey Mouse Act.

Somewhere, some high-dollar corporate attorneys are going to be making even bigger money. What a country.

—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.

**Make your voice heard now at**  
**[SaveTheInventor.com](http://SaveTheInventor.com)**

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AMERICAN  
INVENTOR**





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Dr. Ayanna Howard;  
photo courtesy  
of Georgia Tech



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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):

*"Parts That Fit Your Life" (October 2016):*

I'm glad that plastics injection molded parts are now abundant. I think I'll hire a service to help me build my phone case so that it functions well.

—ANGELA WATERFORD

*"Our Houses, Our Comfort" (March 2018):*

Now there is a new concept in the smart home phenomenon: better retrofitting technologies emerging that can install on classic climate control units and make them a part of the modern IoT process.

—HANNAN AHMAD

*"Amazon Admits to Fraud Risk" (April 2019):*

This is a major problem. I usually try to buy products that are Amazon Prime, thinking they are the real deal, but you never know.

—MACKY IASMU

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## 'THE' TRADEMARK EXTREME

We know the subject of sports allegiances can get pretty heated, so let's say right off the top that *Inventors Digest* has nothing against Ohio State University.

Yes, Ohio State University—not The Ohio State University, the name this storied institution somehow insists on using.

Ohio State has long been a champion for academics and research. A lot of highly respected people and respected athletes went to school there—Jesse Owens, Jack Nicklaus and John Havlicek among them.

But this "The" obsession, often the butt of jokes from sports rivals in particular, has gotten out of hand. On August 8, the university filed an application with the United States Patent and Trademark Office to trademark the word.

Yes, the word "the."

Ohio State explained that it wants the trademark for use in conjunction with the university's name on merchandise. OSU

spokesman Chris Davey said, "Like other institutions, Ohio State works to vigorously protect the university's brand and trademarks."

Vigorously is an understatement. The university has already trademarked the names of former coaches Woody Hayes and Urban Meyer; shapes such as the Oval; arm motions that form the word O-H-I-O, and the marching band formation Script Ohio.

Even some Ohioans couldn't resist making sport of the attempt. Joe Blundo, a columnist for the *Columbus Dispatch*, noted that "Ohio State did not try to trademark pronunciation, so although 'The' might soon be off-limits, the trademark application makes no mention of 'Thee.'"

He added: "All Buckeye fans know that 'The' is forcefully pronounced 'Thee' when it refers to OSU, the better to lend that certain touch of arrogance that so endears Ohio State sports to the rest of the nation."

And in case you were wondering, the word "a" has no trademark restrictions at this writing.



# BRIGHT IDEAS

## POWERUP 4.0

### SMARTPHONE-CONTROLLED PAPER AIRPLANE

[poweruptoys.com](http://poweruptoys.com)

A conversion kit for paper planes, the latest version has an onboard flight computer, autopilot, gyro accelerometer, flight telemetry, and night flight.

To set up the plane, fold it into place; attach the module to your plane; and control it with your smartphone. Tilt your phone in the direction you want the plane to fly. The wireless range is up to 230 feet. Speed is up to 20 mph.

New features include easier aerobatics for mastering tricks, a wind stabilizer, and an auto stabilizer in the event of lopsided folding.

The standard kit—which has a module, four red paper plane templates, 10 more templates and a desk stand—will retail for \$99. It is scheduled for shipping to crowdfunding Rewards backers in April.



**“The role of the teacher is to create the conditions for invention, rather than provide ready-made knowledge.”**

—SEYMOUR PAPERT



## Sheertex 2.0

### RIP-PROOF PANTYHOSE

[sheertex.com](http://sheertex.com)

The updated version features a new slimming control-top style, now available in five colors that include three shades of nude.

Sheertex's makers say that they use the world's strongest, ballistic-grade polymer and that each pair comes with up to \$40 worth of fiber. The polymer is a miniaturized version of fibers traditionally found in climbing equipment and bulletproof vests; Sheertex says that pound for pound, its fiber is stronger than steel.

This strength makes the product environmentally friendly. More than a billion pairs of disposable pantyhose end up in landfills each year.

One pair of Sheertex Sheers retails for \$89.



## kegg

### 2-IN-ONE FERTILITY TRACKING MONITOR

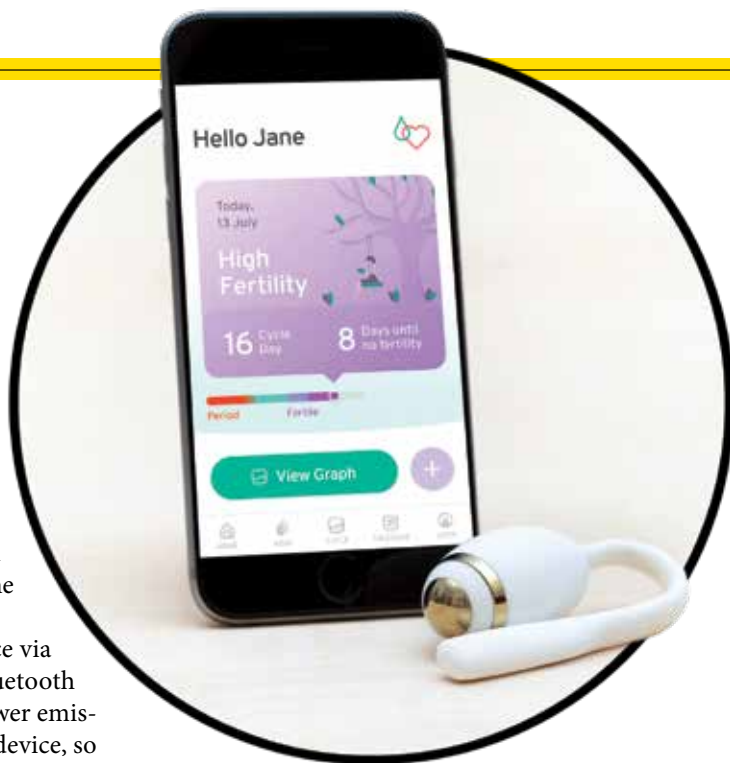
[kegg.tech](http://kegg.tech)

The makers of kegg say it is the first fertility tracker that uses cervical mucus to help predict a more accurate fertile window. It is intended to predict ovulation up to seven days in advance.

Kegg can be used at any time, and on an as-needed basis. Get instant fertility data via the mobile app. It also operates as a Kegel device.

Users can sync kegg with their mobile device via Bluetooth by pushing a button. Kegg uses Bluetooth Low Energy (BLE), which emits a very low power emission standard. The antenna is in the tail of the device, so it safely remains outside of the body.

With a retail price of \$299, kegg will ship to crowdfunding Rewards backers in December.



## SIMO

### SURROUND SOUND PORTABLE SPEAKERS

[pangissimostudio.com](http://pangissimostudio.com)

These magnetically attached modular subunits, featuring Bluetooth connectivity, can be used together or separately. SIMO packs an impressive frequency range into a small size.

Simultaneous contact charging between subunits lets you charge all four at once.

Setup is easy. Power on the SIMO system; connect any smart device to the system using the device Bluetooth menu; and begin playing sound through the speaker. Movies and music on your laptop will get the surround sound treatment.

SIMO will retail for \$250, with shipping to crowdfunding Rewards backers in December.

# Cheers for Fears

SINCE THEIR COMMERCIAL DEBUT 100 YEARS AGO, HAUNTED HOUSES' POPULARITY IS SCARY **BY REID CREAGER**

**L**ET'S START with a question to whet your appetite for this month's What Do You Know? quiz (Page 46).

True or false: There are more haunted houses in the United States than Target stores.

While you ponder that—and so as not to give away the answer by providing it so close to the question—consider that haunted houses are a \$300 million industry in the United States.

So yes, it's true; as of 2017, the Haunted House Association reported there were about 2,700 haunted attractions in the United States, a whopping 50 percent more than the roughly 1,800 Target stores.

## Long-ago origins

Haunted houses date to ancient Egypt; Egyptians, Greeks and Romans all used them in an effort to ward off evil spirits. Christians kept alive the haunted

house during the Dark Ages (roughly 476 AD to 1000). During the Renaissance period (1300-1500), ghosts, demons and the devil were often portrayed during live theater.

It's been a little more than 100 years since the Orton and Spooner Ghost House opened in Liphook, England, as part of an Edwardian fair. Americanhaunts.com is one of many sources that credit this as the first recorded commercial haunted house. The dimly lit funhouse, circa 1915, featured shaky floors and screams howling from phonographs.

Fittingly, haunted houses emerged in the United States during a dark time. Lisa Morton, author of "Trick or Treat: A History of Halloween," told the *Smithsonian* that haunted houses began during the Great Depression as a way for cities to distract youths who were engaged in vandalism.

It would be another four decades before the category would gain pivotal momentum—and from a most unlikely source.

## Dark Disney

When most people hear the name Walt Disney, they think of warm and fuzzy characters such as Bambi, Pinocchio and Snow White. But Disney's vast vision

**The Orton and Spooner Ghost House in Liphook, England, featured shaky floors and screams howling from phonographs.**







was such that he transformed the haunted house industry with the 1969 opening of Disneyland's Haunted Mansion.

This was no Mickey Mouse operation. Among the attractions: a spectral sea captain, a ghostly wedding party, transforming portraits and a headless horseman.

Disney didn't like the idea of a scary exterior for the mansion, opting instead for pristine visuals. He also decided to forgo the traditional walk-through mansion because park staff had trouble keeping the customer line moving.

What resulted was a "dark ride" in which people sat in trains called doom buggies and rode through the attraction. Micechat.com—a Disney-related site that celebrates the 50th anniversary of the ride with an array of photos—says "The Haunted Mansion is a big series of magic tricks that delivers on the promise of Disney 'magic,' unlike any other Disney attraction. Add to that a curious blend of mystery and weirdness and you have an enduring classic ride that's beloved by generations of fans."

Disney relied on a world of imagination besides his own. Special effects for the mansion were borrowed from 19th-century illusionists; others are traced to a series of *Popular Mechanics* books for boys.

His vision long preceded the mansion's opening, dating as far back as 1951 by some accounts. In original artists' renderings for Disneyland, built in 1955, a decrepit mansion and graveyard are seen overlooking Main Street.

### Tech is king

Disney's mansion was seen as technologically progressive at the time. A dizzying pace of subsequent advancements has played a major role in the exploding success of the haunted house industry.

Larry Kirchner, a world-renowned expert on haunted house and horror amusements who owns and operates the famous "The Darkness" haunted

house in St. Louis, Missouri, lists the six top-rated advancements in the field: pyrotechnics; motion detectors; 3D features and glasses; moving walls and rooms; digital sound effects, and custom props.

As the popularity of haunted houses grows, so does the competition to provide the most high-tech thrills and chills. Many operators insist on the latest AV technology to ensure the most realistic experience in sight and sound.

According to the Haunted House Association, the thousands of house operators worldwide spend a combined \$50 million-plus annually on their tech installations.

Jeff Schiefelbein, CEO of Sinister Pointe Productions, told the *Los Angeles Times*: "It's getting so expensive that unless you have \$100,000 to put into it and \$30,000 into marketing, you are not going to make it." 📌



Above: The 1969 opening of Disneyland's Haunted Mansion transformed the haunted house industry.

Below: "The Darkness" in St. Louis, Missouri, is considered one of the best haunted houses in America.

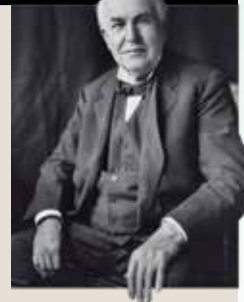
## INVENTOR ARCHIVES: OCTOBER

**October 18, 1931: Thomas Edison** died at his home in West Orange, New Jersey. He was 84.

Edison was so devoted to his projects that he had a time clock installed in his office (where he often slept) to track hours spent on them. Legend has it that the clock stopped three minutes after he died.

His body lay in repose in the laboratory library for two days of public visitation. Edison was wearing his characteristic wing collar and string tie, and the casket was covered in glass during the viewing.

The governor sent an honor guard from the National Guard, but long-time employees of Edison's company stood with bowed heads and folded arms at the head and foot of the coffin, day and night. An estimated 40,000 visitors came to the lab in one day to honor him, at a rate of 2,000 per hour.



# Your Design Features Checklist

TINY SMOOTHIE MIXER IS A BIG REMINDER TO INVENTORS: KEEP IT SIMPLE **BY JACK LANDER**

**R**ECENTLY MY WIFE, Mary, told me that she ordered a single-serving smoothie mixer. I thought, “Oh, great! Another space-taker-upper for a countertop that is already so crowded that I hardly have room for my martini shaker.”

We already have a blender for making smoothies, but taking that down from an upper cabinet shelf risks serious injury to one’s skull. And washing all those parts—like the top with its center insert, the bottom with its gasket, the blade spinner, and the collar that holds all that stuff together—is a pain.

Early the next day, the smoothie mixer arrived—by drone, I’m sure. Our post office is good but not *that* good.

I was emotional as I held in one hand a mixer no larger than a tall, 8 oz. drinking glass. The cordless motor section screwed onto the top of the main section. And thankfully there was no separate charging device, of which we have a drawer full that are for long-gone chargeables.

The battery and charging device are built into the top, along with the motor and blade section. And the cord that does the recharging has a USB connector at one end and a simple, miniscule connector at the other end, held securely to the top magnetically. Therefore, no pins to get bent, no sockets to get clogged with liquified banana.

## Features to consider

I’m going into some detail here because this device was so well designed, it deserves an award. Easy to use. Easy to store. And its 45-second cycle time does a fair job of pulverizing a few ounces of berries and bananas.

Thus, it is a design model for inventors to imitate. The ultimate objective for all of our inventions is to earn praise from their users—and make us a few bucks as well.

So, what are some features of the ideal invention that we should consider as we sketch our prototype? Using the smoothie model as the main example, I see these:

- **Size and storage.** The average home or apartment is running out of room. We have so much stuff these days that many of us have to rent storage areas ... or give up having company. Make it smaller. The smoothie blender accomplishes its purpose but takes up only one quarter the room that our regular blender requires. I admit that it is an added device, not a replacement. But it fits in the same cabinet with our glasses, and its ease of use is worth the cost and need for space.

- **Arrangement of features.** The cordless motor and blade of the smoothie blender is in the cap—not in the bottom of the container, as in larger blenders. Thus, the container resembles an ordinary glass or plastic tumbler. Easy to wash and dry. The cap is sealed, so it is safe to rinse or wash it. Two major components. No tedious disassembly and reassembly needed for cleaning.

Unconventional arrangements may yield patentable advantages. Example: The motor on top of the smoothie blender, rather than on the bottom.

Why is the engine in our cars located at the front? Originally, because that’s where the horse was located. The horse needed to see the road even better than its driver, or it could break a leg. Pulling the wagon, rather than pushing it, was obvious.

The old Volkswagen “beetle” and the Chevrolet Corvair broke with tradition and placed the engine in the rear. VW eventually went back to traditional front engine design, and the Corvair brand was dropped altogether.

So by mass production of an unconventional approach, the automakers proved the value of the front engine location. The result could have been that the rear engine was superior. More than a prototype was required to settle the matter.

More considerations in a potentially ideal invention:

- **Minimal features.** The traditional blender has a body that is open at each end. Thus, the blade mechanism requires a gasket and a screw-on cap-like component. The smoothie blender has a built-in gasket and no need for a separate, cap-like



If you want a lesson in which product not to invent, go to Amazon.com and look up vacuum cleaners. I quit looking when I had covered about 150.



component to couple the motor component to the tumbler. Remember, if your competitor's patent consists of four features and you can accomplish the same result with three similar components or fewer, your patent does not infringe your competitor's patent.

- **Safety.** The smoothie switch is a flush push-button on the top of the motor housing. It requires two pushes in rapid succession. This is a clever safety feature. When rinsing or washing the motor housing, which contains the blade, it would be hazardous if it were easy to start the motor accidentally while handling the housing if a conventional switch were used. But two pushes in rapid succession would be almost impossible to manage unintentionally while handling.
- **Maintenance.** In this case, maintenance means cleaning, and also recharging the built-in battery. The two basic components, the tumbler and the motor-battery housing, make it easy to clean in contrast with the full-size blenders. And recharging is easy, due to the magnetic contacts that eliminate the jack and plug which are susceptible to damage and not always reliable.

### This option sucks

Here's a radically different example: The king of maintenance nightmares around the home is the vacuum cleaner. It is also the prime example of excessive competitive designs. If you want a lesson in which product not to invent, go to Amazon.com

and look up vacuum cleaners. I quit looking when I had covered about 150.

Cordless or cord? Bagless or bag? Mechanism at the handle or on the floor? Canister or all-in-one? HEPA (high efficiency particulate air) filter or regular filter? Handheld or on wheels? The choices go on and on, and none that I reviewed offered all of the information we want as buyers.

No one needs 150 or more choices when deciding which vacuum to buy. And very little, if any, information is given about maintenance. Will I have to change the belt? In fact, is there a belt? Is changing simple? Where do I buy replacement belts, brushes, filters, etc.? How long will the manufacturer support replacement parts? More important, how long will the manufacturer be in business while facing 149 or more competitors?

Bewildering, isn't it? I wonder how many of those manufacturers actually knew the extent of their competition before embarking on designing and producing their own market entry.

"Keep it simple, stupid" is not an idealistic slogan; it's a necessity if we want our inventions to succeed. But I think we should change it to KISSI: "Keep it simple, smart inventor." 📌

**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](mailto:jack@inventor-mentor.com).



# Show You're the Expert

HOW TO USE LINKEDIN ARTICLES TO SHARE KNOWLEDGE OF YOUR INVENTION **BY ELIZABETH BREEDLOVE**

**H**AVE YOU EVER thought of yourself as a subject matter expert? It's true!

No one knows as much about your invention as you. Sharing your knowledge about your invention, the inventing process and your industry is an important part of promoting your product or idea. LinkedIn articles make it easy to write about something only you know, publish your article, and spread the word about your invention.

Think of LinkedIn as your digital resume. Your profile is a chance to show off who you are, what you do and what you know. Joining LinkedIn is free and easy; just sign up for an account and the platform will walk you through creating a profile.

It's important not to confuse LinkedIn posts and LinkedIn articles, as the two are quite different and should be used in very different ways.

LinkedIn posts can be created in the dialog box at the top of your homepage. These posts are typically shorter and more conversational. They can be used to promote content on your website, announce a new product, highlight a successful event, share an article about your invention, ask a question, or share news and updates.

At the time of this writing, posts on a personal profile are limited to 1,300 characters; posts on a company page are limited to 700. Essentially, posts are designed for brief updates.

**LinkedIn articles are much lengthier than posts, designed to be more informational or educational.**





LinkedIn articles, on the other hand, are much lengthier and are designed to be more informational or educational. At this writing, the body text of this article is limited to 110,000 characters.

How to write and publish an article on LinkedIn:

### Choose a topic

The possibilities are practically endless, but here are some ideas to get you started.

- How you became an inventor
- The inspiration behind your invention
- How you work to improve your skills and become better at your craft
- News and updates within your industry
- Predictions for the future of your industry
- Answers to frequently asked questions from your customers or those who demo your invention
- Tip you've learned from bringing your invention to market

### Writing your article

I suggest using a word processing software to write your first draft, such as Google Docs or Microsoft Word, rather than writing directly in the LinkedIn articles publisher. This way you don't have to worry about losing your work if something happens, or accidentally publishing your article before you've finished writing it.

### Publishing steps

Once you're satisfied with the contents of your article, it's time to share it. Log in to LinkedIn and near the top of the home page, in the same dialog box where you can publish a post, you should see text that says, "Write an article on LinkedIn." Click that text to begin publishing your article.

First you'll need to enter your headline, followed by the body text of your article. Make sure to properly format your article, using headers, bullet points and bold and italics where appropriate, to make your article easy to read and digest.

You can also add links by clicking the link icon at the far right end of the toolbar, or you can add images into the body by clicking the icon to the left of the body of your article. This will expand a toolbar that you can use to add images, videos, slides, links or snippets.

Once you've pasted the headline and the body of your article into their respective places, add a cover photo that will display above your article. To do this, click in the area above your headline, then upload a photo from your computer. If you don't

have an image on hand, you can purchase an image or graphic from a stock photography website such as istockphoto.com or shutterstock.com.

You're ready to hit the "publish" button and submit your article for the masses to read.

### Time to share

Now it's time to promote your written work.

Before you begin to share your article widely, it's worth double-checking your privacy settings to ensure that your profile is public, so that those you aren't connected with on LinkedIn can view and read it. To do this, click the drop-down arrow next to "me" in the top left corner of any page, then choose "settings & privacy."

Then click the first option, "edit your public profile." On the right side, you'll see a heading that says, "edit visibility." In this section, make sure your profile's public visibility is toggled to "on," and "posts and activities" is toggled to "show."

You're ready to share. Go back to the article you just published and scroll down toward the bottom until you see options to like, comment and share. Click "share" and you'll be given the option to share in a post, share in a message, copy the link to the article, share on Facebook, and share on Twitter.

These are all great things to do, when applicable. At a minimum, share your article in a post. This will open a new dialog box where you can write a short message encouraging your connections to check out your newest article.

Make sure you add relevant hashtags to the end of your post to help your article get more views by those interested in your topic. Uncertain what hashtags to include? LinkedIn will suggest some, so start with those.

One last tip: Using LinkedIn articles isn't a "set it and forget it" strategy. If you've written a great article that positions you as a thought leader or a subject matter expert, it's important to keep promoting it.

Don't be shy; keep resharing your article. Just vary the message you post when you share it. For example, if your article includes five specific tips, focus on a different tip each time you share it. With any luck, you'll still have new views on it weeks, months and perhaps even years after you initially publish it. 📌

**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.



# Hitting the Panic Button

DEVICE, PAIRED WITH A SMARTPHONE, HELPS YOU SEND ALERTS IN AN EMERGENCY **BY JEREMY LOSAW**

**I** **MAGINE** falling off a motorcycle on a deserted road. You are not sure how badly you are hurt, and no one is around to help you. You panic until you realize you have your phone in your pocket and you can make a call for help.

But you reach into your pocket, and to your horror, your phone is not there. It fell out as your body skittered across the asphalt and dirt. It hurts too much to move and now you are stuck there, hopeful that someone will drive by and stop when he or she sees you.

This is exactly what happened to Kenny Kelley. He invented the Silent Beacon to allow people to call for help in any situation.

## How it works

The Silent Beacon is a wearable panic button that allows you to easily call for help, no matter what kind of emergency.

When an alert is triggered, emergency services can be called and people in your defined notification

network will be alerted. The device uses Bluetooth to communicate to your smartphone, so you must be within approximately 30 feet of the paired smartphone to send alerts.

It has dual buttons that must be pressed simultaneously to trigger an alert. This prevents false triggers. It also has a vibration function to give you haptic feedback as to the status of your alert call, and there is a microphone and speaker so you can communicate with emergency services.

The Silent Beacon can also be set up as a receiver so that you can subscribe to alert notifications from another user, which is particularly helpful for caregivers. The device requires no additional data plan, and the app is free to download and use.

**Kenny Kelley's motorcycle accident inspired him to come up with a device that doesn't have a monthly fee.**





## Early development

Kelley's feeling of helplessness immediately after the accident spurred his desire to develop a product around the idea. He had seen stories about missing people not being able to effectively call for help.

He had previous experience building software for game apps and felt that he could leverage that experience to build an alert device, but he did not want to create a device based on a subscription service that charged monthly fees.

"That is why nobody really has these safety devices on them," Kelley said. "I wanted to develop something that would allow people to buy it once ... and use the information you have on your phone so you never have to pay a monthly fee."

Before developing anything, he did a deep dive on the existing market.

Kelley explored offerings from Chinese vendors but found that nothing was right to fit the need he had identified. There were Bluetooth beacons in the marketplace but nothing that had microphones or speakers to allow two-way communication.

With limited experience building hardware, he contacted developers on Upwork—a website to find freelancers—for help designing the first prototype. Unfortunately, the development was slower than he wanted.

On a whim, he reached out to the CEO of an electronic component supplier on LinkedIn. This led him to a product development firm in France, which he hired to help continue the development.

## 'A bumpy road'

The pace of development accelerated, and the product was launched on Indiegogo in 2014. It was successfully funded with more than \$76,000 pledged to the campaign.

However, pre-orders were not fulfilled for four years. The relationship with the French development team soured and caused major development delays.

"That was a bumpy road," Kelley said. "Number one, you have a language barrier; number two, you have a time zone difference; number three, you just have a difference of opinion. It was a strenuous relationship."

He was nearly ready to manufacture units before that relationship ended, and it cost him years of time to market. He lost the source files for the device and had to start over from scratch.

Fortunately, Kelley found a venture capital firm in Washington, D.C., to help inject capital and new life into the project. Despite criticism from Indiegogo backers for not fulfilling pre-orders on time, he continued development of the product. A new firmware team was brought on board, manufacturing resources were found, and the product breathed new life.

## Turning the corner

He filed a provisional patent application early in the development process. Bluetooth technology was a relatively saturated field in terms of patent filings, so Kelley worked diligently to carve out intellectual property that was both appropriate for the product and of high value.

After filing a provisional patent application, he was startled by threatening letters from lawyers representing other patented devices. Undeterred, he continued with the process and once his utility patents were officially filed, the bullying letters ceased. The subsequent issued patents were a great help when courting VC firms to help with the company.

Two years after the split with the French development firm, the product was finally ready to ship. All of the original Indiegogo backers were delivered production units; the device was offered for sale via its website.

Based on customer feedback, a one-touch version of the device was developed for elderly and limited-mobility users to make it easier to trigger an alert. The Silent Beacon team is now expanding the device's capability and working on cellular-enabled versions, as well as pet versions and corporate deployments for institutional use. 📍

Details: [silentbeacon.com](http://silentbeacon.com)

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



The Silent Beacon has dual buttons that must be pressed simultaneously to trigger an alert. This prevents false triggers.

# Bottle Feeding, Streamlined

MEN'S DESIGN IMPROVES PUMPING, STORING,  
WARMING AND FEEDING OF BREAST MILK **BY ALYSON DUTCH**



While warming a baby bottle at 3 a.m., Ayal Lanternari learned that the traditional bottle needed a major update. That resulted in nanobébé, the first baby bottle for breast milk shaped like a breast.

**O**NE NIGHT in 2013 while warming a bottle of frozen breast milk for his newborn son, bioengineer Ayal Lanternari realized that the baby bottle needed a drastic update. Later that day, he called his best friend.

The baby was keeping Lanternari and his wife, Anna, up at night as they tried to warm the milk and feed their first-born in enough time to stop him from crying.

Before long and with his friend's help, Lanternari had invented his first product. Last year's launch to retail of nanobébé, the first baby bottle for breast milk shaped like a breast, struck a nerve with mothers so quickly that he and his business partner, Asaf Kehat, skipped the multiple-failure process almost every entrepreneur must endure before finding success.

The two had put their heads and formidable professional backgrounds together to hatch a baby industry unicorn—but not before five years of careful research and development. After hitting the market, in less than 15 months nanobébé landed on the shelves in the nation's top retailers at Walmart, Target, Bed Bath & Beyond, BuyBuyBaby and is currently topping the baby gear charts on Amazon.

## Fast start

The wild ride to the top 1 percent of entrepreneurial endeavors started with a bang when the largest retailer of baby products at the time, Babies R Us, took the product only months before its demise but restocked it twice in only two months.

Nanobébé, now 40 employees strong, found its original capital investment from angel investors like themselves who had just welcomed their first baby and understood the need immediately. Month-over-month revenues have doubled consistently in the first year.

Many inventors know that creating radically new innovations makes the consumer education process harder and risks the possibility of a large competitor

swooping in to do it better and cheaper, but Lanternari's and Kehat's product prevailed. *Time* put it on the cover of its innovations issue, CNN declared it "a radical new baby bottle," and Ellen DeGeneres featured it on her Mother's Day box of goodies.

As the brand enters its second year and the initial consumer dazzle settles, it is leveling out to intelligently play in the sandbox of market competition. But like Apple, Lanternari and Kehat brought to market a beautiful combination of sleek design with a fierce functionality so essential that it's hard for competitors to come close.

## Elite work background

Almost all new products to market are the result of someone who is attempting to solve a problem. People who have a background and good business sense in that area have a better chance of succeeding.

Lanternari and Kehat were schooled at the prestigious Technion Institute of Engineering, one of a handful of technology institutes in the world with an affiliated medical school and 60 research centers. This is where some of the world's most influential computer scientists and engineers have made their mark in corporations such as Intel, have been awarded Nobel prizes, and in general made some of the biggest waves in the world of technology.

"This education was invaluable," Kehat says. "We learned the art of conducting deep analysis before embarking on a new path. This really cut down on the challenges we faced from the beginning."

A classic example of a productive partnership, Lanternari and Kehat bring diverse but very complementary backgrounds in health technologies. Together, they cover all that's needed for the three pillars of any business: interesting product, smooth operations, and marketing that appeals to the right consumer.

Before his 3 a.m.-in-the-kitchen-infant-feeding light bulb moment, Lanternari was immersed in the world of curing cancer. He was a masterful project management and collaboration expert for Novocure, where he was involved with implementation of direct



tumor fighting experiments as they relate to regulatory, testing and lab environments.

Kehat managed clinical trials and a massive crew of engineers for a cutting-edge spinal surgery medical device—Mazor Robotics—that sold to Medtronic for \$1.64 billion. Between the partners, they divvy up their talents: Lanternari handles sales and marketing, Kehat capitalization and manufacturing.

The paradigm includes a team of in-house marketers, marketing/communications designers and salespeople. They utilize the braintrusts of outside agencies and consultants in areas in which they don't have in-house talent. The board of directors, a group of entrepreneurs and executives who inspire the duo, serve as mentors.

### Public health impact

The World Health Organization, the Centers for Disease Control and Prevention and the American Pediatrics Association each mandate breast milk as the primary food substance for infants up to age 6 months. According to the CDC, mothers 20 to 29 years old are 80 percent likely to breast feed;

the likelihood for moms 30 and older is 86.3 percent.

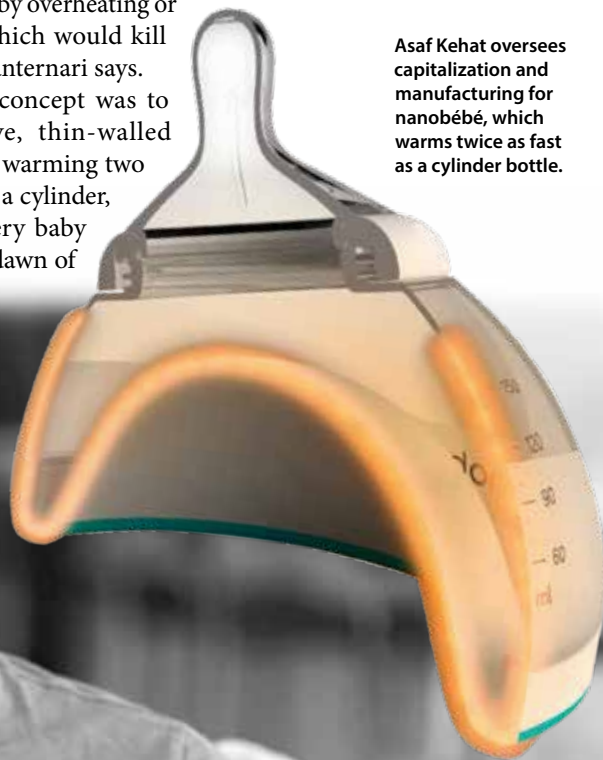
Because many mothers need to return to work in a reasonable amount of time after giving birth, they need help to get this precious fluid to their babies without physically being there all the time. This was the market opportunity for Lanternari and Kehat.

There are some obvious and less obvious reasons for nanobébé being a product that is changing the face of public health—with infant nutrition one of its key aspects.

“To a bioengineer, the warming and freezing process of biological fluid as precious and nutrient dense as breast milk was something that could not be compromised by overheating or microwaving, which would kill the nutrients,” Lanternari says.

“The central concept was to make a concave, thin-walled bottle that made warming two times faster than a cylinder, the shape of every baby bottle since the dawn of

Asaf Kehat oversees capitalization and manufacturing for nanobébé, which warms twice as fast as a cylinder bottle.





## **Time magazine put nanobébé on the cover of its innovations issue, and CNN declared it “a radical new baby bottle.”**

time. With a thin wall, the milk is more evenly spread out and more easily warmed (in about 3 to 5 minutes). All it takes is a bowl of warm water.”

The duo also solved the breast-to-bottle problem.

“Babies expect the instant gratification of a breast, so naturally they grow impatient when hungry and Mom is not always available,” Kehat says. The breast shape of the bottle seems to have helped infants better sense that nothing has changed, as nanobébé consumer feedback indicates the bottle-to-breast transition has eased as a result of its use.

No doubt Steve Jobs would be smiling; the design is almost as appealing to consumers as the functionality.

The space-saving aspect of the design is something that moms chat about furiously on nanobébé’s heavily trafficked social media channels, which have reached a whopping 66,000 on Instagram and 142,000 on Facebook. They love the stackability of the concave bottles and the flat breast milk bags that simply slide into a multi-slotted holder.

They also can get outdoors without a lot of fuss and gear: A cooler the size of a large tomato can feature flat blue ice packs that keep the nested bottles the right temperature.

### **Helping others**

Lanternari and Kehat live by a creed. “Changing lives inspires us, and it’s the most significant part of our career mantras. Knowing that nanobébé is actually affecting the future of public health is as inspiring as it gets.”

For other inventors, the duo provides the following advice: “Have courage to take necessary risks, and trust in your talent,” Lanternari says. “We had to risk that people might not try a completely new bottle shape, but we trusted that (given) the quality and benefits of our product, along with extensive outreach to parents, we would achieve success.

“It’s important to be thorough every step of the way and never miss any steps, whether small or big. Also, when you create something that matters to yourself and can also make a global impact, go for it.”

The partners feel that challenge is something to solve. “For us, it’s about patience,” Lanternari says. “Everyone wants something done quickly, but we wanted to make sure we created the best possible product.”

Another challenge is timing. “We have to, on an ongoing basis, be honing in on a very niche audience, those who are pregnant and the first six months their child is born,” Lanternari says.

As such, for the first year the company focused on those women. But as the product and operations got dialed in, attention turned to marketing—building reputation among young marrieds so that by the time they become pregnant, they already know about the brand.

As that secondary customer becomes familiar, the next move is to the tertiary consumer who are looking to give gifts to young couples and grandparents.

### **Finding joy, learning**

There are so many moving parts and constant growth for nanobébé—which recently opened an office in Charleston, South Carolina—that for the partners, every day is different.

“I don’t have a typical day,” Lanternari says. “We just stay on our toes in case of any curveballs and take joy from all the amazing emails and posts our new nanobébé families are sharing with us of their positive experiences.”

The partners lean heavily on mentors who instilled in them the attributes of never settling and finding joy in more work, continuously innovating and expanding the product line.

“Even with trial and error, the only path to progress is to sustain your vision,” Kehat says.

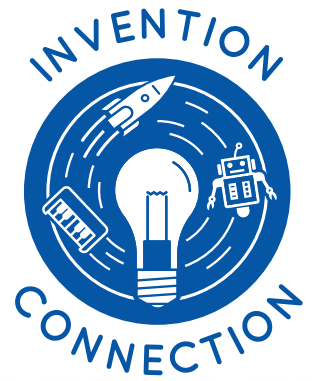
Still best friends, Kehat and Lanternari surf and travel together. They have six children between them—most likely the future of inventing, if the fathers have anything to do with it. 🐾

*Details: [nanobebe.com/bottle/](http://nanobebe.com/bottle/)*

**Alyson Dutch** has been a leading consumer packaged goods launch specialist for 30 years. She operates Malibu-based Brown + Dutch Public Relations and Consumer Product Events, and is a widely published author.



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"America's Next Top Model" All-Stars winner Lisa D'Amato (right) and Emily Doherty created the Dare-U-Go bib.

# Bib Idea for Little Ones

MODEL CO-CREATES COMPARTMENTALIZED FEEDING SYSTEM FOR TODDLERS

BY EDITH G. TOLCHIN

**T**HE MARKET for babies' and kids' inventions is huge—much larger than the few choices I had 30 years ago when my children were little. And because I've been manufacturing kids' products for about as long, I know that safety has come a long way in product development.

Here's a wonderfully convenient new product created by Lisa D'Amato and Emily Doherty, designed to be an all-in-one bib and portable, compartmentalized feeding system for tots. It's easy to store and clean, and comes with one of those sporks (a combination spoon and fork) that fits well in those chubby little hands.

**Edith G. Tolchin (EGT):** How did the Dare-U-Go bib come about, and how does it work?

**Lisa D'Amato (LD):** Emily and I were at the mall with my 2-year-old son, Daxel. I told Daxel that if he behaved while we shopped he would be rewarded with some french fries and ketchup. He ended up being a good boy, so Emily and I got him some.

I put a food-catching plastic bib on him. I put the french fries in the bib's pocket on one side, and in the other side I put ketchup. My son didn't like his food touching. ... Emily saw what I did and said what I did was genius!

I said thanks and told her I did it all the time. I continued with telling her I just wished it was wider and had dividers so the food didn't touch. She looked at me and said, "Then let's make it."

From that moment on, we were on a mission to make it. On our way home, we Googled to see if it existed, and it didn't. That was over three years ago.

We are now in our second year in business, still pretty fresh on the market. Dare-U-Go!, LLC. (DUG) is a food-grade silicone bib that connects to a divider bowl that seals air-tight to be used as a food storage unit.

It is all one piece, a 5-in-1 solution to help parents feed their kids on the go or at home. It has a slit in the back, which serves to hold the spork that is included.

Kids love it for their independence and they get their favorite snack or meals on the-go during their out-of-the-house adventures. Parents love it because they can now attack their to-do list with ease and convenience and feed their kids at their convenience, no matter where they are. It is also eco-friendly and helps save money, water and power!

**EGT:** Of what is the Dare-U-Go made?

**LD:** It is made of food-grade silicone and a microwave- and dishwasher-safe polypropylene tray. The spork is made of reusable plastic (do not microwave; hand wash only).

**EGT:** How is the product packaged?

**LD:** We have two packaging options. One is a blister pack. The DUG is enclosed in plastic against a cardboard back so customers can see it fully open.

The other is a small, colorful box that has two windows that expose the spork in the back and the top of the silicone bib, with the embossed logo in the silicone. This box has the DUG closed up, serving as a food storage unit position.

We also decided on four unisex-friendly colors: yellow, gray, purple and turquoise.

**EGT:** Because it is a children's product, what type of Consumer Product Safety Improvement Act testing and certification have you done?

**LD:** We have had to have third-party testing done for the dyes in the packaging for the colors, the packaging itself, the materials for the actual product and the dyes for the silicone as well. Dare-U-Go! is TPE-free (thermoplastic elastomers), PVC-free (polyvinyl chloride), and BPA-free (Bisphenol-A).

**EGT:** Please share your “Shark Tank” experience! And have you done any crowdfunding before?

**LD:** We did a Kickstarter in 2017, to get product visibility and to help with production costs. We pledged for \$35,000; we were fully funded at \$37,511. We ended up being funded from Quickbooks, and they even gave us a new MacBook Pro and a gift card of \$500 to aid in any other start-up costs.

When we went on “Shark Tank,” we had only been on the market for three months. We filmed it in June 2018. Because Emily is Canadian, she couldn’t go on the show with me, as a visa would have been too costly. I went on by myself and my two young boys. My son Daxel—the Dare-U-Go! rock star—did a great lifestyle example while using it and passing them out to the Sharks.

After being drilled for almost two hours, I walked away with a deal with Barbara Corcoran. When I walked off set and felt like I had been hit by a ton of bricks, I gave Emily and my boys a huge hug in our trailer, told them the great news, and the rest is history!

**EGT:** Where are you manufacturing? If overseas, please share any obstacles you’ve found.

**LD:** Our product is manufactured in China. When working with an overseas manufacturer, I think the biggest hurdle is communication. When having to describe certain details specifically, it is definitely a challenge. Prototypes and CAD models are not only so incredibly detailed but also incredibly costly.

**EGT:** Where are you selling—website, or retail?

**LD:** We sell on our website for \$22.99. We also sell on amazon.com, Walmart.com and UNcommongoods.com. We have distribution in 12 countries thus far and can be found in countries including Canada, Kuwait, Singapore, Panama,

Lisa D’Amato’s son, Daxel, demonstrates the bib.



**SEALS AIR  
TIGHT!**





The Dare-U-Go bib is portable, easy to store and clean, and comes with sporks.

**Parents “can now attack their to-do list with ease and convenience and feed their kids at their convenience, no matter where they are.”** —LISA D’AMATO

UK, Taiwan, Germany, France, Australia, Philippines, South Korea and Lebanon.

**EGT:** Please share your patent experience.

**LD:** Patents are so incredibly complicated to understand, but necessary and so expensive. We have a design patent granted and hanging in our office with pride. We have a utility patent pending and international patent pending also.

Patents will rip your entire business from you, soaking up all your capital if you let it. Starting a small business with an invention might possibly be the most expensive investment we have ever experienced.

**EGT:** How are you handling PR?

**LD:** Tracey Rosen with Productivity PR has been our agent. She has been in the adolescent product market for over 13 yrs in Los Angeles.

If it wasn't for her, we wouldn't have known about our first year exhibiting our product at the ABC Expo during our Kickstarter campaign. She got us some great media interviews in the beginning, like with Sugar.com and Parents.co. She also connected us to a fellow baby product inventor and now our distribution rep, Kelly Ivie.

Luckily, since I am a TV personality, it's been a welcoming experience doing interviews for our product. A lot of publications and media websites have already done stories about me on “America's Next Top Model” after winning the All-Stars, so with that part we've been cut a little slack in this journey.

**EGT:** Had you or Emily invented anything before?

**LD:** When I was 17 or 18 years old, I invented an idea for a toothbrush for on-the-go travelers where the floss and toothpaste are an all-in-one. It was meant to be used for three months exactly, which is the time you are supposed to change your toothbrush.

**EGT:** Are you planning to add any new products to your line?

**LD:** We are in our final round of a prototype that I have been doing on the back end in tandem, while creating and bringing the DUG to market with Emily.

**EGT:** Can you provide any guidance for novice inventors?

**LD:** Sure! Have them email us. Let's talk! 📧

*Details: [dareugo.com](http://dareugo.com), [lisa@dareugo.com](mailto:lisa@dareugo.com), [emily@dareugo.com](mailto:emily@dareugo.com)*

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





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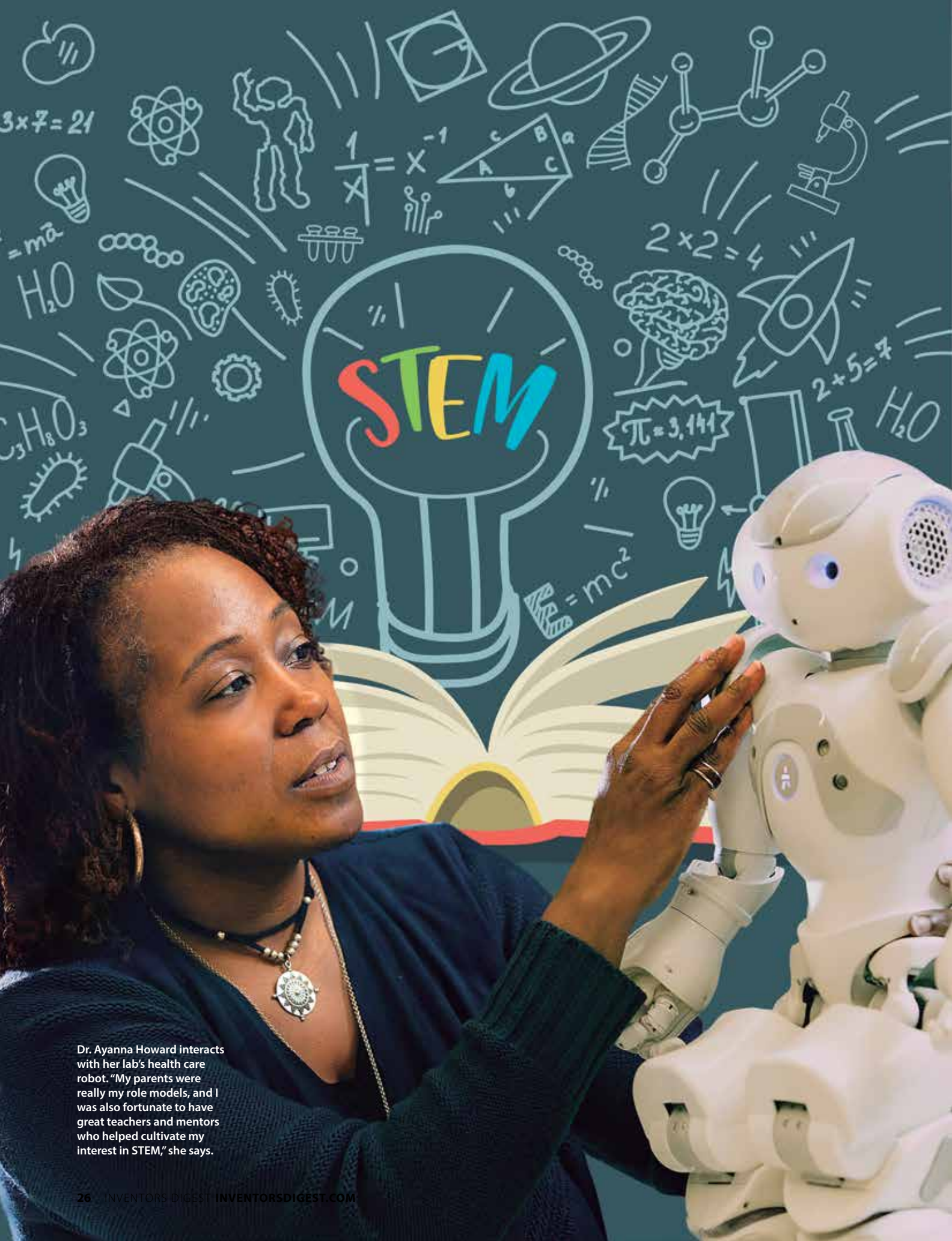
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**Dr. Ayanna Howard interacts with her lab's health care robot. "My parents were really my role models, and I was also fortunate to have great teachers and mentors who helped cultivate my interest in STEM," she says.**



## 10 QUESTIONS: DR. AYANNA HOWARD

# STEM SPARK

ROBOTICS EXPERT, CHAMPION FOR STUDENT ACCESS AND  
SUCCESS ADVOCATES FOR FEMALE INNOVATORS **BY JELANI ODLUM**



**D**R. **AYANNA HOWARD** is an entrepreneur, innovator, educator and an international expert in robotics who began her career working at NASA's Jet Propulsion Laboratory on research to develop the next generation of Mars rovers. She recently shared her thoughts on increasing diversity among patent holders, the importance of intellectual property to start-up success, and female innovators in STEM fields.

Currently, Dr. Howard is the Linda J. and Mark C. Smith Professor and Chair of the School of Interactive Computing at the Georgia Institute of Technology. She is also founder and chief technology officer at Zyrobotics, a technology company dedicated to developing mobile therapy and educational products for children with differing needs.

I was impressed by her March testimony in front of the House Judiciary Subcommittee on Courts, Intellectual Property, and the Internet in regard to student success and access in intellectual property education.

*This interview was edited and condensed for clarity and length.*

**How were you introduced to STEM, and who were your early role models?**

My dad started off as an electrical engineer and my mom was a math major, so our house was heavily involved

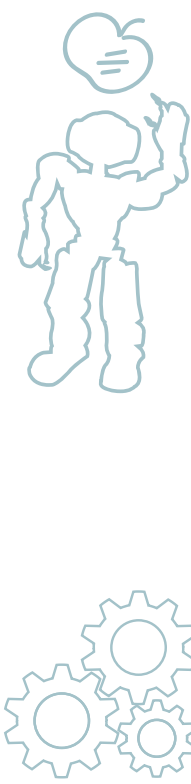
in math and science. My parents were really my role models, and I was also fortunate to have great teachers and mentors who helped cultivate my interest in STEM.

**You worked at NASA in the early 2000s and were funded by the Mars Exploration Research Program. How did you get on board with their research projects?**

I started at NASA as a summer intern after my freshman year of college and remained with the agency through my masters and doctorate degrees. So by the time I became a full-time employee, I was already indoctrinated into the NASA culture. I really wanted to be a part of the robotics team, and I had a new supervisor who was looking for someone who could work on long-range navigation, so I signed up and came on board.

**You mentioned that you had great mentors who helped fuel your interest in STEM. Did that experience lead to your own involvement in outreach toward girls and young women?**

Absolutely! I was exposed to engineering at a very early age, so by the time I became aware of any negativity surrounding women and especially black women in engineering, I had already fallen in love with it. Now as a mentor, I've had the chance to be involved with similar outreach programs aimed toward girls and young women.







## DR. AYANNA HOWARD

**Title:** Roboticist  
(professor and chair)

**Home:** Atlanta, Georgia

**Education:** Ph.D., electrical  
engineering

**Person most admired:**  
Grace Hopper

**Favorite movie:** "The Matrix"

**Favorite quote:** "I have not  
failed. I've just found 10,000  
ways that won't work." —  
Thomas A. Edison

**Favorite book:**  
"The Robot Zoo:  
A Mechanical  
Guide to the  
Way Animals  
Work"



**"If we as women don't understand (patents') value, we're not going to make the effort—often because we have other greater problems within our work environment to address."** —DR. AYANNA HOWARD

I ran a Saturday program at NASA for girls where we'd do hands-on activities. I also led an undergrad program to keep women engaged in STEM because there were a lot of dropouts at that level. We'd take

them to the NASA Jet Propulsion Laboratory for tours and organize lunches with female engineers and scientists at NASA to keep their STEM spark alive.

**How did your work in designing robots lead you to develop therapeutic and educational products for children with disabilities? What was the connection?**

One summer I ran an outreach camp for middle school students and I had a participant with a visual impairment. As an engineer, I thought, "Why is there no technology to assist her?"

I started to look into finding out more about the world of accessibility. It took me down a path where I realized there's a whole demographic of kids who aren't being served by technology. This was truly an under-represented population. So I found a way to use my engineering and training to create technologies that could change lives, and that's when I started pivoting to education and therapy for children with special needs.

**How does intellectual property fit into your story at Zyrabotix?**

I understood very early on that start-ups need a defensible platform in order to succeed. Once you're hitting milestones, it's very easy for a larger player to come in and chomp away at you.

From the beginning, the question was, "What can we patent?" But it's expensive to patent and as a start-up you don't have a lot of money, so the next question was, "What are the high-priority items we could patent that make sense?" We started by funding those.

**Why do you think women in STEM make up such a small percentage of patent holders?**

There are studies that show if women are part of a larger team, they're more likely to be named on a patent. And if they're part of a smaller team, they're less likely to be on a patent. And all of this is representative of women in STEM fields in general.

The numbers don't report on how many women file patents versus how many receive them. So there are many individuals, I think, who might file a provisional patent (application) but who don't then convert it into a full, defensible patent.

Patents take work and require many iterations, and if we as women don't understand their value we're not going to make the effort—often because we have other greater problems within our work environment to address. We have all of these other issues to fight, so then also navigating the complicated patent office falls to a lower priority.



**Opposite page:**  
Dr. Howard  
conducts a student  
outreach program.



**How might a more robust pro bono patent attorney system level the playing field, especially for women?** One of the biggest barriers to getting a patent is that it's expensive. For start-up founders, that money usually comes out of pocket, which is tough for women who are also often caregivers and breadwinners.

But start-ups are very used to giving away equity. Imagine you have a law firm where taking on a pro bono case allows the firm equity in a company, even if it's 1 percent. So now they get a stake in the company for being a nice lawyer, and it's win-win. Those kinds of creative structures could be a good first step.

**In your experience, how do academic researchers think about intellectual property?**

At the university level, there's a disconnect. As researchers and scientists, we produce IP all the time, but science is all about sharing knowledge, it's not about keeping it stored away in your lab.

We publish as much as we can and show others in our field how they can reproduce our research. And that's almost counterintuitive to the nature of patents. Most academics look at patents and just see them as something nice to have; they don't rise to the same importance as having peer-reviewed publications and sharing the research associated with those.

**What are your ultimate goals for your research and your work?**

At Georgia Tech, my ultimate goal is to provide methods and tools to change the landscape of accessibility with respect to therapy, robotics, and AI. At Zyrobotics, my goal is to provide low-cost or free resources to people who need it most, particularly those from low socioeconomic status backgrounds and communities with large populations of special needs.

**Have you seen positive changes or progress in recent years for women in STEM or robotics?**

Oh, yes, and I'm seeing it firsthand at Georgia Tech. There are a lot more of both female undergraduate students and graduate students in STEM fields. I've definitely seen an increase, and although it's not on parity with the population, it's trending upward. That gives me hope. 📱

**Jelani Odum** is a program manager at the Michelson 20MM Foundation based in Los Angeles, where she oversees the Michelson Institute for Intellectual Property. She is passionate about the intersection of philanthropy, education, and innovation.



## POWERFUL CHANGE ON THE WAY?

When technology leaders, innovators and educators speak about the future growth of STEM jobs, it's not a pipe dream. There's plenty of evidence that more young people will gravitate toward STEM careers, even in the face of the most recent sobering data:

- Although 58 percent of all bachelor's degrees are earned by women, only 36 percent of bachelor's degrees are in STEM, according to the National Science Foundation.
- According to the National Center for Education Statistics, only 18 percent of undergraduate computer science degrees go to women.
- Seventy-four percent of middle-school girls show interest in engineering, science and math, but only 0.3 percent choose computer science as a college major.
- The National Girls Collaborative Project also reports the following figures for minority women participation in STEM at the collegiate level: physical sciences, 6.5 percent; mathematics, 5.4 percent; computer science, 4.8 percent; engineering, 3.1 percent.

But it's time to stem that tide, if myriad opposing data are any indication. First, the financial advantages of STEM careers are impossible to ignore.

- The Bureau of Labor Statistics' latest average median hourly wage for STEM jobs is \$38.85, contrasted with the median earning wage of \$19.30 for all other types of jobs in the United States.
- Among 100 STEM occupations, 93 percent had wages above the national average.
- The national average for STEM job annual salaries is \$87,570; the national average for non-STEM jobs is \$45,700.

In the 10 years leading to 2027, the number of STEM jobs is projected to grow 13 percent (9 percent for non-STEM jobs). Computing, engineering and advanced manufacturing will be leaders in this category.

Talia Milgrom-Elcott, a STEM researcher and advocate, wrote earlier this year in *Forbes* that "PK-12 learning is becoming more intertwined with the practical side of STEM." She cited a 2018 national meeting of public, private and nonprofit leaders, "STEM Solutions: Workforce of Tomorrow," and the reauthorization of the Perkins Act, emphasizing the need to develop career and technical paths linked to STEM.

Better yet, the U.S. government seems committed to funding STEM-related programs.

In fiscal year 2019, the National Science Foundation's budget for the Advanced Informal STEM Learning program was \$65 million. This includes both production/development funds, and money to support research into whether the tools being supported are promoting children's development. —Reid Creager



# All Pros at This Con

USPTO EVENT FEATURES ALL-STAR INVENTORS AND INNOVATORS YOU SHOULD GET TO KNOW **BY HOWIE BUSCH**



**RECENTLY SPOKE** at Invention-Con 2019 at the United States Patent and Trademark Office in Alexandria, Virginia. It was my second year at this really cool event for Inventors.

Invention-Con is a two-day event the USPTO hosts every year. Because not everyone is able to travel to an event like this, I want to share the experience and introduce you to some of the incredible people I was fortunate to hang out with this year.

It's important for inventors to get out there and meet people. Whether it's someone who can help you in inventing or other inventors in the same boat—get out there.

I can't introduce you to everyone I met, but I will introduce you to people I think you should know about. I'm pretty sure I won't be able to do anyone true justice, but I'll give it a shot.

After being a featured speaker at last year's Invention-Con, who would have thought I'd even be allowed back onto the USPTO's campus?

But somehow, I was welcomed back. This year, I moderated a panel of my fellow "Shark Tank" entrepreneurs called "Swim with the Sharks." Then I was a panelist on another panel called "Moving from inventor to entrepreneur."

The "Swim with the Sharks" panel was especially fun for me. It's crucial to have a group of people in your network with whom you can share ideas and help each other. Well, we "Shark Tank" alum have a big group where we regularly communicate and share ideas and resources.

It's a really special group of like-minded entrepreneurs and inventors—like having our own turbo-charged Mastermind Group. This panel included four of us who have communicated with each other either within the group or on the phone, although none of us had never met in

person. There's something extra special about meeting someone who you've spoken with but never met. And this meeting didn't disappoint.

The interesting thing was that during the panel, I noticed some similarities between the four of us "Shark Tank" entrepreneurs on the stage.

As everyone shared their stories, I realized we're all optimists by nature who favor action over inaction—and we didn't let the problems we ran into along the way derail us. We shared stories of turning those problems into better situations, making the proverbial lemonade out of lemons.

Here are some of the inventing all-stars who were on hand, and who you should try to get to know:

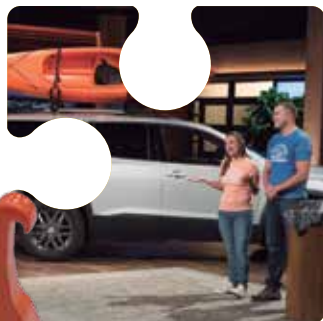
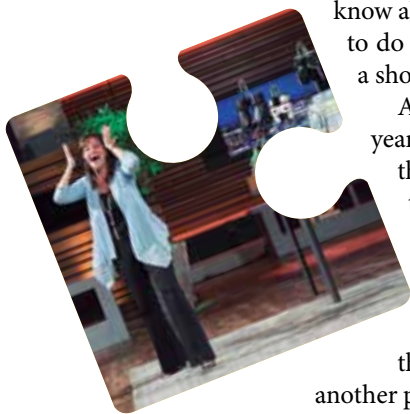
## 'Swim With the Sharks'

**Krista Woods:** Krista has the interesting title of director of stink operations at GloveStix, a patent-pending odor management solution designed to eliminate odor, inhibit bacteria and absorb moisture in athletic sports gear. She talked about how she first came up with her product. Annoyed by her son's smelly lacrosse equipment, she did something about it—and as we all know, nothing can stop an annoyed mother. Krista didn't go to college but hasn't let that stop her on her way to overcome all of the obstacles she's encountered with GloveStix and building it into a very successful brand. Even though we just met, it feels like we've known each other forever.

**Zach Brown:** A firefighter, Zach grew tired of his vertically challenged wife not being able to tie or untie things from the roof of their car without him. So he created the Moki Doorstep to help her (and many others). While in "the Tank," Zach and his wife sold their entire company to Daymond John for \$3 million. He is still a firefighter and still the main brand ambassador for Moki.

**Aaron Tweedie:** A contractor, Aaron needed something to carry his things to and from work sites. He searched for something that suited his needs, but as a guy, his bag options were limited. So he invented

"Shark Tank" entrepreneurs Krista Woods (below) and Zach Brown (bottom, shown with his wife, Alyssa), became inventors by solving product problems that affected them.







## It's important for inventors to get out there and meet people. Whether it's someone who can help you in inventing or other inventors in the same boat—get out there.

the Man-Pack, a better bag. On the panel, Aaron talked about many of the issues he had to overcome, but as an entrepreneur you have to fight through it. He couldn't hang out after the panel because he's an Army Reservist who had to report for duty. Thanks for your service, Aaron!

### Inventor-entrepreneur

**Dara Trujillo:** The chief merchandise officer at SLC Holdings, Dara is a real pro. She's an amazing speaker with incredible real-life experience. Prior to SLC, she was at Home Shopping Network as VP of merchandise business development. There, she created and managed the American Dreams Program and Entrepreneur Academy, helping inventors and entrepreneurs realize their TV retail dreams. And before that at Disney, she produced products and experiences that park guests still enjoy today (including the Bibbidi Bobbidi Boutique and Goofy's Candy Company). At SLC Holdings, her mission is to find amazing inventors and entrepreneurs, and take them from start-up to stardom.

**José Colucci-Rios:** The Southeast regional manager of the National Institute of Standards and Technology, José oversees a national network of innovations in the mechanical, engineering and plumbing areas. He knows a lot about manufacturing in the United States. On a side note, he really loves straw and looks cool in straw hats.

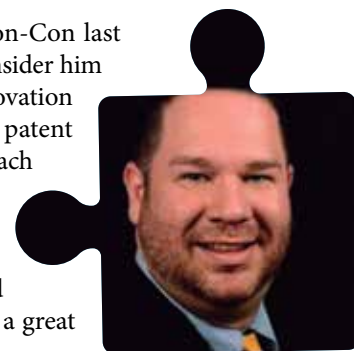
### Inventors, friends to inventors

**Josh Malone:** With eight kids, Josh was frustrated by how long it took to make water balloons for his crew. So he devised a system, Bunch O Balloons, that could fill up to 100 water balloons in about 60 seconds. He

licensed the product to Zuru Toys, won Toy of the Year and made a lot of money in the process. But knock-offs started popping up, including from Telebrands, the As Seen on TV behemoth. But they found a willing adversary in Josh, who has become extremely passionate about patent reform. At dinner he shared lots of stories about his incredible patent victory over Telebrands, where he (and his licensee) were awarded more than \$12.3 million in damages (dinner on Josh!). He is so passionate about inventors being run over by corporate America's patent infringement that he moved his family to the Washington, D.C., area to continue the fight with an attack from the ground.

**Sean Wilkerson:** I met Sean at Invention-Con last year. We immediately hit it off, and I consider him a friend. He works in the Office of Innovation Development at the USPTO, creating patent education programs and managing outreach services to independent inventors, small businesses, entrepreneurs, makers and universities. This includes Invention-Con and many other events. He's a friend to inventors around the country and is a great asset to the USPTO.

**Elizabeth Dougherty:** Elizabeth is the Atlantic outreach liaison for the USPTO and leads the office's East Coast stakeholder engagement. She ensures the USPTO's initiatives and programs are tailored to the region's unique ecosystem of industries and stakeholders. For Invention-Con, Elizabeth served as the moderator of our panel that focused on being an inventor versus being an entrepreneur. If you're on the East Coast, get to an event where she speaks. She's a great speaker, knowledgeable and helpful.

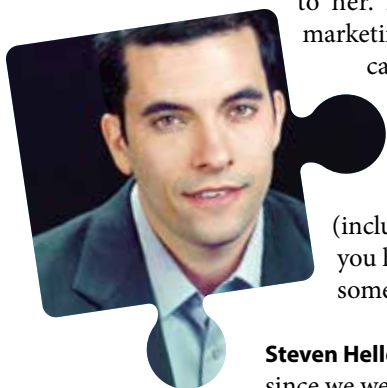


Sean Wilkerson of the United States Patent and Trademark Office is a prime force behind Invention-Con.



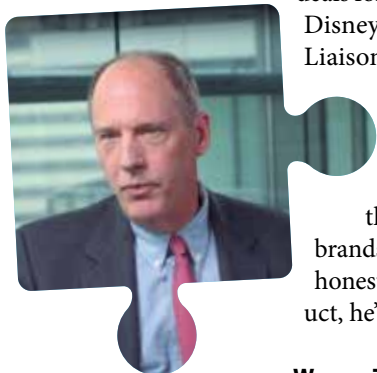
## Don't let the inevitable obstacles get in the way. Keep fighting and networking. You will get there.

**Lindsey Brooks:** Founder and CEO of Boardwalk Holdings, Lindsey is a force of nature. She is one of the best presenters and pitch people I've ever seen. When she finishes speaking and walks out of the auditorium, she always has a group of inventors wanting to learn more and pitch their product to her. Boardwalk Holdings uses Facebook marketing and media to power direct-response campaigns, and sells lots of product. She made her way up in the As Seen on TV/direct response world, having been involved with some of the highest-grossing campaigns in that space (including the Sham Wow and Slap Chop). If you have a product for this space, Lindsey is someone you need to know.



Chris Landano invented a device to help trapped firefighters.

**Steven Heller:** Steven is an old friend I have known since we were teenagers. We hadn't seen each other in many years until we ran into each other at the Sports Licensing & Tailgate Show in Las Vegas six or seven years ago. He owns a company called Brand Liaison, one of the licensing industry's leading boutique agencies. He has been involved in licensing deals for brands such as Gloria Vanderbilt, Nautica, Disney, Warner Bros., the NFL and NBA. Brand Liaison is a friend to inventors who are looking to license their products to leading manufacturers, who will bring their products to market in exchange for royalties. They also work with brands who want to expand their name and presence by licensing those brands into other categories. Steven is a terrific and honest guy. If you're an inventor with a great product, he's someone you should consider contacting.



United Inventors Association President Warren Tuttle runs open innovation programs for companies.

**Warren Tuttle:** The president of the United Inventors Association, Warren runs open innovation programs for companies such as Lifetime Brands (the world's largest kitchen utensil manufacturer) and TTI Power Tools (whose brands include Ryobi & Rigid).

I've gotten to know Warren pretty well over the years; calling him a friend to inventors is a serious understatement.

**Chris Landano:** President of the Queens Inventors & Entrepreneurs Club, Chris is a fireman who invented Trakbelt 360 after he found himself trapped in a fire. He is a relentless entrepreneur who continues to overcome obstacles to get his product to market, and he is an incredible networker who has become a good friend after seeing him at so many events.

### The inventors

I met so many great inventor attendees at this event that it's not possible to include everyone. But I'm proud they shared their inventions with me and others. Don't let the inevitable obstacles get in the way. Keep fighting and networking. You will get there.

My advice to attendees was, don't wait for perfect. Get your product out there and get going.

And don't hide behind excuses. I had five inventors come up to me and explain why they hadn't been able to get their product to market. They were valid excuses (sick parents, working seven days a week, taking care of their kids, etc.), but you have to fight through those and get it done anyway.

If you're an inventor who couldn't make it to D.C., there are inventor events throughout the country. Get out there to meet the speakers and experts, as well as fellow inventors and entrepreneurs. Create your own network, and you will be one step closer to getting your product to market.

Hope to see you at Invention-Con 2020! 📍

**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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PART 1 OF 2

# The ABCs of LEDs

THEIR UNDERLYING TECHNOLOGY ENABLES A VAST RANGE OF APPLICATIONS AND BENEFITS **BY JEREMY LOSAW**

**F**ROM the tips of our cell phones, the dashboards of our cars and all the way to the Las Vegas strip, LEDs illuminate our world and are found in a huge proportion of electrified products.

The humble light-emitting diode is a simple component of an electrical circuit that creates light when current is placed across its terminals. Despite LEDs' simplicity, they have some unique technology inside their small lenses, and their development began more than a century ago.

The use of LED technology has skyrocketed in the past two to three decades, so it is vital for anyone building electrified prototypes to understand the technology and capability.

In this two-part series, I will start our exploration of LEDs by revealing their history and underlying technology, and discuss their merits and applications. In Part 2, I will discuss them in more practical terms and reveal how to use them in your next prototype.

## What is an LED?

In a light-emitting diode, a diode is like an electronic check valve. It allows electric current to flow in one direction but not the other. This is an important task in an electronic circuit because it can prevent current from flooding into sensitive areas of a circuit.

There are myriad types and applications for diodes beyond the scope of this discussion. However, the LED is a special type of diode that emits light when current flows through it in one direction but does not light up when current flows through it the opposite way.

Unlike other types of diodes, they are used not for circuit protection or signal rectification but rather primarily as indicators for what is happening in a circuit or simply for the light they create.

## How they work

To understand how an LED works, you must understand what a semiconductor is.

A conductor is a material that conducts electricity very

easily (such as metal), and an insulator is a material that resists the flow of electricity (such as plastic). So, a semiconductor is a material that conducts electricity relatively poorly unless provided with unique conditions.

Of course, this is all relative; any material can conduct electricity if enough power is available. The obvious example is that air is non-conductive until enough energy builds up in the atmosphere to induce a lightning strike that carries electricity from the upper atmosphere to the ground.

Semiconductors are made by taking a typically insulating material and adding or doping it with trace amounts of a conductive material. For example, red LEDs use aluminum gallium arsenide (AlGaAs). This allows semiconductors to flow electricity under special conditions.

LEDs use two different semiconductor materials that are placed adjacent to each other. One of the materials has extra positive charge; the other has extra negative charge.

When voltage is placed across the terminals of the LED, the excitation is enough to cause the negatively charged electrons to combine in the gap between the materials with positively charged "holes." When the electrons and holes combine, energy is released in the form of light.

If current is applied to the LED in the wrong direction, the semiconductor is not excited properly, no current flows through the LED, and no light is formed. Different colors of LEDs can be created by changing the material of the semiconductor.

## History

The foundational technology of the LED dates to 1907. British scientist Henry Joseph Round created the first examples of electroluminescence, creating faint yellow light by applying voltage across a piece of silicon carbide. However, it was not until the 1960s that LEDs became viable production components, and it took decades of research and development to create LEDs that would emit light in the visible spectrum.

The first commercially available LEDs were red; blue and yellow ones were developed in the 1970s.

LEDs come in many sizes and packages, making them convenient to package into many different applications. These surface-mount LEDs are mounted to a flexible strip with adhesive backing for easy installation.





These first-generation LEDs were not very bright, extremely expensive, and only viable for use in high-end lab equipment.

Since then, LED technology has accelerated rapidly. We now have access to high-brightness, low-cost LEDs in an array of colors that include UV and infrared. We have RGB LEDs, which have all three primary colors of light (red, green and blue), as well as addressable LEDs with tiny integrated circuits inside to give us infinite color and brightness control. We are truly living in the golden age of LED technology.

### Advantages

LEDs have many advantages over other types of lighting devices, such as incandescent bulbs. The primary benefit is that they are the lowest-powered way to generate light.

A single-component LED draws about 20-30 milliamps of power, and LED light bulbs use about 10 times less power to generate the same amount of light as their incandescent equivalents. This makes them economical for home use and much better for battery-powered devices with a fixed power capacity.

Because LEDs use less power, they generate less heat. This makes them much more friendly and less dangerous in the home environment than incandescents.

Lower heat is also good for the companion circuitry, because electronics usually run more efficiently when not under duress from excess heat. LEDs rarely require additional cooling elements such as fans and their associated power consumption, unless many high-powered LEDs are put into a large grid or fixture.

LEDs are also long-lived components. A standard LED can have a useful lifespan of about 50,000 hours, which is more than 5.5 years of 'round-the-clock use.

**The LED is a special type of diode that emits light when current flows through it in one direction but does not light up when current flows through it the opposite way.**

For many applications, this means they are essentially immortal. It is very rare to replace a burned-out LED on a circuit board unless it is mistreated.

The final advantage of LEDs is their versatility. Component LEDs come in many different sizes. The most common is the 5mm domed LED, but there is a whole spectrum of sizes. The smallest is the 0201 series—just .002" x .001" in plain view—but they can go up to 20mm in readily available packages.

This means they can be used in the tiniest of electronics, all the way up to giant TV screens. The largest LED screen is at Charlotte Motor Speedway in Concord, N.C. The Panasonic-built screen uses more than nine million discreet LEDs to display live video to fans during races.

### Applications

LED lighting has endless applications. In consumer products, home lighting is a huge category.

However, LEDs are often a component of other common devices. TV remotes use IR LEDs to send control signals, and they are commonly used for status indication and for backlighting buttons on consumer electronic devices.

Outside of consumer products, LEDs are huge in automotive—from headlights to interior dashboard lighting—and can be found in civil devices such as street and traffic lights. They are in almost anything that has a circuit inside it. 📡

Once bleeding-edge tech, LEDs can now be found for pennies on Amazon in an array of colors.



# Active Buying

RECENT BIG-MONEY PLANS AND DEALS  
SHOW OPTIMISM ABOUT PATENTS **BY LOUIS CARBONNEAU**

**A**S WE ENTER the final quarter of the year, here is the long and short of things!

I'm making a few changes to my newsletter, which you can also find online at [TangibleIP.biz](http://TangibleIP.biz). The column will be a bit shorter and alternate between a main topic and several short ones, such as the ones below. As such, we will aim at publishing something every other week online, instead of one very monthly long piece.

Our newsletters on our blog site also include all previous editions for your reading pleasure and reference. I post daily updates on LinkedIn and Twitter. For those of you who prefer to consume things in smaller and more frequent bites, I invite you to join me there as well.

Happy reading!

## Buyers and sellers

Well-known, publicly traded non-practicing entity **Acacia Research** recently announced that it was allocating \$20 million to \$30 million for patent acquisitions in the next year. (*Editor's note:* A non-practicing entity, or NPE, is a person or company holding a patent for a product or process but with no intentions of developing it.)

The Acacia announcement is a welcome sign that one of the most sophisticated patent monetization units has an optimistic view of where the patent market is heading. ...

**Canon** recently assigned an OLED-related portfolio to **Samsung** in a rare occurrence of disposal for the Japanese company, while Samsung recently divested some patents to Texas-based NPE **Longhorn IP**. In Canada, Ottawa-based **Quarterhill** (the parent company for NPE Wi-Lan) acquired more than 1,000 patent assets from various semiconductor companies, including patents originating with **Advanced Micro Devices (AMD)**, **DB HiTek**, **GlobalFoundries**, **IBM**, **Renesas**, and **STMicro**. ...

Large patent aggregator **Intellectual Ventures**, which is now divesting a large chunk of its portfolio, has sold assets to several high-tech companies such as **Citrix**, **Facebook**, **Uber**, **Seagate**, **Tivo**, etc. Social media platform **Pinterest**, fresh off its IPO, has acquired about 60 patents from **Excalibur**, which is the outfit monetizing most of the former Yahoo patent portfolio. ...

**Dominion Harbor** has been an active buyer of late, mostly gobbling up large portfolios originating from **Kodak**, **NEC**, **Amex**, **IV**, etc. As a result, and likely to keep its powder dry for the large campaigns to come, it has reportedly started to offload some of its smaller portfolios acquired previously....

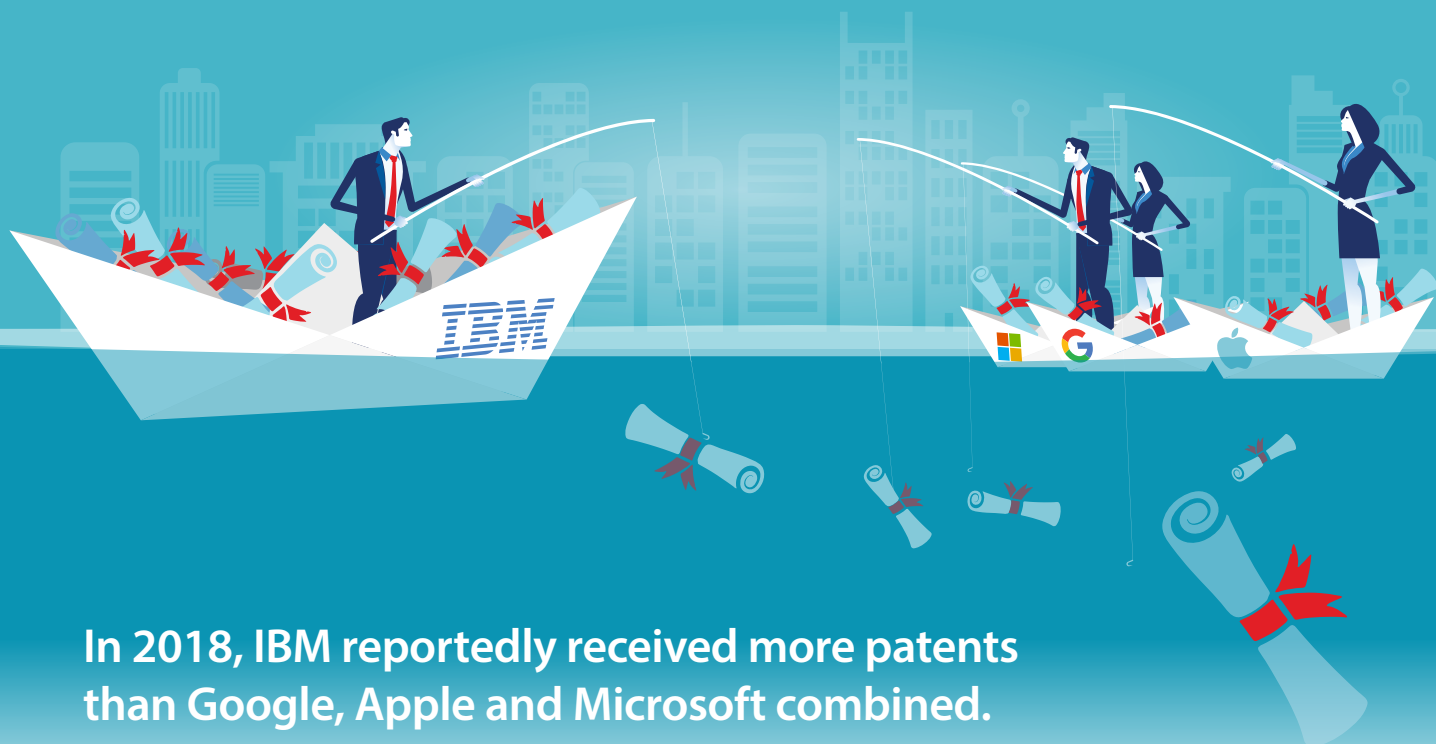
Another fairly active buyer has been Chinese handset maker **Oppe**, which showed no sign of slowing its recent buying spree by acquiring more than 500 assets from Swedish telecommunications firm **Ericsson** after taking a license to a portion of Ericsson portfolio earlier this year.

This comes on the heels of another transaction in which **Oppe** acquired a small number of **Intel** patents in the 5G area before **Apple** stepped in and bought most of Intel's 5G modem related assets—and inherited over 2,000 employees, including 17,000 patents—for a one-time payment of \$1 billion. This was by far the largest patent related transaction reported in past years, with the obvious caveat that Apple got a lot more than patents.

That transaction is actually much closer in nature to the Motorola Mobility acquisition by Google in 2012, which was for more than \$12 billion. However, this makes the Apple purchase look like a real steal by comparison. ...

Those having a hard time raising money by securitizing their IP should consider looking to China. Recent reports say that Chinese companies borrowed \$8.5 billion in the first half of 2019, using their IP as collateral.





## In 2018, IBM reportedly received more patents than Google, Apple and Microsoft combined.

### Winners and losers

It is rare that we see patents actually playing their intended role of deterring companies from bringing infringing products in the marketplace—so rare that we tend to forget the primary function of a patent is precisely to exclude others from practicing an invention that it does not own.

So it was refreshing to read that after being confronted with evidence of patent infringement by German-based NPE **IPCom**, handset manufacturer **HTC** pulled that model from British stores voluntarily instead of taking a license to said patents. Although it may not be the ideal outcome from the NPE, it at least shows that the exclusionary nature of patents can still work.

French cosmetics company **L'Oréal** learned the hard way the lesson of the saying, “You can put lipstick on a pig, but it’s still a pig.”

A California jury returned a verdict against **L'Oréal** for \$91 million in damages to U.S. start-up **Olaplex** for stealing its trade secrets, breaching a contract and infringing two patents. The judge overseeing the case then reduced those damages to \$50 million, holding that **Olaplex** is entitled to recover \$25 million for the trade secret, patent infringement and breach of contract claims, as well as another \$25 million in connection with the jury’s finding that **L'Oréal** acted willfully in its violations of the law. ...

In its assertion campaign against car manufacturer **Daimler**, **Nokia** registered a major court victory when a Munich court handed down an unprecedented order preventing **Daimler**-supplier **Continental** from applying for a U.S. anti-suit injunction that would

block **Nokia** patent litigation in Germany. **Nokia** managed the legal equivalent of a contortionist’s act when it secured what is essentially an “anti-antisuit-injunction injunction”! You don’t see those often. ...

Those who think patent cases do not affect the bottom line of companies should note that after a U.S. judge upheld two patents relating to **Amgen**’s blockbuster rheumatoid arthritis drug **Enbrel**, denying a challenge by **Novartis AG**, **Amgen**’s stock price immediately went up by 6 percent and added \$7 billion to the company valuation. ...

The name-calling defamation suit brought by NPE **Automated Transactions**, which did not appreciate being publicly labeled a “patent troll” by the **American Bankers Association**, ended with a thud when the Supreme Court of New Hampshire held that because there is no set definition as to what it means, it is not possible to conclude that it is meant as an insult! I guess it leaves one to assume that perhaps it was meant as a compliment? ...

**IBM** continues to be the annual winner of the “how many patents have you got” race. In 2018, it reportedly received more patents than Google, Apple and Microsoft combined.

### I’ll see you in court

Patent litigation is so rampant that it has become daunting to keep track of all the new lawsuits being filed. So, except for the rare case that stands out, I will now report new filings as they come in via our LinkedIn and Twitter accounts and will focus more on decisions that may affect the patent marketplace more specifically.





## Handshakes

Touchscreen technology NPE **Immersion** agreed to a settlement with **Motorola** and declared itself litigation free. ...**Endo Pharmaceuticals** and **Perrigo UK Finaco Ltd. Partnership** told a Delaware federal court they reached a settlement to end allegations that Perrigo infringed patents covering Endo's vitamin B12 nasal spray, Nascobal.

## From the bench

In an important development for patent litigants in the United States, a United States Court of Appeals for the Federal Circuit panel held that factual issues can prevent judges from making patent eligibility decisions early in a case.

This means that if this decision continues to be seen as the established practice, it will become increasingly difficult for patent defendants to secure a quick exit of a patent case by arguing that the patents at stake merely recite an abstract idea. Now this issue will have to be determined at trial.

On the other hand, the same court decided that inter partes review (IPR) can apply to patents filed prior to the 2011 America Invents Act, and that these patents do not constitute "takings" of a property right under the Fifth Amendment to the U.S. Constitution. (*Editor's note:* IPR, a procedure conducted by the oft-criticized Patent Trial and Appeal Board that was established in the 2011 AIA, challenges the validity of a U.S. patent before the United States Patent and Trademark Office.)

This is a clear setback for patent owners who could have made this argument, showing again that there is no judicial will at this stage to do away with the PTAB and its proceedings.

Another decision averse to patent owners came out when it was held that the mere fact of instructing employees not to read third-party patents was insufficient to establish willful blindness.

This doctrine could lead to enhanced damages if the defendant was found to be infringing patents. This is important, because it is a common practice at large technology companies where employees are being told to avoid looking at any third-party patents for fear of contamination.

## On the legislative front

No news yet on the implications that the recently reintroduced **STRONGER Patent Act** will have, but there is no shortage of support so far in the public. Several pundits have written op-eds in order to bolster support, while others commend it but contend that is does not go far enough to restore patent rights.

In parallel and following several reports showing that female and minority-based inventors are underrepresented, **U.S. Sen. Thom Tillis** (R-N.C.) and **U.S. Rep. Steve Stivers** (R-Ohio) recently presented bicameral, bipartisan legislation to require the voluntary collection of demographic information for patent applications. ...

Meanwhile, never to be left behind in showing his complete ignorance of how the patent system works—or at least, should work—an analysis of proposed legislation by **U.S. Sen. Marco Rubio** (R-Fla.) targeting **Huawei** reveals that it would not stop the company from enforcing patents outright but would severely hamper its buying and selling activity. ☞

**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.



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# Freedom to Compete

STRONGER PATENTS ACT FIGHTS FOR THE RIGHTS OF THE GARAGE INVENTOR **BY CHARLES SAUER**

*(Editor's note: This op-ed piece, published by the Washington Examiner, was featured on the Innovation Alliance homepage.)*

**E**VERY CONGRESS there are thousands of bills introduced, but this summer I was privileged to help introduce one: the STRONGER Patents Act. It addresses innovation, an issue close to my heart.

I'm the son of two hippies who taught me to dream and imagine, but also all about business. They taught me that anyone in America can build something new, get a patent, and compete. That means that from the inventor in his garage to the hippie dreamer, anyone can compete with a big corporation with just an idea.

That is freedom to me. That is America. And it's all made possible by patents, which give inventors exclusive rights to their invention for a limited time—a big financial benefit.

Patents have done amazing things for our economy, and they force the big guys to try and out-compete the guy in the garage. Understandably, many large corporations don't like this.

These large businesses often consider patents a cost and don't want to have to pay inventors even when they are making money from their ideas.

Fearing the garage inventor, market leaders have invested millions and millions of dollars into weakening the patent system rather than strengthening their own companies. From legislation weakening

patent rights to supporting court cases that further erode patents, big companies are trying to pull away the economic ladder to success from their nascent competitors.

## The search for clarity

The STRONGER Patents Act helps move back the patent system toward inventors by clarifying the rules around an open-ended administrative patent court (Editor's note: The Patent Trial and Appeal Board) that Congress created in 2011.

Since the creation of the new administrative court, the administrative boondoggle has been used by infringers, crony interests and Big Tech to help stifle innovation and harm inventors.

In fact, one group of inventors was so fed up with the new court that in a show of frustration, they lit their patents on fire in front of the U.S. Patent and Trademark Office in 2017. And their frustration was justified.

Here's one example of the ineptness of the patent death panel. In one instance when the tribunal sided with an inventor, the leader of the patent office at the time, Michelle Lee, decided that it wasn't acceptable for the inventor to win so she put two more people on the panel.

When that new enlarged panel again sided with the inventor, Lee expanded it again. When asked about these additions in court, her staff just responded like it was business as usual. At one point, the administrative court had a patent kill rate of about 80 percent.

## Rare bipartisan backing

STRONGER puts an end to the madness, taking a giant step in the right direction and helping restore congressional intent instead of the patent death panel that filled the void. And the best part is that effort is bipartisan.

In the Senate, the bill is cosponsored by Sen. Chris Coons of Delaware (a Democrat) and Tom Cotton of Arkansas (Republican), and in the House by Rep. Steve Stivers of Ohio, Tom McClintock of California (Republicans), Bill Foster of Illinois, and Nydia Velazquez of New York (Democrats). To have this diverse a group of legislators all sign on to a bill is almost unheard of.

Their common ground is innovation, and the bipartisan nature of this issue makes sense.

Innovative ideas come from both Republicans and Democrats, so protecting innovators makes sense for both sides of the aisle. That is why I look forward to more members joining the ranks of these leaders, and to the passage of this important bill. Most important, I look forward to the innovations that we can't even dream about today that this bill will incentivize future inventors to develop.

Patents have long been the backbone of American innovation. And the STRONGER Patents Act would only make our country an even better place to pursue a dream.

**Charles Sauer**, whose work on Capitol Hill for the small inventor was featured in the January 2017 *Inventors Digest*, is a contributor to the Washington Examiner's Beltway Confidential blog and the president of the Market Institute.







# New Life for Patent Owners

USPTO LEADERSHIP'S RULING ALL BUT ELIMINATES EXCEPTIONS TO FILING LATE IPR PETITIONS **BY STEVE BRACHMANN**

**C**OULD A RECENT DECISION by patent office leadership mean an escape route from the Patent Trial and Appeal Board "death squad"?

On August 23, the PTAB's Precedential Opinion Panel issued a decision granting patent owner 360Heros' request for rehearing of an earlier PTAB decision to institute an inter partes review requested by U.S. technology company GoPro. The decision also denied institution of that IPR under the one-year time-bar codified under patent law. (*Editor's note:* An IPR challenges the validity of a patent.)

The panel agreed with 360Heros that the one-year time-bar began tolling from the filing date of a counterclaim alleging patent infringement, even though the consumer electronics retailer didn't own the patent when the complaint was filed.

The POP held that the date of service of the complaint is all that matters, "regardless of whether the serving party lacked standing to sue or the pleading was otherwise deficient."

The POP panel—which sets precedent for the PTAB—included U.S. Patent and Trademark Office Director Andrei Iancu, Commissioner for Patents Drew Hirshfeld and PTAB Chief Administrative Patent Judge Scott Boalick.

## The dispute

The case stems from an action for declaratory judgment of, among other things, non-infringement of the patent in question filed by GoPro in April 2016. 360Heros filed a counterclaim alleging patent infringement in August 2016, two months before the patent-at-issue was formally assigned to the entity. The district court later dismissed the counterclaim for lack of standing on a motion for summary judgment.

GoPro filed for IPR proceedings to challenge the validity of U.S. Patent No. 9,152,019 in September 2018. This was within one year of a District of Delaware patent infringement complaint filed by 360Heros, which argued that the dismissed counterclaim filed in the Northern District of California should instead be considered the original complaint for patent infringement served, starting the time-bar.

In the original institution decision, the PTAB found that the California filing didn't trigger the time-bar. The PTAB had disagreed with 360Heros that the United States Court of Appeals for the Federal Circuit's 2018 *en banc* decision in *Click-to-Call Technologies v. Ingenio* didn't apply to this case because the standing issue present wasn't considered in that decision.

Further, the board found that 360Heros ignored other PTAB cases in which ownership of a patent at the time of filing a complaint or counterclaim for infringement was required to start the time-bar running.

360Heros filed a request for rehearing of the time-bar issue by the PTAB POP, and an oral hearing on the issues was conducted in late July. Megan Chung of Kilpatrick Townsend argued on behalf of GoPro; Robert Greenspoon of Flachsbart & Greenspoon argued on behalf of 360Heros.



**The Precedential Opinion Panel agreed with 360Heros that the one-year time-bar began tolling from the filing date of a counterclaim alleging patent infringement.**

Chung began oral arguments by offering three reasons a plaintiff's counterclaim for patent infringement when that plaintiff lacks standing doesn't start the time-bar: 1) Without standing, there is no proper complaint or service of the complaint; 2) The statute and its legislative history confirms that only a patent owner or a successor in interest can serve a proper complaint; and 3) the federal circuit's decision in *Hamilton Beach Brands v. f'real Foods* confirmed that *Click-to-Call* didn't consider whether standing affected the time-bar.

Director Iancu asked where standing was referenced in the statute:

"But there can be many deficiencies in any complaint, right? So, it doesn't specify that it's got to be a complaint, a proper complaint, a fully... iron-clad complaint. It doesn't say it's a complaint with standing... The various requirements you are alluding to don't seem to be in the statute per se, are they?"

#### Iancu: 'You were on notice'

Although the statute itself doesn't include the word "proper," Chung argued that the ordinary meaning of the statute's wording would require proper official service. Responding to Commissioner Hirshfeld, Chung said that the statute was ambiguous and that other factors, such as the statute's title, indicated that the statute must refer to the patent owner whose district court action must include a proper "complaint"—which GoPro used interchangeably with "counterclaim" throughout the hearing.

Chief Judge Boalick asked Chung how she reconciled her view on the statute's ambiguity with

*Click-to-Call*, which held that there was no ambiguity in the statutory language. Chung said that the federal circuit did end up interpreting service as official service complying with rules of the civil action. Because 360Heros' complaint wasn't proper, Chung argued that the service couldn't be considered proper either.

Chief Judge Boalick inquired as to why GoPro's nullification argument should hold any more weight than the nullification argument that failed in *Click-to-Call*. Chung answered that, while *Click-to-Call* involved a civil case dismissed without prejudice, the standing issues in the present case were more similar to issues decided by the Supreme Court in *Lujan v. Defenders of Wildlife* (1992), where standing was determined at the time that the lawsuit was initiated.

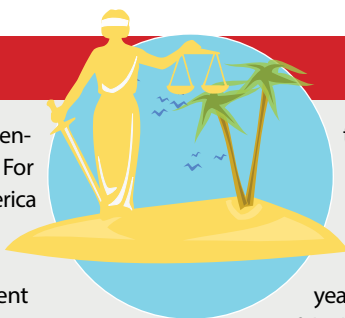
Director Iancu asked if it made a difference that GoPro started the civil action by filing the declaratory judgment action against the entity that it mistakenly believed owned the patent in question:

"[F]rom the Petitioner's point of view, you were aware of the issues. In fact, you initiated the lawsuit. So, you could have at the same time or shortly thereafter filed a petition for IPR. As far as you are concerned, you were on notice about this particular patent." 🗨️

**Steve Brachmann** is a freelance writer located in Buffalo, N.Y., and is a consistent contributor to the intellectual property law blog IPWatchdog. He has also covered local government in the Western New York region for The Buffalo News and The Hamburg Sun.



## A NEW GAME?



The 360Heros ruling's potential impacts are immense. For the first time since the America Invents Act became law in 2011, the shoe could be on the other foot for patent holders.

One IPWatchdog commenter, self-identified only as "Nobody of Consequence," proposed the following approach:

"Independent inventors should jointly create a list of every patent they think is or may in the future be infringed by Apple, Google, Facebook, etc. Create a shell company in the Virgin Islands—no need to assign the patents to the shell. Have

the shell company file and serve a complaint alleging infringement of 10,000+ patents and dismiss the case the next day. Wait a year before filing suit on any of the listed patents."

Subsequent commenters pointed to the inherent risks of this type of gamesmanship. However, given the options for small inventors in the current climate, any leg up may be worth considering.

IPWatchdog founder and CEO Gene Quinn added:

"I suspect there will be patent owners who will look at this decision and seek

ways to for the first time create leverage against infringers who for too long have engaged in a game of efficient infringement. These patent pirates have had the upper hand, and patent owners have been a punching bag.

"Whether what transpires amounts to gaming, as suggested by "Nobody of Consequence," or just sound litigation strategy will likely be in the eye of the beholder and based on the magnitude and legitimacy of the complaints served."

Emily Rapalino, a partner with Goodwin, said the decision has "created a bright line rule that's easier for PTAB to administer."



# As Previously Explained...

THE FEDERAL CIRCUIT'S RULINGS ON ABSTRACT IDEAS AND PATENT ELIGIBILITY ARE SIMPLY WRONG **BY GENE QUINN**

**T**HE United States Court of Appeals for the Federal Circuit recently reversed the District of Minnesota's denial of summary judgment in *Solutran Inc. v. Elavon Inc.* It found that the claims at issue, which related to processing paper checks, were invalid under Section 101 of the U.S. patent code.

The physicality of the limitations of the claims did not save the claims—the latest ruling that is a logical impossibility.

“[W]e have previously explained that merely reciting an abstract idea by itself in a claim—even if the idea is novel and non-obvious—is not enough to save it from ineligibility,” Judge Raymond Chen of the federal circuit explained for the majority.

The federal circuit can state that proposition until every judge is blue in the face and there will be one exhausting, inescapable truth: It is wrong!

This error is written into so many federal circuit decisions, one must wonder how it is possible any of the judges who believe this nonsense were able to achieve an acceptable score on the LSAT in order to gain admission to law school in the first place.

One primary component of the Law School Admissions Test is how adept the taker is with respect to logic. Obviously, anyone who believes this garbage dished by the federal circuit is wanting with respect to either intellectual honesty or logical reasoning abilities. Allow me to explain.

## Patent eligibility 101

Section 101 says that if you are claiming a machine, process, article of manufacture or a composition of matter (i.e., compound), the invention is patent eligible. This question is a threshold one and historically in the United States—at least until 2010—virtually everything had been viewed as being patent eligible subject matter.

In 2010, the U.S. Supreme Court embarked upon a quartet of patent eligibility cases that from an innovator's perspective have not only redefined what is patent eligible but have wreaked havoc on America's

primary technological fields: software, biotechnology and medical diagnostics (and by necessary implication medical devices, since you cannot treat what you cannot diagnose).

The two most alarming of the four cases are *Alice Corp. v. CLS Bank* (2014) and *Mayo Collaborative v. Prometheus Laboratories* (2012), which together created what we know as the *Alice/Mayo* framework. This framework requires the decision maker to ask and answer a series of questions that go beyond the statutory inquiry before determining whether any patent claim question covers patent-eligible subject matter.

## Step 2A: Missing the obvious

The first question of the *Alice/Mayo* framework (commonly referred to as Step 2A, or Step 1 of the *Alice/Mayo* framework) requires the decision maker to ask whether the patent claim seeks to cover one of the three specifically identified judicial exceptions to patent eligibility. At the moment there are only three identified judicial exceptions: laws of nature; natural phenomena; and abstract ideas.


If the claim does NOT implicate one of those judicial exceptions, the claim is patent eligible.

The judicial exception to patent eligibility implicated whenever software patent claims are at issue is the abstract idea exception. Thus, the decision maker must ask whether the patent claim is directed to an abstract idea.

In true absurd form, neither the Supreme Court nor the federal circuit have ever defined what it means to be an abstract idea, despite that term being crucial to making an informed determination. The first definition on Google for the term “abstract,” which comes from the Oxford free English dictionary, defines the term as “existing in thought or as an idea but not having a physical or concrete existence.”

Therefore, Judge Chen and the other judges of the federal circuit who believe it is possible for a claim to cover an abstract idea while still reciting tangible,





**It is impossible for something that has a physical or concrete existence to be abstract. I suspect most elementary students know that.**

physical, concrete elements that actually exist are simply wrong.

There is no other way to say it, no sense sugar-coating it. It is impossible for something that has a physical or concrete existence to be abstract. I suspect most elementary students know that. How and why learned jurists have lost sight of the obvious is a mystery.

### **Step 2B: Conflating inquiries**

In the case when the patent claim seeks to cover a judicial exception to patent eligibility, such as covering an abstract idea, the final question (commonly referred to as Step 2B, or Step 2 of the *Alice/Mayo* framework) asks whether there is an inventive concept covered in the claimed invention that adds “significantly more” than the judicial exception.

It also asks whether the limitations in the claim fail to add “significantly more” and thereby seek to merely cover the judicial exception. In the case of software, the question asks whether there is an inventive concept present that adds significantly more—such that the claim does not merely claim the abstract idea.

Putting aside the logical and practical impossibility that something physical or concrete cannot be abstract, assuming *arguendo* that a jurist were to reach Step 2B and inquire whether there is a sufficient inventive concept, it is again a logical impossibility for the claim at issue to detail a novel and non-obvious innovation and at the same time still lack an inventive concept sufficient to add “sufficiently more.”

In other words, it is impossible for a claim that is novel and non-obvious under U.S. patent code Sections 102 and 103 to lack an inventive concept under Step 2B of the *Alice/Mayo* framework.

Again, there is no way to sugar-coat this inconvenient reality. If there is no prior art that can be

brought to bear to reject the claims in the first instance or invalidate the claims once issued, that means the patent claims describe an innovation that does not directly overlap with the prior art. It also means that no combination of references can be found that add up to the sum total of the claimed invention.

This is precisely why the Supreme Court ruled in *Diamond v. Diehr* that it is inappropriate to consider novelty and non-obviousness when making a patent eligibility determination. And according to this Supreme Court, which has given us the *Alice/Mayo* framework, *Diehr* remains good law.

That must mean it has not been overruled—and that necessarily means the so-called hunt for an inventive concept must mean something different than what the federal circuit is turning it into.

### **Isolating the bar**

It is time for the federal circuit to wise up.

Spewing illogical nonsense and practically chastising the bar by saying “we’ve previously explained” is unbecoming. Yes, you have previously explained that it is possible for something that is not abstract to still be abstract and for something that is inventive to not be inventive.

Such ridiculous rulings should hardly be celebrated or even tolerated. They are ruining innovators in America and causing many stakeholders to seriously question whether we even need a federal circuit at all. ☒

**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.



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## IoT Corner

With more than 450,000 art collections in the world, preservation is a primary concern for almost all of them. Tech firm **Conserv** has created a LoRa®-based IoT platform to help collections monitor gallery and storage conditions in order to help curators. (LoRa, short for long range, is a spread spectrum modulation technique derived from chirp spread spectrum technology.)

This platform monitors temperature, humidity, light and vibration, with a much longer range than WiFi or Bluetooth systems. This means less wiring and setup, which is particularly helpful for historic buildings that house many collections.

The system provides real-time alerts and has a battery life of up to 30 months. —Jeremy Losaw

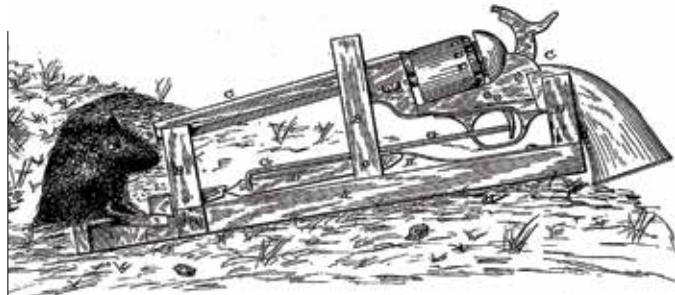


## Wunderkinds

On March 14, 2014, 6-year-old **Kiowa Kavovit** became the youngest inventor to appear on “Shark Tank.” With the help of her father Andrew, Kiowa came up with an environmentally friendly skin protectant called Boo Boo Goo that paints a bandage onto the skin where the cut has

occurred. Kevin O’Leary from the show invested \$100,000.

Last year, Kiowa (now 12) and her team reportedly began negotiations with an undisclosed major bandage company. Planned additions to the brand include Boo Boo Bites, Boo Boo Burns, Boo Boo Salve and Boo Boo Block.

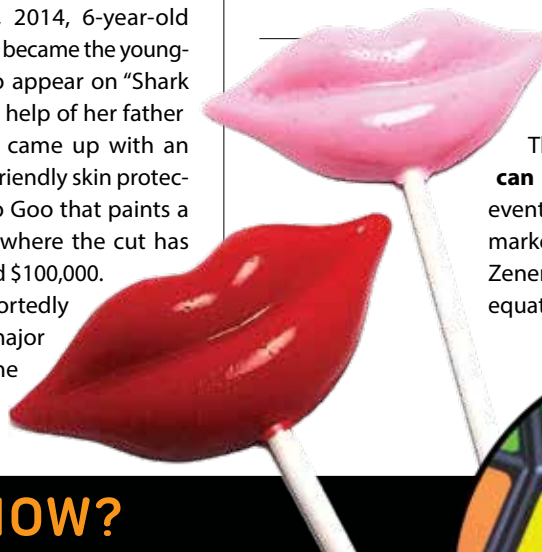


## What IS that?

This **1882 patented invention** by **James A. Williams** of Fredonia, Texas, never caught on because of people’s general reluctance to keep .50-caliber-loaded revolvers on their floors. A wooden stand held the gun at foot level, and a spring/lever combination pulled the trigger if a mouse stepped on the treadle in front.

## 17,000

The number of **steps a person can walk at a typical trade show event**, according to Toronto-based marketing and communications firm Zenergy Communications. This can equate to burning 300-500 calories.



## WHAT DO YOU KNOW?

**1** According to a recent report by the American Intellectual Property Law Association, the median patent litigation cost in 2019 is:

- A)** \$400,000      **B)** \$700,000-\$4 million
- C)** \$900,000      **D)** \$1 million and up

**2** Which was invented first—candy corn, or Reese’s Peanut Butter Cups?

**3** **True or false:** Popular horror hostess Elvira has a patent for the eye makeup she uses.

**4** When Erno Rubik invented Rubik’s Cube in 1974, how long did it take him to first solve the puzzle?

- A)** 12 hours      **B)** 8 days
- C)** 1 month      **D)** 6 weeks

**5** **True or false:** The shape for candy lips is protected under federal trademark law.

**ANSWERS:** 1.B. 2. Candy corn was invented in the 1880s by George Renninger; Reese’s cups were invented in 1928 by H.B. Reese. 3. False. 4.C. 5. True. The same is true of the shape for the Hershey’s Kiss, Lifesaver, M&M’s, Pez, Tootsie Roll and more.

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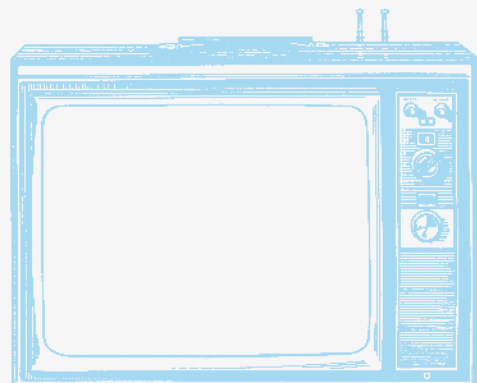
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