

# Inventors

OCTOBER 2017 Volume 33 Issue 10

DIGEST

## GROWING GAINS

### Young Inventors' Impact

TEENS' BATH BOMBS HAVE A FUN TWIST

PROLIFIC RENAISSANCE MAN

FATHER-DAUGHTER TEAM, ADVICE & MORE

#### Learn the Tricks of Going Viral

YOUTUBE CONTENT  
WITH MASS APPEAL

#### Fidget Spinners Are Nothing New

ANCIENT ORIGINS,  
MANY MYTHS

#### Prospects for USPTO Nominee

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OFFERS CLUES

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## Impact of Youth Never Gets Old

Here they come.

Those are the first words of "Enter the Young," a minor hit by the Sixties group the Association. The painfully dated music notwithstanding, the song serves as a fitting soundtrack for this issue of *Inventors Digest* with these lyrics:

*Enter the young, yeah  
Yeah, they've learned to think ...  
More than you think they think  
Not only learned to think, but to care  
Not only learned to think, but to dare*



Carson Kropfl,  
inventor of  
Locker Board

Youth's impact on the inventing world, regularly chronicled in these pages, gets more comprehensive recognition this month. Aided by a seemingly intuitive feel for technology and born into a post-internet world, the 21-and-under crowd has never had more relevance in innovation circles.

The mainstream media took notice long ago. One of the more recent, high-visibility examples will be on display October 1, when 12-year-old Carson Kropfl of San Clemente, California, will appear on the season premiere of "Shark Tank" to pitch his Locker Board. Last year, he invented a skateboard that could fit in his backpack and his locker.

Don't be surprised if Carson isn't nervous. The *Orange County Register* reported that in January, while in New York to appear on a TV show, he rode his invention into Trump Tower. Then he left a note on a napkin for President Trump, offering to send a Locker Board to the president's son, Barron. The president reportedly sent Carson a letter, saying "I am impressed by your craftsmanship and business spirit."

*And some are doing, some are trying  
Some are selling, some are buying  
Some are living, some are dying  
But demanding recognition one by one*

So often nowadays, we see young people with poise and confidence beyond their years—and more important, a media savvy and presence that are essential for selling a new idea. Ben Bercaw, the father of this month's teen cover subjects Isabel and Caroline Bercaw, said that when he and his wife, Kim, saw the girls "selling their product to retailers in a corporate meeting or trade show, or the poise they showed when on camera for an interview, we knew this had the potential to be even more."

Many young people, even children, have figured out some aspects of the invention journey that others cannot master in a lifetime. They also have the energy to keep learning while we learn from them. Enter the young.

—Reid  
(reid.creager@inventorsdigest.com)

# INGENUITY IS AMERICA'S MOST VALUABLE RESOURCE.

**DON'T TREAT IT LIKE A CHEAP COMMODITY.**

Our strong patent system has kept America the leader in innovation for over 200 years. Efforts to weaken the system will undermine our inventors who rely on patents to protect their intellectual property and fund their research and development. Weaker patents means fewer ideas brought to market, fewer jobs and a weaker economy. We can't maintain our global competitive edge by detouring American innovation.

**SAVE THE  
AMERICAN  
INVENTOR**

**TAKE ACTION AT [SAVETHEINVENTOR.COM](http://SAVETHEINVENTOR.COM)**

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Isabel and Caroline Bercaw, inventors of Da Bomb Bath Fizzers; photo by Eliesa Johnson.

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Focus on the Fun and Fascinating

# BRIGHT IDEAS

## Survivor Filter PRO X

### PORTABLE ELECTRIC WATER FILTER

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

Billed as the world's first of its kind, the PRO X supplies clean water at the push of a button. It lets people from all walks of life turn lakes, rivers, streams or ponds into drinkable water and weighs less than 1 lb.

The carbon filter helps absorb heavy metals, tastes and odors for maximum taste. Options for powering the PRO X include solar pack, two AA batteries, external charger, wall outlet, in-car charger or any micro USB charger plug.

How it works: Plug the PRO X into the power source, or insert batteries; place the intake tube into fresh water; place the outtake tube into a container; and press the power button.

Suggested retail price is \$140. Shipping begins in April 2018 if fully funded.



## CIO

### MAGNETIC ENERGY BIKE LIGHT

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

The CIO shuns performance-draining friction in favor of 100 percent magnetic energy to power its bright, flashing LED.

Just one easily mountable, coin-sized magnet per wheel is needed to power the Scandinavian-designed lights, made to be permanently mounted to the bike fork and come on automatically when the bike is in motion. The lights mount in seconds with ReeMount, a simple and secure wire system.

If the bike stops for a moment, the ReePower backup system automatically continues to supply power to keep you safe even when stopping at traffic lights. CIO keeps flashing for 2 minutes before automatically turning off. The system is intuitive, with no buttons or switches on the bike light.

Initial deliveries are scheduled for October, with an estimated retail price of \$78 U.S.



## Kurrent

### TABLETOP CHARGING HUB

[bit.ly/KurrentIndie](http://bit.ly/KurrentIndie)

This charging station/alarm clock lets you simultaneously charge six devices, from your phone to your iPad to your wearables to your headphones to your laptop. The made-for-iPhone product will also charge the new iPhone 8, iPhone 8 Plus and iPhone X.

Kurrent features a Qi wireless charging pad; various upgradeable, built-in charging cables; USB ports, and an AC power outlet for laptops. It's also designed to accommodate future technology updates, with upgradeable charging cables that are easily replaceable. Its Lightning connector has a built-in Auto Sensing power output—meaning that depending on your device's battery level, Kurrent detects exactly how much charge is required.

The Kurrent Smart Alarm Clock has an estimated retail price of \$119, with deliveries set to begin in January if fully funded.

“I despise the conventional in anything, even the arts. I paint canvasses on the floor and drove one art teacher out of his mind. But that’s just the way I paint best.”

—HEDY LAMARR, INVENTOR AND ACTRESS



## Steakizmo

### 'DONENESS TESTER'

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

Steakizmo measures the level at which any steak is cooked so you don't have to pierce it with a thermometer, preserving maximum flavor and providing an accurate reading in seconds. You can also cook multiple steaks at various doneness levels.

Steakizmo does not use wires, which can tangle or damage easily, and does not require precision placing. Although the product comes ready to use and set to industry standards, you can tweak its setting using the sliders on the app for customized preferences. Steakizmo weighs only 11.1 oz., and is water resistant and easy to clean.

The estimated retail price is \$115, with Rewards shipping for crowdfunding backers scheduled for May 2018.



# Fidget Spinners Are Really Nothing New

SENSATION DERIVES FROM SIMILAR TOYS DATING BACK CENTURIES;  
MEDIA MYTHS ABOUND **BY REID CREAGER**

**B**y some media accounts, fidget spinners surpassed a half-billion dollars in sales during April and May of this year as they became perhaps the hottest trend ever in the toy industry. Notice we didn't say "the hottest new trend."

The palm-size device—consisting of a top connected to a ball bearing with rounded blades that can rapidly spin when flicked by a finger—is a fascinating illustration of an improvement invention and our Age of Misinformation.

Wikipedia says "similar devices had been invented as early as 1993." Depending on one's interpretation, that statement may be off by many thousands of years; the fidget spinner is basically a handheld top deriving from ancient traditional tops that were spun on a flat surface. Some tops were found in the tombs of King Tut.

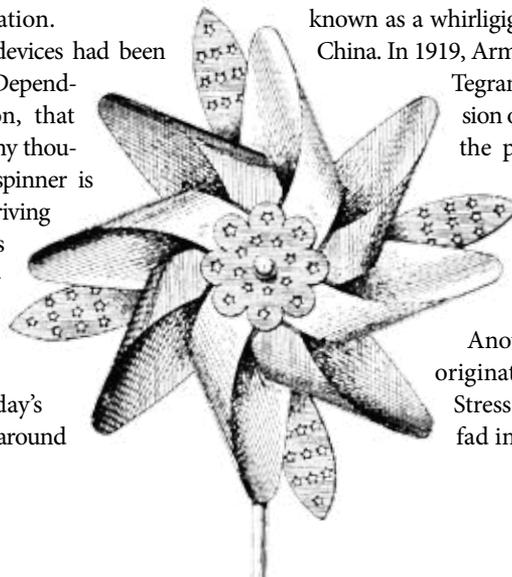
It's true that fidget spinners closely resembling today's handheld models have been around

for 25 years or so (YouTube videos last year featuring teenagers performing tricks with the toy were key to sparking the sensation). But if you take the phrase "similar devices" to mean handheld devices that have the same purpose as the current hot toy du jour, that would include several much-older handheld diversions also meant to occupy the user in a calm and relaxing way.

One could argue that the fidget spinner is merely a horizontal version of the pinwheel—and the latter (also known as a whirligig or wind wheel) dates to 400 B.C. China. In 1919, Armenian immigrant toy manufacturer Tegrin Samour created the modern version of the pinwheel in Boston. Although the pinwheel can be wind driven by merely sticking the thin attached pole into the ground, its wheels can also be put in motion with a flick of a finger.

Remember the stress ball?

Another way to release tension, it also originated in ancient China, in the 1300s. Stress balls became a hot but short-lived fad in America in the 1980s.



Tegrin Samour created the modern version of the pinwheel in 1919.

## The fidget spinner is basically a handheld top deriving from ancient traditional tops that were spun on a flat surface. Some tops were found in the tombs of King Tut.

### Psychological claim disputed

The marketing claim of fidget spinner as proven anxiety tonic has been met with skepticism by many psychology experts. Various media accounts have said the spinner is beneficial to those with autism, ADD, ADHD and other social/learning disorders, although there are no scientific data to support this.

Scott Kollins, a clinical psychologist and professor at Duke University, has been quoted as saying “there’s no evidence to support that claim.” Suggestions that the spinner can sharpen focus are contradicted by the many schools that have banned the toys because they can be a distraction.

Neither caution is slowing the craze. Thousands of variations are available in styles ranging from low-budget plastic to one that is reportedly the world’s most expensive at £13,000 (almost \$17,000 U.S.). Kim Kardashian released her own spinner recently.

Our early-September search for “fidget spinner” on Amazon produced more than 50,000 results, with eBay searches topping 480,000.

### Misinformation spreads

A Google search of Catherine Hettinger revealed about 250,000 results. In the vast majority of news stories—including those by *Time*, *Money* and the *New York Times*—the Orlando, Florida, chemical engineer is credited with inventing the fidget spinner in the early 1990s yet never realizing a profit because she let her patent lapse in 2005.

But she didn’t invent the current version of the spinner, and admitted as much to Bloomberg News in May after the news service asked two patent experts to review Hettinger’s idea for a spinning toy. In the story, Jeffrey Blake, a partner at a law firm that specializes in intellectual property, said ‘It doesn’t appear to cover the products that people are selling now.’

Hettinger’s response, per Bloomberg: “Let’s just say that I’m claimed to be the inventor. You know, ‘Wikipedia claims,’ or something like that.”

She was referring to the report in the story that when someone created a Wikipedia page for the fidget spinner in April, he or she credited Hettinger as the inventor. That page has since been updated and corrected to reflect Bloomberg’s finding.

### Watch that bling

When it comes to a cellphone or any torrid market item,

creative and enterprising minds will ultimately endeavor to bling it out. The fidget spinner is no different.

On the high end, the toys have Bluetooth connectivity, LED lights and integrated speakers. These allow the user to listen to music or watch the rotating lights sync with the beat. But the hottest upgrades to the hottest trend can sometimes spark a literal fire.

Recent news reports chronicled fires in Michigan and Alabama that started when the spinners were plugged into outlets for charging, ultimately causing the toys to melt and burn the surfaces on which they sat. The Consumer Product Safety Commission warned people not only to never leave a charging fidget spinner unattended, but never to leave young children with them because of the danger of choking.

The fidget spinner craze is fun, largely harmless, and will likely go the way of other fads. But it seems almost a given in our trend-happy, post-it-now world that the more popular something becomes, the greater the possibility that obsession and misinformation may spin out of control. 🌀

## INVENTOR ARCHIVES: October

### OCTOBER 12, 1972

**Stevie Wonder** copyright registered the words and music for “You Are the Sunshine of My Life.” The 25-time Grammy Award winner and author of more than 30 U.S. top 10 hits is a good fit for this month’s young inventors theme in *Inventors Digest*, having registered his first work at age 14 in 1964.

“You Are the Sunshine of My Life” earned Wonder (born Stevland Hardaway Judkins) a Grammy for Best Male Pop Vocal Performance. Many don’t realize that the first two lines of the song were sung not by Wonder but by Jim Gilstrap, the next two lines by Lani Groves.

In 1976, Wonder began a long friendship with the inventor of the Kurzweil Reading Machine. Ray Kurzweil invented a device, specifically for blind people, that is able to read text on a page and speak the words aloud. After becoming Kurzweil’s first official customer, Wonder teamed with him to produce the Kurzweil 250, a groundbreaking musical instrument that uses artificial intelligence to create sounds.



Ray Kurzweil (left) shows Stevie Wonder the Kurzweil 250 synthesizer.

KURZWEIL.NET

# Go So Viral, It'll Be Sick!

HOW TO CREATE YOUTUBE CONTENT WITH ULTIMATE IMPACT

BY ELIZABETH BREEDLOVE

**S**ince YouTube was established in 2005, digital marketers and content creators have desperately sought to have their video “go viral” and even be featured among the most-viewed on the site. In fact, one could argue that during the past 12 years, viral YouTube videos have shaped popular culture.

Consider the music video for the song “Gangnam Style” by South Korean musician Psy. In 2012, this video became the first to reach 1 billion views. The video eventually “broke” the YouTube view counter, which had a theoretical upper limit of 2,147,483,647, forcing YouTube to redo its algorithm. Additionally, the video’s viral success led to Billboard overhauling its methodology for ranking music sales, and it led to a surge in the West’s interest in K-Pop and J-Pop music.

Another example is the Ice Bucket Challenge, a craze that took the world by storm in summer 2014. The challenge called for people to pour a bucket of ice water over themselves, nominate a few others to complete the challenge, and then donate to organizations that support ALS research. The challenge quickly went viral across all forms of social media, not just YouTube, and had a huge impact as public awareness and charitable donations to amyotrophic lateral sclerosis charities skyrocketed.

Having a video go viral can have a huge impact on your business.

## What makes a video go viral?

Before you can create content in hopes that it goes viral, it’s important to understand what makes it happen. Jonah Berger, a marketing professor at the Wharton School at the University of Pennsylvania and author of “Contagious: Why Things Catch On,” says it isn’t luck.

Berger argues that there is a science behind what people share. If you understand what types of content people share with others, you can create content that is likely to become “contagious.”

According to Berger, six key drivers determine a video’s virality: social currency, triggers (things that are top-of-mind), emotion, the public (imitating what we see others do), practical value and stories. Once you

understand these six factors, it becomes easy to see why certain content goes viral.

Berger adds: “Show rather than tell the benefit. Create an emotional story that is remarkable enough that it gives the viewer enough social currency that they can’t help but spread the word.”

## Dollar Shave Club

Dollar Shave Club spent \$4,500 on a silly 1:30 video that racked up 4.75 million views in the first three months after it was posted in March 2012. To see it, search “DollarShaveClub.com—Our Blades Are F\*\*\*ing Great” on YouTube.

In the first 48 hours after the video debuted on YouTube, 12,000 signed up for the service. Why did this video go viral so quickly? Perhaps it’s because it’s everything you wouldn’t expect from a razor company. It’s silly, unexpected and a little crass. It elicits an emotion (humor), tells a story and provides practical value.

## Purple Mattress

Purple Mattress has taken a similar approach to Dollar Shave Club with its commercials and YouTube videos, with remarkable results. It currently has 31 videos on its YouTube channel, and 13 of them have more than a million views. Each of the videos takes a similar approach: Using a silly storyline to show off why the Purple Mattress is better than any other mattress.

In its most popular video, “How to Use a Raw Egg to Determine if Your Mattress is Awful,” an actress playing a sassy Goldilocks character demonstrates what happens when you drop raw eggs on a mattress that is too hard, too soft, too “average” and just right. The eggs break on every mattress except for the Purple mattress, and Goldilocks explains why: The mattress’s unique composition makes it soft enough to protect your body’s pressure points and hard enough to support everything else. The video uses a combination of emotion (humor), practical value (the science that makes the mattress so great) and story (Goldilocks and the three bears, something almost everyone can relate to), to create a clever video that people want to watch and share.



## Planning your viral effort

- 1. Set a budget.** The amount you'll need to spend on your video varies widely, but plan to spend at least several grand. Note that the longer your video is, the more complex—and the better your videography team, the more your video will cost. That brings us to our next point...
- 2. Hire a good videographer.** Although some of the most well-known viral videos were shot at home on simple cell phone cameras ("Charlie Bit My Finger," for example), if a company wants a video highlighting its product to go viral, it must work with an experienced videography team. After all, if the goal is to sell more of your invention or product, you need potential buyers to trust you—and a high-quality video instills trust in the viewer. As you're choosing a videography team to work with, look at its past work and make sure it aligns with your vision.
- 3. Write a story that stays true to your brand and includes the drivers of virality.** Once you settle on a videography team, work with it to write the script for your video. As you're creating the script, keep in mind Berger's six drivers of virality but stay true to your product's image.

If your invention or brand doesn't have a "funny" voice, don't go out of your way to use humor. Other emotions can be just as effective; look up Dove's Real Beauty Sketches video to get another idea of how emotion can lead to people sharing your video. Think critically about which factors lead people to share content, and look for ways to tie that into your script.

Above all, don't forget about your business goals as you're writing the script. "Viral is good, but valuable virality is better," Berger says. "Make sure people don't just share the content but can't help but remember what the product it is for. Don't just build a story; build a Trojan horse story that carries your idea along for the ride."

**Marketing professor Jonah Berger says six key drivers determine a video's virality: social currency, triggers (things that are top-of-mind), emotion, the public (imitating what we see others do), practical value and stories.**

- 4. Once your video is finalized, share it on social media.** Begin by uploading it to YouTube with a good, keyword-rich title and description, and don't forget to include a link to where people can buy your product. Don't stop there, though: YouTube is meant for videos specifically, but videos perform well on all social networks. Share the YouTube video on your Twitter account or LinkedIn profile, or pin it to one of your Pinterest boards. Upload it to your Instagram account, and don't forget to upload it to Facebook as well (native video performs better on Facebook than links to YouTube videos). As you share the video on social, encourage viewers to share it with their friends and followers.

There may be a little bit of luck involved when it comes to videos going viral on YouTube, but there is much that inventors and product creators can do to put themselves in the running for the next viral sensation. 📺

**Elizabeth Breedlove** is content marketing manager at Eventys Partners, a product development, crowdfunding and inbound marketing agency. She has helped start-ups and small businesses launch new products and inventions via social media, blogging, email marketing and more.



# Baking Kits Become a Recipe for Success

FOUNDED BY TWO MOMS, SCRATCH & GRAIN BAKING CO. KEEPS INNOVATING **BY DON DEBELAK**

**I**n October 2012, Taya Geiger was fed up after 12 years as a financial consultant at just the time her neighbor, Leah Tutin, came up with an idea for a baking kit. The two moms pooled their talents, and today Scratch & Grain Baking Co. products are in more than 5,000 stores with sales growing 500 percent each year.

Along the way, the company was featured on the reality TV show “Shark Tank” and landed co-star Barbara Corcoran as a mentor, put together an automated production process, and survived the departure of Tutin after four years.

## Concept, roles established

Tutin wanted to make cookies with her daughters from scratch but found it was not much fun and a lot of work. Her solution was a baking kit, with all of the ingredients and just the right amount, packaged in individual color-coded bags.

At first, Geiger was apprehensive. “I thought this concept had to be on the market,” she says, only to conduct research and find nothing. “But I wasn’t sure about the product.”

Once she tried the kit, she was all in: “I totally got the concept. It was about making delicious baked goods but also making it fun and easy. No more baking soda, brown sugar, flour and other ingredients sitting in my cabinets until I was ready to bake; no more measuring cups, measuring spoons; and most important, no more major messes in the kitchen.”

When Geiger almost lost a tooth on a dried fruit cookie, the duo’s roles were defined. She would be the baker, Tutin the taster.

## Early breakthroughs

The first goal was to finalize ingredients for four cookie kits: Chocolate Chip, Oatmeal Raisin, Gluten-free Chocolate Truffle and Gluten-free Chewy Peanut Butter. Starting in March 2013, the cofounders started

putting together kits in 100 square feet of a shared commercial kitchen. They packed and sealed the bags themselves, and had 40 cases ready by mid-month.

“Our original intent was to sell online and develop consumer demand,” Geiger says, “but then on a whim we decided to ask a store cashier what she thought of the product. She loved it, brought in the store manager, and he bought it.”

The store manager said he needed a 35 percent margin and felt it would sell at \$7.99. The resulting wholesale price of \$4.50 was exactly the cost of the product. But the duo went with the price, knowing they could get the product cost down when they automated their equipment.

Geiger and Tutin called on the stores in their hometown area of Portland, Oregon, and they all took the product. This included chains such as Albertsons and Whole Foods. Most grocery stores and mass merchants allow local managers to buy and stock local products to see how they do. As organic products were starting to take off, managers were happy to stock a local organic product to help fill up their organic sections.

With the Portland market saturated, Geiger and Tutin focused on the next big market, Seattle—where they got their first big break. “We had success in Seattle with the grocers,” Geiger says, “but our big sale was to Sur La Table, a high-end kitchen housewares retailer that also carried a large number of cooking kits. This gave us our first national account.”

Still, the two were not making any money packaging the kits by hand. They needed to bring in more automated equipment.

## ‘Shark Tank’ experience

In August 2013, Geiger and Tutin decided to email “Shark Tank” in an effort to appear on the show. The program only allows a photo and a few lines to describe the product, so the two maxed out the opportunity with a creative idea.

“We sent in a really crazy photo of us breaking up our spatulas with a straightforward sentence explaining that we were a kit for people wanting to cook from

Gluten-free Chocolate Truffle was one of the company’s four original cookie kits.



scratch while having fun, no mess, and no measuring,” Geiger says. The show’s representatives called back.

“Shark Tank” only films in June and September for the next year’s shows, and time was tight. Geiger and Tutin filled out all of the forms, answered the phone questions and prepared a video audition pitch. Then came a bombshell: The show was going in a different direction that year.

They put the show aside and kept selling. Then they were contacted again about possibly taping for 2015 shows in 2014, and the producer was very excited.

Geiger learned what happened the previous year. “You need to go through many layers to get on “Shark Tank,”—first a lower-level scout, then an associate producer, a higher-level producer and finally the

executive producer. One executive producer didn’t understand our product. She didn’t understand our kit concept and thought the product was a mix, not a kit.” One of Scratch and Grain Baking Company’s supporters, another executive producer for the show, purchased a sample of the product for the skeptical colleague—who loved it and gave the product the green light.

The show was filmed in June 2014 for airing the next January. Barbara Corcoran agreed to be the mentor for Geiger and Tutin, and offered a \$120,000 line of credit in return for 20 percent of the equity. A line of credit is a source you can borrow money from when needed, though you typically need to provide details about how you will spend the money.

Making a career change after 12 years as a financial consultant, Taya Geiger now runs a company with sales growing 500 percent each year.

**“No more baking soda, brown sugar, flour and other ingredients sitting in my cabinets until I was ready to bake; no more measuring cups, measuring spoons; and most important, no more major messes in the kitchen.”**

—TAYA GEIGER,  
SCRATCH & GRAIN BAKING CO. COFOUNDER



This was straightforward for Geiger and Tutin, who prepared a proposal to buy equipment that would automatically fill and seal color-coded bags. Not all of the money was required, and Corcoran's share of equity was adjusted downward to match the line of credit. In February 2015, "Good Morning America" featured their products on the show. They were featured again on ABC's "Beyond the Tank" in March 2016.

## Sales take off

With equipment in place to increase production and make some money, Geiger and Tutin were ready to expand sales. The founders started to court Target, and in July 2015 they started an SKU test in 500 stores. SKUs stand for stock-keeping units, which are typically individual bar codes, that give each product a separate identity. (Today, Scratch and Grain Baking Products are in 1,500 Target stores.)

They had continued to expand grocery stores sales, which now included Hy-Vee, Safeway/Albertsons, Publix, Ralph's, Fry's and select regions of Whole Foods. Geiger and Tutin kept adding to the company's momentum.

A big move came in December 2015 via direct input from their Target buyer. According to Geiger, "We stepped outside of the cookie world as we knew it and expanded into other

areas of the baking category. We launched three new products: Gluten-Free Honey Cornbread Kit (exclusively for Target), Gluten-Free Cheesecake Brownie Kit, and Coffee Cake & Muffin Kit." Today, two of those three products are the company's biggest sellers.

In July 2016, the Scratch & Grain Baking Co.'s facility and all non-gluten-free products received their USDA Organic Certification. The company kept expanding its product line in September 2016 with the launch of its first CupCake Kit—The Confetti CupCake & Cake Kit—as well as another exclusive product for Target, an Organic Pumpkin Bar Kit, which launched in the retailer's stores nationwide.

## EXPLODING SALES

The number of stores carrying Scratch & Grain Baking Co. products since the company's inception four years ago:

March 13, 2013 .....	1
September 2014 .....	400
January 2015 .....	600
July 2015 .....	1,300
November 2015 .....	2,400
September 2017 .....	5,000

## Retooling and additions

In December, Tutin decided to back away from the company; she left on January 1 to spend more time with family. Geiger responded by spending two weeks of every month flying around the country meeting with her customers to kick sales into higher gear.

Geiger and Tutin had decided early on to do all sales themselves, bypassing brokers and distributors. "We just didn't feel the brokers could give the same enthusiastic presentation that

When Taya Geiger (right) almost lost a tooth from a dried fruit cookie early in the collaboration, she and Leah Tutin (left) decided that Geiger would be the baker and Tutin the taster.



we give,” Geiger says. “They carried 20 or more products, while we carried just one.”

Her first move was to launch three out of the company’s four current gluten-free SKUs as Certified Organic. She followed that up this past June—based on the success of the Confetti CupCake & Cake Kit, the company’s No. 1 seller in a mere three weeks—with a launch of a full line of CupCake Kits: Salted Caramel CupCake, Chocolate CupCake, and several seasonal varieties including Valentine’s, Fourth of July, Autumn and Holiday.

For the holiday products, Geiger recently signed an agreement with Elf on the Shelf to co-brand on select Christmas products. All of these moves are positioning the product line to stand on its own without the intense sales efforts from Geiger, who has two young sons. It’s paying off: The company has 12 production and three office workers, and sales are growing every day.

“The organic category is much smaller than standard products, pallets versus truckloads. Our best-selling units sell 25 packages per store per week,” Geiger

says. “This niche is one grocers are looking to fill with products they really like, and the limited competition has allowed us to grow rapidly.” She’s also proud not to have outsourced any aspect of the product.

Although her extensive business experience is a great fit for what she’s doing now, the learning never stops. As she says on the company’s website, “I am the most uncomfortable and overwhelmed than I have ever been, as I am doing things daily that I have never done or thought I would be doing. At the same time, it is one of the most exciting and gratifying times of my life.” ☺

*Details: Scratchandgrain.com*

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



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# TEENS' INVENTION IS A BLAST

DA BOMB BATH FIZZERS ARE ALL ABOUT FUN—AND LOTS OF HARD WORK **BY REID CREAGER**

**S**isters Isabel and Caroline Bercaw run track in the spring at Edina High School in Minnesota. Although they approach this with their usual 100 percent effort, track season pales by comparison to the amount of fast-paced activity they have come to know in their daily lives.

Not that they're complaining. Their lives have become increasingly busy since 2012, when their idea to make unique bath bombs for a local art fair unleashed a shower of response that hasn't turned off. Now their Da Bomb Bath Fizzers are sold in Target and more than 7,000 stores nationwide, a multi-million-dollar business with 150-plus employees and projected revenue growth of 500 percent over last year.

Fifteen-year-old Caroline, a sophomore, talks about the importance of finding a balance: "We're always working. Sometimes maybe we have to sacrifice some of our friend time or sleep time."

Sister Isabel, 16 and a junior, says that "even during math class, maybe you'll glance over your shoulder and answer an email. Or in the car, you'll already be on a call. Or you'll be hanging out with friends and you'll start answering Instagram Direct messages."

The best-friend siblings agree that it's all worth it. With help from their mother, CEO Kim

Bercaw, and father Ben Bercaw (CFO and COO), they embody the fresh, fun appeal of their business and are always hungry to learn more.

## Life-changing art fair

Such initiative dates back to when they were 10 and 11, respectively, and Caroline and Isabel made a few hundred bath bombs for the Minneapolis Uptown Art Fair. Bath bombs are nothing new—but the girls came up with the idea to put a tiny toy or jewelry charm inside each one that would be revealed after dissolving for 5-7 minutes in the water.

Their months-long project sold out in a few hours. They had taken the basic relaxation theme of bath balls and added a novel twist: fun.

"People do love to relax in the bath, but there aren't a lot of bath products that create fun," Caroline says. "We wanted to project that onto our brand."

A year later, a salon owner approached them about selling their products there. As the product gained popularity, it was time to examine the market and the potential for success.

"When we first started researching, we figured out that the bath bomb market was huge," Kim Bercaw says. "The leader in the market makes 22 million bath bombs per year."

The ingredients for the bath bombs aren't complicated: baking soda, citric acid, fragrance oils and cosmetic-grade pigment that won't stain you or your tub. There's also PEG (polyethylene glycol), found in many sports drinks.

Da Bomb's main line features about 15 bath bombs, depending on the time of year. A recent search on the





Isabel Bercaw (left), 16, and Caroline Bercaw (right), 15, came up with an idea that spawned a multi-million-dollar business.

company website revealed a Cozy Bomb, Spooky Bomb, Beach Bomb, Galaxy Bomb, Cherry Bomb, Ninja Bomb (created by the sisters' little brother, Harry), Party Bomb, Bug Bomb, Bling Bomb, "F" Bomb, Cake Bomb, Candy Bomb, Earth Bomb, Treasure Bomb, Sporty Bomb, Quote Bomb, Fortune-Telling Bomb, Hero Bomb, Love Bomb and Groovy Bomb. Every holiday season or couple months, the girls introduce a featured fizzer that is available for a limited duration.

"When we first started, we came up with the Earth Bomb (with a tiny sea creature inside) pretty much right away because we knew we wanted to give back," Caroline says. "On every purchase, money goes toward saving the world's oceans. We donate to different organizations to help clean up the oceans."

### Running 'two businesses'

The "sisterpreneurs" are always brainstorming ideas for new bath bombs and surprises, making bath bomb batches, working at mall kiosks and overseeing the business. They work with 12 employees, including a designer and branding agent.

Their parents' help has been essential. In addition to their CEO mom, CFO/COO Ben Bercaw monitors the financial health of the business and oversees production activities. He says Da Bomb has been "a completely unexpected and incredible journey for all of us.

"With the initial success of the product, we knew the girls were onto something special. But when we saw them selling their product to retailers in a corporate meeting or trade show, or the poise they showed when on camera for an interview, we knew this had the potential to be even more."

All bombs are handmade in Minneapolis with plenty of help, Kim says. "We have over 150 employees during the fourth quarter (most of them making the bombs), shipping, packaging, all sorts of stuff. We are our own manufacturer. Our packaging is made locally, and all raw materials are purchased domestically."

Isabel says the company has a design patent pending on the packaging. "We can't patent the formula, because anyone

can make bath bombs. We designed our own packaging and worked with a designer to bring it to life. We're pretty far along in the process."

The family estimates that it sells about 500,000 bombs a month, more during the holidays. But where do they get all of the surprises that go inside the bombs?

"Some of them originate overseas," Kim says. "They're not made domestically. But we do deal with U.S. distributors, and we also purchase surprises that are made in the U.S. whenever possible."

She says the family recently closed on a warehouse to house the bombs and materials. "We had been renting a building and occupied more than half of it—40,000 square feet," she says. "So we just purchased it."

Isabel notes that "we're running two businesses right now: a production and shipping business for making all the products and getting them out to people, and we're also building a brand. It's a lot of work.

"We never set out to be bath bomb manufacturers, but it worked out well because we have a lot of control. We can do more experiments, and we can experiment with new products in our test kitchen. There are all sorts of beneficial things to having your production in house."

### Wide-open futures

The running-the-brand part of the business that Isabel refers to includes marketing. She says Instagram is the company's largest social media presence.

"I was Googling our products on YouTube, and there are many pages of bath bomb videos. I love seeing people use our product and giving reviews and feedback; that's really fun. People buying our bath bombs are mainly women ages 12 to 55, but they're buying them for everybody."

The teens' connection with the public is a natural extension of their social nature.

"They made it very clear early on that they didn't want to give up a traditional education," Kim says. "It's pretty easy to do an online school these days, but they very clearly did not want that. We continue to support their being in school each day, which I think is awesome.

Now hopefully they won't miss out on too much of what everybody gets excited about—like homecoming, friends, all that stuff that people like to remember."

She says their participation in track for 6-8 weeks in the spring satisfies their need



for regular interaction with peers and gives them somewhat of a break from the business: “We make efforts to give them a balance because they’re still growing up and they’re still figuring out what they want to do with their lives—believe it or not,” she says with a laugh. “They seem really content right now, but Ben and I always encourage them that when they go to college, maybe they stay close to the business, and maybe they don’t. You don’t want to limit them.”

Caroline agrees. “We definitely know that we want to go to college, but it would be interesting to explore something other than business. ... And we know that there’s a lot more to business than we think, and there’s so much more to learn. Who knows? Maybe I’ll decide I want to major in business, and I’ll have our company as a model. I do think I’ll want to work for myself.”

“Working for yourself is a lot of fun,” Isabel says. “Whatever I do, I’ll be able to take my entrepreneurial skills with me because owning a business really is doing everything. No matter what I do, I have a lot of options now, thanks to starting this business.”

Ben Bercaw says the experience has also taught the girls the value of teamwork and open communication.

“As many small business owners and operators know, we all wear many hats. Our family is fortunate in that our interests and strengths complement each other. We are free to insert ourselves in what could be perceived as another’s area of responsibility, and the support is welcomed. In other environments, one may feel threatened by this, but we often end up with a better solution or outcome.”

Although the sisters are running a business earning multi-million-dollar profits, they don’t seem to think about it.

“The only time that we really understand how much it’s changing our lives is when someone asks us if it is,” Isabel says. “Then we realize. We take a look back and we think, ‘Oh, wait, maybe it is.’ But running a business to this extent is pretty time consuming. You’re lucky if you get a shower twice a week.”

*Details: [Dabombfizzers.com](http://Dabombfizzers.com)*

**Isabel Bercaw and her sister Caroline were 11 and 10, respectively, when they first made their unique bath bombs for a Minneapolis art fair—and sold out within a few hours.**



# HIS IDEA FAUCET KEEPS RUNNING

PATENTED WATER-CONSERVING DEVICE IS JUST THE START FOR KNOWLEDGE-HUNGRY RENAISSANCE MAN **BY EDITH G. TOLCHIN**



I **generally prefer** the story behind the inventor, sometimes more than the story of the invention itself. This is especially true when interviewing the young innovators who will shape our nation and make it greater.

Recent University of Virginia graduate Zihan Chen, 21, holds a 2016 patent for a faucet design that, according to Chen, “minimizes water waste and manufacturing costs while maximizing user experience and personal hygiene.” I asked him about the details of this invention and information about his other patents pending in the field of electronic devices, user interfaces and home appliance-related inventions.

Ah, the energy of youth!

**Edith G. Tolchin (EGT): Have your background and education led to any of your inventions?**

**Zihan Chen (ZC):** I graduated this May from the University of Virginia with a major in studio art and a minor in architecture. I have been fascinated with designing and inventing way before I began studying at the university. I submitted my first patent application about four years ago.

All the inventions I’ve had so far are from my personal observation and creation and have no direct relation to my education or my field of study. But the study of art did open my eyes a bit and in some ways changed my way of observing, which I think definitely contributed to my ability to invent.

**EGT: How did you come up with your first patented idea, the new faucet design?**

**ZC:** I came up with the idea about three years ago. It all began when I noticed people leaving the water faucet

on, running, while using hand soap. That annoyed me when I saw clean water being wasted. You can imagine that a lot of people all around the world are also leaving faucets on during hand washing, so every single second a great amount of water is dumped without even being used.

I tried to invent a faucet that could “teach” its users to save water and end that problem. After about a month of researching and designing, my Tango faucet finally came about. However, it went way beyond just solving the initial water-wasting problem and became a total game changer.

**EGT: How is this faucet different?**

**ZC:** Tango is a faucet that is redesigned on many levels to achieve great improvements on the user experience, water and energy saving, and manufacturing cost. All the improvements come from the design of a very simple but novel structure which differs from all others.

The knob is circled by water coming out so that all the dirt and hand soap that is brought onto it by the user’s hand will be washed away immediately after the knob is rotated “on.” No second-time pollution happens when the user turns off the water, and the knob is always clean and ready for the next user.

The soap dispenser now is incorporated into the knob of the faucet, and the outlet of soap—located at the end of the knob—will be covered by water when the faucet is on. In this way, the user has to turn off the water to access the soap so that a great amount of unnecessary water waste is prevented.

Tango surpasses similar products on the market in all aspects, with easy and low-cost production, more stable performance, better user experience and great

In addition to his faucet that has a design patent, 21-year-old Zihan Chen (opposite page) has a host of other patent-pending inventions in the United States.



water and electricity savings. The annular outlet distributes the same amount of water discretely in a wider and more efficient range, which pushes the water savings of Tango to an even higher level.

**EGT:** Do you plan to create a business, manufacture on your own, or get a licensing agreement?

**ZC:** Currently, my broker and I are looking for potential buyers, and I am considering licensing the patent as well. We first reached out to some of the companies in the field, and a few of them showed interest. I am confident. I believe this is a great invention, and most important it solves tough problems—problems that exist every day and problems that cause a shortage of water resources which threatens the planet. I will be more than happy and proud to see the production and application of the faucet, which means that I have made my contribution to the environment.

**EGT:** Tell us about your other patent-pending inventions.

**ZC:** Besides the faucet invention, which has already been granted in the United States, I currently have five other patents pending in the U.S.—a method for pairing of electronic devices based on short-range communications by analyzing the intervals between motions; a method of dynamic text presenting on electronic

devices based on motions detected; a method of contacting for emergency, using electronic devices activated by a pattern of active buttons; a structure design of refrigerator devices that prevents objects from falling, and a structure design of a container that produces a more comfortable and hygienic way to wash fruits.

**EGT:** Do you have a specific category of inventions that holds your interest?

**ZC:** I do, actually. In my very early stages of inventing, I was just searching for problems and coming up with solutions from my everyday life. Well, of course I couldn't file patents on all the ideas I had, sadly, for the sake of time and money. I can only select the ideas that I think have the most potential to be commercialized and to be successful on the market and then file a patent on those.

The faucet and the refrigerator invention were two of those. Later, I started to switch my focus to electronic devices and internet-related inventions only. I am a fan of those technology items. I always follow the most updated technology and news, like biometric sensing under screens, and mobile payment in an augmented reality. I have been studying a significant amount of inventions and patents in that area, by a lot of industry leaders like Apple, Google and Facebook.

I don't have a very deep background in engineering, but in no way can that stop me from inventing because I focus more on the user level. I always try to put myself

**“All the inventions I’ve had so far ... have no direct relation to my education or my field of study. But the study of art did open my eyes a bit and in some ways changed my way of observing, which I think definitely contributed to my ability to invent.” —ZIHAN CHEN**



One of Zihan Chen's innovations is a structure design of a container that provides a more comfortable and hygienic way to wash fruits.

inside those innovations and to maximize the functionality and user experience based on updated technology with new inventions.

**EGT: Do you have a favorite among your inventions?**

**ZC:** Honestly, I like all of them. They all solve existing and common problems and provide better solutions. If I am asked to pick only one as my most favorite, it would be the faucet.

**EGT: What are your hobbies or other interests?**

**ZC:** I started to fly airplanes when I was 19, and I became a private pilot after a year's training. I enjoy observing from different angles. I believe that is also something a good inventor should always be doing.

I also founded a game studio and developed a few mobile games with my friends not long ago. Some of the games went pretty well and got quite an amount of downloads. Please check those out at [secstudio.com](http://secstudio.com) and try them.

Other than these, I enjoy graphic design and have done some internationally awarded work. Currently, I am spending some time with a top advertising company and doing some brainstorming and designing for it.

**EGT: What are your future goals?**

**ZC:** I was admitted to a graduate design program in New York City, and I will spend the next two years learning and experiencing the city that I've always wanted to be in. Different from a lot of other people, I do have a life goal but won't really make very specific life plans for the next few years other than trying to do my best every day. I just keep doing and learning from what I did, and keep correcting myself and searching for the best in my adventures.

I do want to be involved in inventing in some ways in the future, either professionally or as a personal hobby. Inventing is something I have been fascinated with for a very long time, and it seems to be something I will be doing for a long time.

I am still on my way of proving to myself if it is possible for me to be a professional inventor and achieve what I want. It might take another few years—but if I get the answer and the answer is yes, then I might just talk to a few of my attorneys I have been working with and form an inventing team. Otherwise I might be working for a company. But I think as long as I have the ideas, I will survive easily.

**EGT: If you could invent a solution for world peace, what would that be?**

**ZC:** World peace is quite a complicated problem. Thousands and thousands of people from different areas are working on that every day, and yet we still face tough situations. I certainly do not think that there is just one thing to be invented to make the world peaceful all of a sudden.

I believe that an educational opportunity for everyone on the planet is a first step. So I might start with coming up with a new media or method based on current information technology for massively spreading valuable knowledge at low cost and helping to create an educational equality for underdeveloped areas. ☺

*Details: [zihanchen@secstudio.com](mailto:zihanchen@secstudio.com) or [zihanchen.me](http://zihanchen.me)*

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.



Another of Chen's inventions is a structure design of refrigerator devices that prevents objects from falling.

# TEEN AND HER FATHER STICK TOGETHER

3D PIXEL ART STICKER HAS FUN USES AND THE POTENTIAL TO HELP OTHERS

**A**t age 4, Yannie Tan was determined to invent something to help her uncle. “He had a smoking problem, so I created a toothpaste that had a smoke-like taste. It was a childish idea and maybe not so logical, but I was just trying to do something to help him stop smoking.

“I wanted to create things that would improve people’s lives. I know that sounds like such a big idea for a 4-year-old.”

Even then, inspired by the TV show “Inspector Gadget,” she was building a journal of improvement inventions. Twelve years later, the Atlanta teen remains committed to big ideas. Her latest is a collaboration with her father, CK Tan, called STiKidotz—a 3D pixel art sticker that derives from The Dotz Company he founded.

## Building on a concept

Dotz are colorful, interconnecting silicone blocks used to craft unique pixelated designs on anything from notebooks to phone and tablet covers. Yannie came up with an idea in 2014 to build on that by taking the traditional, two-dimensional decal into the 21st century with a versatile update.

“STiKidotz (trademarked and patent pending) have an adhesive on the back, while the dots that my dad originally had did not,” she says. “I thought adhesives were very important because they give you a new dimension to play with. You can put them on different surfaces.

“Because a lot of people use decals, STiKidotz are great because you can actually change the idea over time. With conventional decals, people don’t really want them after a certain time. They get tired of them.

Yannie Tan is thrilled to innovate with her father CK Tan, founder of The Dotz Company.

**“With STiKidotz, you can actually create your own decal—while using something that doesn’t require technology for once—and apply it to your daily life.” —YANNIE TAN**



With STiKidotz, you can actually create your own decal—while using something that doesn't require technology for once—and apply it to your daily life. Create your own character, maybe create your own college logo, then cut it and place it wherever you want in order to express yourself."

The sticker base is made from soft silicone, which is flexible and can be cut into any shape. The designs are created on the sticker's base using colorful dotzPIXELS. These small pieces come in a 4-by-4 perforated dotzBLOK that can be easily separated into the dotzPIXELS that fit on the sticker.

Each sticker's base is backed by a non-toxic adhesive that doesn't leave behind any residue, so it can easily be removed and repositioned. "The adhesive part was the most difficult thing, because silicone is a very difficult material to stick with," Yannie says. "It has a very oily substance in it, so any kind of sticky material would be repellent. I had to do a lot of trial and error (resulting in three generations of prototypes) that was frustrating sometimes, but after a lot of experimenting it worked out."

Her research on adhesives began when she finished in the top 100 in the Google Science Fair for her Phytoplankton Package Project, which involved absorbing carbon dioxide emissions from city pollution and converting them into oxygen. This connected to her father's work with silicone and pixel art graphics.

### Varied applications

A STiKidotz Kickstarter campaign launched on August 28. Funds raised will be used for color and material safety testing for the silicone, production-ready prototypes, molds, packaging and more.

Assuming the realization of its \$5,000 funding goal, Yannie and her father are excited about the wide-ranging possibilities of a product—designed and assembled in the USA—that is fun for the whole family and has uses for people of all ages.

Because it's a fun way to practice fine motor, design, graphing, visual spatial and creative world building skills, STiKidotz has uses at home and in the classroom. CK Tan even hopes to see it used as part of a STEAM-related curriculum (science, technology, engineering, art and math). Yannie has recently created a website called Astutia.us to encourage girls in school to get involved with STEAM activities.

"This can also have an application for blind people because of the touching, three-dimensional aspect," says the longtime IT professional. "Or to help with therapy. The pressure on the pieces from the fingers may be able to help people with Alzheimer's symptoms."

The Malaysian-born Tan, who came to the United States in 1985, says the product's next hurdle will be its execution—most specifically, marketing and sales.

He says he has been talking with companies from the United States, Australia, Canada and Mexico about how they could be partners. "There is nothing concrete, but it's a very good feeling that somebody recognizes our product and that it has big potential."

It's also a very good feeling for both of them to savor a father-daughter collaboration. "I really like the experience of working with my dad," Yannie says. "I never had a chance to, so this is great."

"These will be great memories for us," her father says. "It's something we can talk about for a long time." —Reid Creager



2016 Collegiate Inventors Competition winners Payam Pourtaheri, Ameer Shakeel

Among the programs that incentivize youths and young adults to showcase their innovation skills, often resulting in significant rewards:

- **Collegiate Inventors Competition (National Inventors Hall of Fame, United States Patent and Trademark Office):** [collegiateinventors.org](http://collegiateinventors.org)
- **Invent It Challenge (Lemelson Center for the Study of Invention and Innovation):** [invention.si.edu/2017-invent-it-challenge](http://invention.si.edu/2017-invent-it-challenge)
- **InvenTeams (Lemelson-MIT):** [lemelson.mit.edu/inventteams](http://lemelson.mit.edu/inventteams)
- **Lemelson-MIT Student Prize:** [lemelson.mit.edu/studentprize](http://lemelson.mit.edu/studentprize)
- **Mighty Minds (National Inventors Hall of Fame Camp Invention):** [campinvention.org/mighty-minds/](http://campinvention.org/mighty-minds/)
- **Young Inventors Program (Academy of Applied Science):** [aas-world.org/YIP/index.html](http://aas-world.org/YIP/index.html)



2017 Mighty Minds winner Mya Sewell

**UPDATE:  
1 YEAR LATER**

# USING YOUTH AS AN ADVANTAGE

KENNETH SHINOZUKA REFLECTS ON CRUCIAL LESSONS LEARNED **BY JEREMY LOSAW**



**B**ringing a product to market is often a years-long journey that is fraught with challenges, and even the most experienced entrepreneurs and developers often fail. So it is even more remarkable when a teen is able to break through and bring a new innovation to market.

Last October, Edith G. Tolchin told *Inventors Digest* readers about then-17-year-old Kenneth Shinozuka. He is the inventor of the SafeWander, a connected monitoring device and app for elderly people to alert caregivers when seniors are on the move.

One year later, we interviewed Kenneth to reflect on how—with the help of a great team—he was able to use youth to his advantage to surmount the challenges of developing the device. His lessons learned can benefit young inventors as well as innovators of all ages.

## Have a why

Because product development will often test your will and enthusiasm, it is important to have a strong reason for bringing a

product to market. Kenneth's mission was the health of his family.

His grandfather was diagnosed with Alzheimer's and had a tendency to wander at night, requiring extra care from Kenneth and his family. "My aunt was tasked with looking after my grandpa all night. I was very concerned about her well-being," he says. "I was also concerned about my grandpa's well-being. I decided to take the problem into my own hands."

## Use hardship as opportunity

Kenneth and his family had to take turns monitoring his grandfather at his bedside. This was a tedious task for a teen, but it yielded the key insight that led to the first prototypes.

"I was on night watch to look after Grandpa and I saw him stepping out of the bed—and the moment that his foot landed on the floor I thought, 'Why don't I put a pressure sensor under Grandpa's foot?'" This moment led him to sew a pressure sensor in the heel of a sock with Bluetooth communication to a smartphone, the first prototype of the SafeWander system.

Kenneth Shinozuka's comfort level with technology was crucial in developing his SafeWander monitoring device and app for senior citizens.



PHOTOS COURTESY OF KENNETH SHINOZUKA

## Tech is your friend

Young people have a massive advantage in our tech-fueled world. Teens in the 2010s have never known the pre-internet and connected world, and are extremely comfortable with technology. Coding and STEM education are now taught en masse, and Kenneth leveraged this experience to his advantage.

Before working on the SafeWander, he made an under-floor pressure sensor for monitoring Alzheimer's movement and made his grandfather a smart pill dispenser with LEDs and buzzers. "I had lots of ideas when I was younger, but I only ever created models. I never actually turned these ideas into functioning products, but they got me very interested in using technology," Kenneth says. By the time he started working on the SafeWander, he had enough experience to code most of the app himself.

## Mentors are key

It takes a team with a variety of skills to bring a product to market; the technical and marketing challenges can be immense for an inventor of any skill. This is where leveraging the experience of a mentor can really help.

Kenneth was fortunate to have parents who had gone through the patent process before, so he could leverage their experience to file for his patents. He also reached out to Columbia University and was able to get an electrical engineering professor to help mentor him. The professor helped him navigate the technical challenges and contributed to the design.

## Your first idea may not sell

It is easy to get obsessed with a great idea. Although this mentality can help drive the project forward in challenging times, it is important to keep an open mind about changing the product features to suit consumer needs.

Kenneth's first concept for the SafeWander was pressure-sensing socks. At first, this seemed like a go-to-market solution. However, after market testing he found that not all seniors like to wear socks at night. This severely limited the marketability.

"While the device was very effective...I had to think of an alternative system that was more versatile," he says. The resulting product is a wearable, accelerometer-based system that attaches to any article of clothing and detects the motion of the wearer. It is a more robust system that has much broader appeal to caregivers. ☑

# 5 FOR THE AGES

**10 YEARS OLD** In 1972, **Becky Schroeder** of Toledo, Ohio, was having trouble seeing while trying to do homework in her mom's car as it got dark outside. She began experimenting with phosphorescent materials that exhibited light without heat. Using phosphorescent paint to cover an acrylic board, she created the Glo-Sheet. Two years later at 12, she became the youngest female to be granted a U.S. patent.



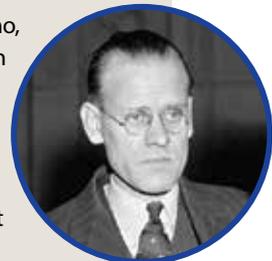
**11 YEARS OLD** One cold Bay Area evening in 1905, **Frank Epperson** unintentionally left a mixture of powder-flavored soda water with a stir stick in it on the porch. The boy awoke to a frozen treat on a stick that he originally called the Epsicle—and is now known as the Popsicle.



**12 YEARS OLD** Blinded by an accident at age 3, **Louis Braille** of Coupvray, France, created a way to make it easier for blind people to read nine years later. Frustrated by how the raised letters used on books for blind people were difficult to read through, he created a new system that uses a series of raised dots with each symbol representing a different character. This led to the development of a new standard for printing text for blind people.



**14 YEARS OLD** Plowing the field on a family farm near Rigby, Idaho, gave electronics prodigy **Philo Farnsworth** an idea. Looking at the vast display of evenly parallel lines, row after row, prompted him to envision an image that could be sliced into rows, back and forth, with each row transmitted in a continuous sequence. The idea for picture transmission led to the world's first fully electronic television in 1927.



**15 YEARS OLD** **Chester Greenwood** of Farmington, Maine, had trouble keeping his ears warm during the harsh New England winters. The boy took two pieces of wire and added soft fabric over them to cover his ears. Three years later in 1877, he was granted a patent for "ear muffers" that sold out in tens of thousands each year. He ultimately sold more than a quarter-million earmuffs.



# ADVICE FOR A YOUNG INVENTOR

KEEP A NOTEBOOK; DO YOUR HOMEWORK;  
KEEP IT SIMPLE; RESEARCH THE MARKET **BY JACK LANDER**

**I**f you are a born inventor—if you feel it deep down inside of you—you already know that inventing is easy. But following through with the steps that are essential in order to transform your invention into something that strangers will want, and pay money for, is not so easy.

If you don't want to go on to the next steps or can't because you lack the resources, that's unfortunate. If you decide to go ahead with any of your inventions—maybe filing for a patent, making a working prototype, and then connecting with companies that might be interested in buying or licensing your patent—you'll need persistence and resources. If you decide to produce and market your invention, chances are that you'll require a lot more money than you would if you were to license.

So much for general advice. Now I'll give you some specific rules to help you succeed.

**1 Keep an inventor's notebook.** This is useful whether you can immediately afford to proceed with your full invention plan or not. In your notebook, you can write descriptions of your inventions and draw sketches of them. Someday, maybe after you graduate from college, you can look back on the many entries in your notebook and realize that your research work on early inventions has enabled you to acquire knowledge and habits that may soon pay off.

Maybe you have seen pictures of Leonardo Da Vinci's notebooks; he was the genius who invented the helicopter 450 years before the first successful helicopter flew. But the point is that serious inventors keep a record of what they have invented, even if they never work on it further.

In fact, it's a good idea to write down the problems, needs and annoyances that you encounter, even if you don't have a solution. You'll find that by defining the



**Always search the market as a first step after recording your idea in your inventor's notebook. Many inventors think they have an original idea because they don't see their invention being sold in stores.**

problem, your subconscious mind will work for you to gather what you need. And perhaps you'll even solve the problem in a dream; it's not uncommon for inventors to invent that way. In any case, there are countless inventors and authors who had great ideas that they were sure they would not forget, and guess what? By failing to write them down, they forgot them and never again recalled them.

An essential related rule to your inventor's notebook is to always carry a pencil or pen and paper in your pocket, or some kind of electronic form to record notes. You don't have to look like a nerd unless you like the image. You'll be amazed by how often you'll want to record e-dresses and phone numbers as well as notes about inventions, or problems that need inventions.

**2 Read about famous inventors.** You may discover that you are a lot like Nikola Tesla. He has recently become more popular because a car is named after him. But when I was a kid, few people had ever heard of him.

Tesla invented a mechanical eggbeater and a hydraulic pump when he was a very young boy. As a man, he was the main inventor of AC (alternating current), transformers that enable the transmission of electricity for hundreds of miles, and the alternating current motor that powers our factories and our home appliances. Read also about Thomas Edison, who did not actually invent the light bulb. Twenty-three inventors before Edison had demonstrated the incandescent filament lamp. But Edison solved the problems that had prevented others from earning the title and became known as the principal inventor.

One of the most fascinating stories of invention is that of radio and innovators like Tesla, Guglielmo Marconi, Lee de Forest, Edwin Armstrong and Reginald Fessenden. Never heard of Fessenden? If it weren't for this Canadian's invention of amplitude modulation (AM), early listeners would have heard only dots and dashes instead of music. These fellows created a drama better than Harry Potter, including feuds and even a suicide. "Empire of the Air: The Men Who Made Radio," by Tom Lewis is an outstanding book that I highly recommend. You can purchase a used copy on Amazon.com for \$1.99 plus shipping.

By reading about how important inventions were created, you will be better able to work through your own discouragements and feel more confident about eventual success.

**3 Keep your inventions simple until you have the means—especially the money—to work on complicated inventions.** There is nothing as discouraging as running out of money after having worked very hard on a complicated invention.

Mark Twain worked with an inventor of an automatic typesetting machine. The machine was very complicated. It attempted to accomplish what human typesetters did by picking metal type, letter by letter, from a rack, and assembling it into words and paragraphs for printing the newspapers and books of the 1800s and before.

Ottmar Mergenthaler, the successful inventor of the Linotype machine, beat Twain's machine to the market. Although the race was neck to neck, the machine that Twain was financing kept on needing "just one more improvement," and it would work. Or so the inventor and Twain always thought. It never did work satisfactorily. As a result, Twain went bankrupt and had to move to Europe to avoid his creditors. Eventually he recovered, paid his debts, and moved back to the United States.

Chester Carlson, the inventor of the Xerox process that is the basis for our copiers and laser printers today, demonstrated the Xerox process in 1938. But the first practical dry copier, the Xerox machine, didn't make it to the market until 21 years later. The complexity and mystery of the process impeded financial investment, understanding, and serious acceptance of his invention. Motto: Keep it simple.

**4 Study the market before investing emotional energy and time on what you believe is novel.** It probably isn't. I don't mean to sound negative or discouraging, but nearly all of what we (I include myself in the "we") invent is a variation of something that has already been done. Most true novelty today comes from very high-tech discoveries, such as the MRI (magnetic resonance imaging) machine, or TV, computer, tablet screens, etc.

I don't mean to imply that there are no opportunities left. Successful great inventions disrupt the old way of doing things, and the disruption creates small, practical opportunities for inventors.

Kitchen gadgets, tools, garden implements and more are areas that still offer opportunities for inventions. But always search the market as a first step after recording your idea in your inventor's notebook. Many inventors think they have an original idea because they don't see their invention being sold in stores. Check Amazon.com.

If you invent something that is a new variation on an old theme and rush to a patent attorney, you'll pay a lot of money for a patentability opinion that will advise against filing a patent application. First, it is improbable that your version of the invention is novel. Even if it is, you won't find a company that will want to license your patent due to the enormous amount of products already satisfying the need. The competition is fierce. You would almost certainly be wasting your efforts, even if your version of the product is slightly better than many of those already being produced and sold.

Always, always, always, start with a market search.

Surprisingly, if there is no competition whatsoever, this may be almost as bad as extreme competition. If no one has ever thought of your kind of invention— not necessarily your exact features and design—chances are that there is no market, or a very small one. If you proceed, you will have to invent the market as well as your invention. And you will be scratching a place that doesn't itch.

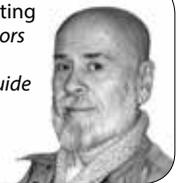
**5 Learn how to do your own preliminary patent search.** Don't file a patent application without a professional search, however. Searching is more of an art than it may seem. I'll e-mail you a copy of my instructions on how to do a search if you contact me at [Jack@Inventor-mentor.com](mailto:Jack@Inventor-mentor.com). Meanwhile, check out [google.com/patents](http://google.com/patents).

**6 Join an inventors club if you can find one near you, or start one.** Your local newspaper may run a free publicity article about your plan, and you'll be on your way. Once in operation, ask a local patent agent or patent attorney to join with you. You'll have sound professional advice and a source of more members.

**7 Courage and persistence are essential.** Most ideas don't pan out, so you need to keep searching and evaluating. You have to kiss a lot of frogs before you find your princess or prince. 🐸



**Jack Lander**, a near legend in the inventing community, has been writing for *Inventors Digest* for 20 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).



## FROM A PATENT ATTORNEY: LOVE IT, AND LEARN IT

My advice for young inventors isn't any different than it would be for any new inventor. Little is different, except for the required presence of a legal guardian to make the application for a patent on behalf of the minor inventor.

Really, the only thing that changes is the expectation that the advice will be followed. In my experience, motivated young inventors are far more likely to follow advice and guidance than their older, more experienced inventor colleagues.

That said, here are a couple of guidelines to follow:

**Find something you are passionate about.** This is important if you are a serious inventor and do not plan on giving up the first time an obstacle is placed in front of you, because setbacks outnumber the successes. Inventing takes a lot of time, so you need to love it to make it work.

Perhaps you are a tech wiz and your parents never seem to be able to pull you away from your computer or device of choice. If that is you, become inspired about how the machine works, how software works, and consider learning to write an app or something computer oriented. If, on the other hand, you love getting your hands dirty with grease and gears, go out into the garage and start imagining.

**Become an expert on the field of your invention.** The biggest mistake I see inventors make is rushing into a field of endeavor without understanding what they are getting into, or trying to solve a problem in an industry they don't know. For example, every new parent suddenly becomes an inventor in the baby products space, but how many have any idea about the onerous government safety regulations imposed on baby products?

A true inventor will learn everything he or she can about each aspect of the field, from the technology to the business to the competition. What is the market size? What are the channels of distribution? Who would want to purchase the invention, and for how much?

In a lot of ways, young inventors find this easier because they make no assumptions and treat this exercise with the same energy as working on the invention itself.

And kids, don't listen to any adult who says a child can't be an expert on a topic. If you want to learn how to play a video game, do you ask an adult? When I was a kid, I collected baseball cards and knew more about player statistics, history and baseball card value than any adult I knew because it was my passion and I spent endless hours collecting, reading, going to shows, and in card shops. If you have a passion and you have the desire, you can become an expert. —Gene Quinn



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# A BREATH OF FRESH AIR

DYSON'S NEW PURIFIERS REMOVE 99.97% OF PARTICLES AS SMALL AS 0.3 MICRONS

**In conceiving its most advanced line of purifiers**, Dyson Inc. followed a classic invention formula: It identified an ongoing situation or recent trend—in this case, both—that called for innovation, and went to work on a solution.

The World Health Organization says people now spend about 90 percent of their time indoors. That's where air pollution can be up to five times worse than outside, according to the U.S. Environmental Protection Agency.

Modern houses can contribute to the problem. Paul Dawson, Dyson's global category director for environmental control, says that although these homes are better sealed in terms of their construction, this also limits air circulation around that environment.

"Our starting point for purification has been real homes and real consumers," he says. "We needed to rethink purification in response, so our machine simultaneously purifies the air and projects a powerful airflow for whole room purification."

## 'Obsessive' engineering

Dyson air purifiers are uniquely engineered to cover the three elements of efficient air purification: efficient filtration, whole room air mixing and intelligent sensing. Company founder James Dyson says its latest line of machines, announced earlier this year, "is our most advanced purifying technology yet to ensure that the air in our homes is cleaner."

He notes that the company has been developing filtration systems for 25 years, starting with vacuums that manipulate airflow using sophisticated cyclones to capture pollutants. The firm spends \$8.8 million a week in the research and development department and plans to hire another 3,000 engineers globally by 2020. Now, "our obsessive approach to engineering has led us to take a different approach to purification."

Though air purifiers are known to help capture pollen, mold, bacteria and odors, some of them struggle to trap ultrafine particles and distribute cleaner air evenly around the whole room. The science behind the new Dyson purifiers is particularly "obsessive" as it relates to filtration.

After 10 years of testing and thanks to its second-generation filter (for which 365 prototypes were developed), Dyson purifiers now capture gases and 99.97 percent of particles as small as 0.3 microns. The company's engineers developed an improved compact filtration technology, the 360-degree glass HEPA filter, for particulate capture and an extra layer of activated carbon for improved gas capture. Each activated carbon granule inside the



PHOTO BY JEREMY LOSAW

filter is coated with Tris to increase the capture of formaldehyde. It's pleated more than 200 times to increase the surface area to 10.2 square feet yet remain compact and easy to position.

## Testing reveals strong need

Formaldehyde is just one of the harmful gases that can be emitted inside the house; the filter is also capable of trapping benzene, toluene and naphthalene. These benefits are the results of research that reveal the extent of indoor air pollution in U.S. homes.

Testing in the San Francisco and Los Angeles metro areas showed that 80 percent of homes measured had formaldehyde levels above the Chronic Reference Exposure Level, and 85 percent had trace amounts of two other Proposition 65 gases (Proposition 65 is a state law designed to protect against environmental hazards). The tests also revealed that an average of 5,000 mold spores per cubic meter were found in L.A.-area homes.

Dyson Inc. developed a machine that could trap these particulates and deliver a long-range stream of purified air, projected evenly around the room. This is where Dyson's whole room air mixing comes into play: Using its patented Air Multiplier technology, up to 52 gallons of air per second are drawn in and amplified at least six times to distribute purified air.

The system's intelligent sensing entails the detection of airborne pollutants and purifying air in the home; monitoring and maintaining your target temperature, and simultaneously reporting live indoor and outdoor air quality to the Dyson Link app.

The company's worldwide presence and impact are underscored by its recent \$412 million investment in the new Singapore Technology Centre, which houses development labs in order to marry the latest hardware and software expertise to develop connected machines of the future. 🏠

Details: [uspr@dyson.com](mailto:uspr@dyson.com) or 312-237-3972



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# Heated Lacrosse Stick Scores Big

ENVENTYS PARTNERS TEAM HELPS TEEN INVENTOR THROUGH PROTOTYPING PROCESS **BY JEREMY LOSAW**

**B**oth the weather and unsatisfactory results on the field were leaving her cold, and high school lacrosse player Samantha Wolfe felt she had to do something about it.

During the winter, the native New Yorker found her hands would get cold to the point that they would lose dexterity and her game would suffer. “I tried different gloves, but nothing seemed to keep my hands warm,” she says. “Whether it was during a game or practice, I was not able to play to my full potential as the numbness in my hands was hindering my playing.”

There was nothing on the market to help. So with the help of her father, Bruce Wolfe, they decided to create a heated lacrosse stick. Because they did not have much experience with product development, they reached out to Enventys Partners in April 2015 to help bring it to life. The result has been a pre-production prototype that is being tested at the highest levels of the women’s game.

into a particular technology or existing patents, the team had a blank canvas to build it from the ground up.

The process began by researching different heating methods. Heating the stick electrically was an obvious path, but I was concerned about how power-hungry heaters tend to be and was worried we would not have enough battery life. We also looked into chemical and phase change heating technology as alternatives.

To evaluate the different technology, we bought a bunch of different heating products, took them apart, and measured their heating capacity and power use. The main findings were that chemical heating means were not effective, and there were plenty of low-voltage heating devices that seemed feasible.

It was time to make a proof of concept prototype of the stick. My favorite heater from our research was a resistive copper film we found. This seemed to have plenty of heating capacity with just a few volts of electricity and could be rolled up to fit inside the stick. I sourced a small-diameter, high-powered lithium battery from Hobbyking.com that would fit inside the stick and wired in a mini-USB lithium charger from Adafruit. Using two of the heating elements, I wired it up and slid the assembly inside the stick so that one heater would be near the center of the stick for the player’s upper hand while the other was wrapped around the batteries at the butt end to heat the lower hand.

The prototype worked well right away. Despite not having any microcontroller to monitor and throttle the temperature of the heating element, it warmed quickly to a comfortable temperature. The only problem was that because there was no regulation of the battery power, the heaters were running at 100 percent power all of the time and there was only about 45 minutes of battery life.

## From blank canvas to progress

The product was loosely defined at the beginning of the project. Samantha had a great idea but had never made a prototype. The only requirements for the stick were that it heat up to about 90 degrees Fahrenheit in a few minutes, that the mechanism be as light as possible and fit completely inside the stick, and that it stay hot for 90-120 minutes of a typical practice or game. Because we were not locked

Samantha Wolfe, inventor of the Finger Fire, can keep her hands warm on the field now.





**“I tried different gloves, but nothing seemed to keep my hands warm. ... the numbness in my hands was hindering my playing.”—SAMANTHA WOLFE**

### Fine-tuning a solution

At this point, I solicited the service of our electronics guru. I showed him the prototype and the issues I was having. We decided to change the heaters to a ceramic unit and mounted them on aluminum sleds with wings that would spring tightly against the inside of the stick to get maximum heat transfer and keep them from sliding.

Our guru designed a new circuit board with a micro-controller and temperature sensor so we could monitor the heaters and throttle the output for better battery life. Then we designed a plastic part that would fit into the butt end of the stick and put the PCB in place while giving us access to the charging port. We made two of these prototypes, one for an aluminum stick and one for a carbon fiber stick. With a little bit of tweaking, both sticks worked great and we shipped them to Samantha to test.

The sticks worked well, and she got some great feedback from other high school players. She also continued to work on her business by trademarking the name Finger Fire for the product and filing for patents, which are set to issue before the end of the year.

Though high school players loved the product, she knew the concept needed validation from elite players. She began reaching out to college teams to see if they were interested in her idea and got two of the best Division 1 teams—Syracuse and Johns Hopkins—to agree to test them. Each school sent five sticks to EP office to get retrofitted with the technology.

In order to make assembly easier and more robust, we designed a thin plastic chassis to hold the batteries

and mechanically bridge the upper and lower heaters. We 3D-printed the new chassis and made more heater sleds and PCBs. After a small issue with the charging circuit on the PCB we got the problem solved, and the sticks were sent to each school before the weather warmed up this past spring.

### Higher-level approval

Samantha attended the training sessions and got real-time feedback on the sticks from the teams. Though the sticks were programmed to heat to about 90 degrees, both teams mentioned that they wanted more heat in the next generation.

Fall is here and Samantha is starting her first semester at Hamilton College in Clinton, New York, but refinement of the concept continues. The EP engineering team is making changes to the prototypes to get more heat without hurting battery life, and the updated prototypes will be delivered back to the teams in the fall to get a full cold-weather season of testing. Samantha has also received inquiries from 2017 national champion University of Maryland, and we will be making sticks for the Lady Terrapins. 📍

Samantha (center) poses with members of the Johns Hopkins women's lacrosse team.

The next-gen prototype featured a custom circuit board and updated heating elements.

**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/).





# Countdown to Blast-off

CONSIDER THESE KEY QUESTIONS BEFORE LAUNCHING YOUR INVENTION INTO THE MARKETPLACE **BY JOHN G. RAU**

**I**f you want to make money with your invention, you need to commercialize it.

Commercialization is an expansion of the word commerce, defined by Merriam-Webster as “activities that relate to the buying and selling of goods and services.” So commercialization is the process of introducing a new product or production method tied to buying and selling those goods and services and making it available to the public.

This is generally a multi-step process. Assuming that you have conducted sufficient market research and have determined that your new product idea has market potential and is potentially patentable, you are ready for that final commercialization step—the “launch” that signifies the entering of the product invention into the marketplace.

Now you need to address the following questions/issues: When and where will the launch be accomplished? Who will be your target? And perhaps most important, how will you launch?

## When to launch?

The answer to the “when” question depends on whether your new invention is protected and, if so, how.

If it is not patentable or you choose not to patent it, you can introduce it into the marketplace any time you want, so long as you are not infringing on someone else’s patent or patents. You may have some trademark or copyright protection, but, beyond that, introducing a non-patented product into the marketplace puts you at risk in the sense that anyone can copy it and sell it without your approval. In this situation, you don’t have exclusive ownership of your new product, which is what a patent would provide you.

This begs the question as to why you might want to patent your invention as part of your commercialization effort. Reasons for patenting include:

- Exclusive rights of ownership for the duration of the patent life, providing protection against copying.
- If your new product is unique and/or superior to other similar products in the marketplace, that would help establish you as having a strong market position vis-à-vis your competitors.

- Patenting provides an opportunity to license or sell the invention because you own it, thus creating the potential for licensing fees.
- You will be more readily able to attract investors and potential partners because you own something that might interest them.

## Next questions

The answer to the “where” question depends on where you believe your market and customers are located. If you are planning to enter the e-commerce marketplace, you don’t really care where they are located because the internet is basically worldwide. Many inventors with a new product or service would most likely start their marketing efforts in their local or regional area; larger business entities may enter a national market at once. If you want to enter the international marketplace, make sure you don’t infringe on any existing foreign patents.

To answer the “Whom to target?” question, you must identify the needs of your intended audience. You need to focus on the problem you are trying to solve, how many people have this problem, where they are located and how you reach them.

Your potential customers could be of two types—namely consumers, businesses or both. You need to research the demographics of each type. For consumer customers, necessary demographic information might include age, gender, location, income level, social class, occupation, education, buying habits, etc. For business customers, demographics would most likely include the industry or segment of an industry, location, size of firm, demand for products and/or services you plan to provide.

## How to launch?

The answer to this question is a function of these choices available to you:

- 1 Develop, manufacture, market, sell and distribute your new invention product yourself, forming a company to do this.** In essence, you are becoming a start-up business. Most inventors don’t pursue this approach because it requires a potentially significant amount of capital and some business know-how

## When and where will the launch be accomplished? Who will be your target? And perhaps most important, how will you launch?

regarding how to start and run a business, which is experience many inventors lack.

Independent of whether your new product idea is good, innovative and/or may fill a potential market need, most start-up small businesses don't survive beyond 3-5 years for a variety of reasons. In several studies conducted by numerous entities such as the Harvard Business School and results published in the Wall Street Journal, results show that 30 percent to 40 percent of high-potential U.S. start-ups fail and more than 95 percent never achieve their planned growth rate or date to break even on cash flow.

The top reasons for start-up failures include: ignoring customers, no market need (this is why market research is so important in planning your commercialization strategy), not the right team, poor marketing, ran out of cash, lacked a business model, product or service mistimed, and poor product or service.

### 2 Find a licensee for your new invention product.

In this situation you can expect that your new product should be at least patent pending as the result of having filed a provisional patent application or, better yet, having filed and or received a non-provisional patent. In order to attract potential licensees, you must own something that they would want. That is why having a patent (or one on the way) increases your chances of getting a successful license.

The biggest advantage of licensing is the lack of risk, because the licensee assumes the expenses related to marketing and all risks associated with the product. However, perhaps the biggest risk that inventors face when licensing is getting a license at all. In comparison to the above cited statistics regarding start-up success, much less information is available regarding the chances of getting a licensing agreement. Typical estimates in the literature suggest that the chances of success are perhaps on the order of 2 percent, but probably no more than 15 percent.

### 3 Sell all rights to the invention for a lump sum.

This is based on consideration of the revenue potential over the economic or patent life of the new invention. Remember that there are many factors, in



addition to those associated with product launch as discussed above, that affect the potential profitability of a new invention:

- Whether or not it is patented.
- Both the quality of the invention and the scope of claims of the invention if patented.
- Timing of entrance into the marketplace.
- Viability and implementation of a good marketing strategy and plan, as product marketability is what determines whether or not your new invention has what it takes to make it.
- Perhaps the experience of the inventor in terms of whether this is his or her first invention or has done this successfully before.
- Luck, as most likely the final outcome will be influenced by factors beyond the inventor's control.

In summary, the USPTO claims that about 3 percent of issued patents have made more money than the inventor invested. That claim includes issued patents from both the private sector and the commercial sector, so one would expect those patents issued to the individual inventor would have a much lower success rate.

So in order to successfully commercialize your invention, you will have to convince others of its value and viability. You will have to determine that people will buy your invention and that it will create profits. Understanding the issues associated with your new product launch will help increase your chances of commercial success. 📦

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





# USPTO Chief Nominee Has Strong IP Record

ANDREI IANCU MAY BE WELL RECEIVED IN SOME PATENT OWNER SEGMENTS, BUT NOT IN BIOTECH **BY GENE QUINN**

**W**hat kind of reception can Andrei Iancu expect from the intellectual property community, now that he has been nominated by the Trump Administration to be the next Under Secretary of Commerce for Intellectual Property and director of the United States Patent and Trademark Office? Possibly a mixed one, due to the companies he has represented in his legal work.

Very accomplished in IP and patent law, Iancu will come to the agency after most recently serving as the managing partner of Irell & Manella LLP, practicing full time with the firm's litigation and intellectual property practice groups. According to his firm profile, Iancu's practice with the firm focused on intellectual property litigation, but he has involved himself with all aspects of intellectual property practice—including patent and trademark prosecution, due diligence and licensing.

He has represented clients in technological fields including genetic testing, the internet, medical devices, therapeutics, telephony, TV broadcasting, video game systems and computer peripherals. In addition to his legal practice, Iancu co-teaches an advanced patent class at UCLA School of Law, where he serves as an adjunct professor.

His August 25 nomination is expected to eventually result in a smooth confirmation process by the Senate. Iancu will replace former USPTO Director Michelle Lee, who resigned June 6.

## Big TiVo settlement

Iancu has received recognition for his legal work since 2007, when Chambers USA first named him as a leading individual in the area of intellectual property and patent law; his bio states he has received that distinction every year since. Since 2011, Iancu has been listed by Intellectual Asset Management as among California's top patent litigators in its annual IAM Patent 1000 report. Similar distinctions have been proffered since at least 2010 by the *Los Angeles-San Francisco Daily Journal*, *Managing Intellectual Property* and *The Best Lawyers in America*. Last year, Iancu was named lawyer

of the year for firms with 75 to 125 attorneys by the Los Angeles Business Journal. This year, he was recognized as a BTI Client Service All-Star for exemplary client service by corporate counsel at large organizations.

One of Iancu's major successes during his practice as an intellectual property litigator was his work in securing large settlements for American tech company TiVo Corp. in 2012. That year, TiVo secured a \$250 million settlement from New York City-based telecommunications giant Verizon. Months before that settlement, Dallas-based telecom firm AT&T agreed to a \$215 million settlement to end litigation surrounding digital video recording technology. Iancu's bio states that total payments to TiVo from these settlements and others from Microsoft, Cisco and others exceeds \$1.6 billion.

The fact that Iancu represented TiVo, a patent owner, against big tech in Silicon Valley will undoubtedly lead to a warm reception in certain patent owner segments. Iancu and his firm have a reputation for suing big tech while representing patent owners, and he also served as counsel for San Jose-based touch feedback tech firm Immersion Corp. in a patent infringement suit against Japanese tech conglomerate Sony Corp. involving video game controller patents, which ended up netting \$150 million for Immersion in March 2007.

## The flip side

On the other side of the coin, Iancu's work in the biotechnology sector will undoubtedly lead to a cold, if not hostile reception. He represented Ariosa Diagnostics in patent litigation against Sequenom, the patent owner. The discovery at the heart of the innovation patented by Sequenom resulted in a test for detecting fetal genetic conditions in early pregnancy that avoided dangerous, invasive techniques that are potentially harmful to both the mother and the fetus.

The invention, which became embodied in U.S. Patent No. 6,258,540, claimed certain methods of using cfDNA. The patent taught technicians to take a maternal blood sample, keep the non-cellular portion (which was "previously discarded as medical waste"), amplify the genetic material that only they had discovered was present, and identify paternally inherited sequences as a means of distinguishing fetal and maternal DNA. The



Andrei Iancu has represented clients in a diverse array of fields.

claimed method does not preempt other demonstrated uses of cffDNA. The United States Court of Appeals for the Federal Circuit concluded that the discovery was “a significant contribution to the medical field,” but that did not matter insofar as patent eligibility was concerned.

The Sequenom decision was an enormous step backwards for many biotechnology companies, particularly start-ups. It is extraordinarily unlikely that biotechnology start-ups will support Iancu. He may even find himself challenged during his confirmation process by biotechnology companies, as well as the Biotechnology Innovation Organization. The extent of any opposition to Iancu by the biotechnology industry is not yet known.

### Mostly defense experience

According to data collected through IP litigation research company Lex Machina, Iancu has served as an attorney in 63 intellectual property cases at U.S. district courts, 60 of which were patent infringement cases. He was most active as patent counsel in 2011 and 2012. Despite the aforementioned notable wins Iancu helped secure on behalf of patent owners asserting their patents, he actually has more experience as defense counsel, representing plaintiffs in 18 cases and defendants in 40 cases. He has actually served as an attorney in seven trials at the Patent Trial and Appeal Board, representing either petitioners and patent owners in those cases.

Iancu was appointed to the managing partner position at Irell & Manella in 2012. Since then, the firm has been notable for achieving high levels of revenue per lawyer. During the 2015 fiscal year, the firm’s revenue per lawyer reached \$1.59 million. In an interview on the subject with Forbes published earlier this year, Iancu credited the intense lawyer training at Irell & Manella, including handing over responsibility and autonomy to recent hires early in their tenure at the firm. Although many firms with lower revenue per lawyer numbers were very excellent firms to Iancu, he did mention ways that firms could improve those numbers:

“I would begin with focusing the practice on areas where you know that you can deliver consistent excellence. You don’t have to be everything to everybody. And from there, there’s really no shortcut. You have to do what I mentioned in your first question, which is to bring in the highest-quality lawyers and then set them free to grow their practices and trust that they will. And in general, they will.”

Along with being a managing partner of a law firm with an intellectual property focus, Iancu has also appeared as an author on several papers regarding the patentability of software claims—a subject of much debate over the past two decades. In February 2008, the *Journal of the Patent and Trademark Office Society*

published a paper co-authored by Iancu titled “Code on Disks and Hat Tricks—Is Computer Software on a Medium Really Patentable? The paper notes that software has been “the black sheep of the patent family” even as it “plays a major part in the modern world and our present economy.”

Iancu is also listed as the lead author of an article published in the Spring 2010 issue of the *Northwestern Journal of Technology and Intellectual Property* under the title “Machines and Transformations: The Past, Present, and Future Patentability of Software.” The paper examined the effectiveness of the machine-or-transformation test to determine patent-eligible subject matter in light of oral arguments made before the Supreme Court in *Bilski v. Kappos*; the case was decided months later.

“Unfortunately, the test may well be throwing out the baby with the bathwater. Whatever the merits of various arguments regarding the patentability of business methods, the patentability of software processes, which are at the heart of innovation in our Information Age, at least deserves separate consideration.”

**One of Iancu’s major successes during his practice as an intellectual property litigator was his work in securing large settlements for American tech company TiVo Corp. in 2012.**

Iancu will also bring the perspective of a former engineer to the USPTO, having worked with Hughes Aircraft Co. before joining law school. During his time with that company Iancu received several awards, including the Malcolm R. Currie Innovation Award.

He earned his bachelor’s degree in 1989 in aerospace engineering from UCLA. He received his master’s degree in mechanical engineering from UCLA in 1990 and graduated from the UCLA School of Law with his Juris Doctor degree in 1996. While at UCLA School of Law, Iancu was a member of the Order of the Coif and received the Melville B. Nimmer Copyright Award. 📖

**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.





# USPTO Admits to Stacking PTAB Panels

SELECTIONS OF JUDGES WERE MADE TO ENSURE RULING THAT FORMER DIRECTOR WANTED

BY GENE QUINN

**I**n late August, the 717 Madison Place blog published a disturbing article detailing how the United States Patent and Trademark Office picks administrative patent judges for expanded panels.

According to admissions made by the USPTO during oral arguments at the United States Court of Appeals for the Federal Circuit, the selection of APJs for expanded panels is done with the express intent to ensure the ruling desired by the director.

In other words, the director stacks Patent Trial and Appeal Board panels with judges that are known to hold views on issues in alignment with the director.

### Argument excerpt

The case where this admission was made during oral argument was *Yissum Research Development Co. v. Sony Corp.* The pertinent part reads:

**USPTO:** And, there's really only one outlier decision, the SkyHawke decision, and there are over twenty decisions involving joinder where the –

**Judge Richard G. Taranto:** And, any time there has been a seeming other-outlier you've engaged the power to reconfigure the panel so as to get the result you want?

**USPTO:** Yes, your honor.

**Judge Taranto:** And, you don't see a problem with that?

**USPTO:** Your honor, the director is trying to ensure that her policy position is being enforced by the panels.

**Judge Taranto:** The director is not given adjudicatory authority, right, under Section 6 of the statute that gives it to the board?

**USPTO:** Right. To clarify, the director is a member of the board. But, your honor is correct –

**Judge Taranto:** But after the panel is chosen, I'm not sure I see the authority there to engage in case specific re-adjudication from the director after the panel has been selected.

**USPTO:** That's correct, once the panel has been set, it has the adjudicatory authority and the –

**Judge Taranto:** Until, in your view, it's reset by adding a few members who will come out the other way?

**USPTO:** That's correct, your honor.

So the USPTO admits that the director does not have statutory authority to adjudicate an issue after a panel has been chosen but argues that the director can assert administrative authority to intentionally select judges that will rule diametrically opposite to those judges originally assigned to the case, thereby stacking any panel the director chooses to achieve the result the director wants in any case.

The USPTO also made a similar, although not so direct, admission during oral argument in *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, which was decided by the federal circuit on August 22 of this year. In his concurring opinion, Judge Timothy Dyk (joined by Judge Evan Wallach) mentioned concern with the USPTO stacking PTAB panels but said the court did not need to reach the issue. "While we recognize the importance of achieving uniformity in PTO decisions, we question whether the practice of expanding panels where the PTO is dissatisfied with a panel's earlier decision is the appropriate mechanism of achieving the desired uniformity," Dyk wrote.

### Possible fallout

These admissions by the USPTO are stunning and scandalous for at least two reasons.

First, although APJs of the Patent Trial and Appeal Board are not administrative law judges, the Administrative Procedures Act does apply to PTAB proceedings. The federal circuit has applied the APA to PTAB proceedings strictly. The importance of this is simple: The APA demands decisional independence, which obviously is not happening when the director of the USPTO can stack a panel to achieve a particular desired outcome.

In *Nash v. Califano*, a case dealing with the Social Security Administration, an ALJ sued because he felt his judicial independence was being compromised by the agency. The case was dismissed by the district court

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but was reinstated by the United States Court of Appeals for the Second Circuit.

Certainly, if an ALJ has standing to file a lawsuit that challenges an agency interfering with his guaranteed judicial independence, it would seem logical to assume that all the patent owners who have lost at the PTAB where there were expanded panels would have standing to sue the USPTO. The discovery in such lawsuits—if they come, and I suspect they will—should be very enlightening.

Second, multiple patent owners have been harassed with large numbers of post-grant challenges. For example, Zond LLC was faced with 125 petitions. Some of these patent owners reached out directly to then-USPTO Director Michelle Lee to ask her assistance. Trading Technologies International, the owners of multiple patents on graphical user interfaces that should never qualify for covered business method review, have been hauled into CBM review after CBM review.

TTI asked Lee use her power—a power the patent office specifically and correctly acknowledges was given to the director in the America Invents Act—to step in and put an end to this harassment at the hands of multiple petitioners and a complicit PTAB. Lee refused, explaining she did not want to place her finger on the scales. That justification is laughable in light of the admissions about what was really happening inside the USPTO. Lee, who ran the USPTO in either an acting capacity or later as director from Fall 2013 to Spring 2017, was stacking PTAB panels when necessary to intentionally place her finger on the scale so that cases would come out as she wanted.

### Where is the fairness?

What exactly does the federal circuit envision as its role if it is not to oversee the USPTO? How could it be that in America, a court of appeals is made aware that an appointed government official is stacking the deck intentionally against patent owners and effectively in a unilateral way deciding the outcome of cases that the statute mandates be decided by a panel of impartial judges?

There is no impartiality at the PTAB, a fake court that has the trappings of a fair and balanced tribunal on the surface. The closer you look at the inner workings, the more you realize the tribunal is hopelessly broken and wholly incapable of being fixed. Given the lack of due process, the arbitrary and capricious rulings, refusing to consider timely submitted evidence, fundamentally misapplying the law of obviousness, determining that an MRI machine is an abstract idea, the PTAB ignoring the law, very serious conflicts of interest where judges decide cases dealing with former clients, missing pro-patent eligibility PTAB decisions from the office database, and now stacking PTAB panels to ensure outcomes, it is time to realize that the only viable solution is to disband the PTAB and search for a different answer. ☞



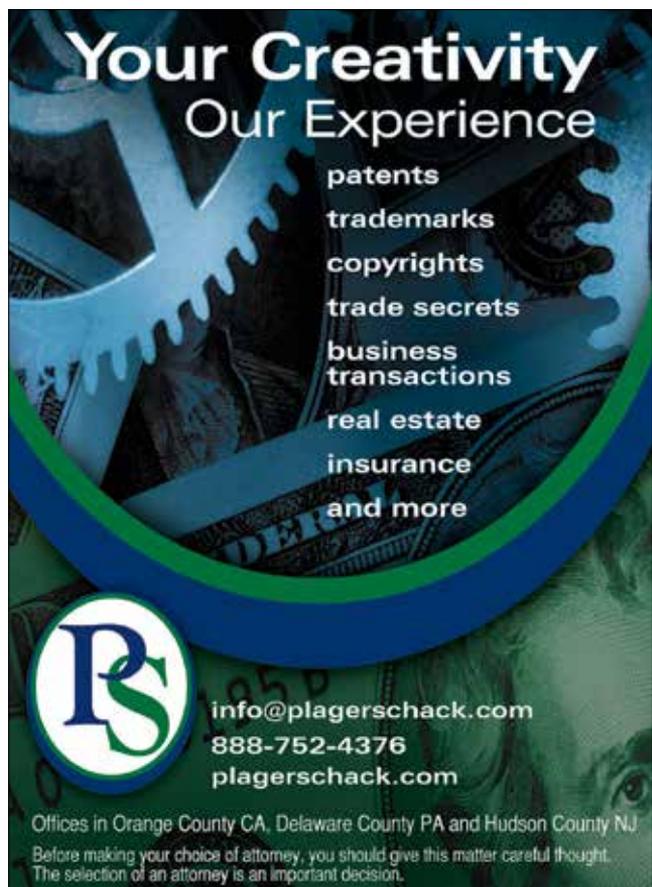
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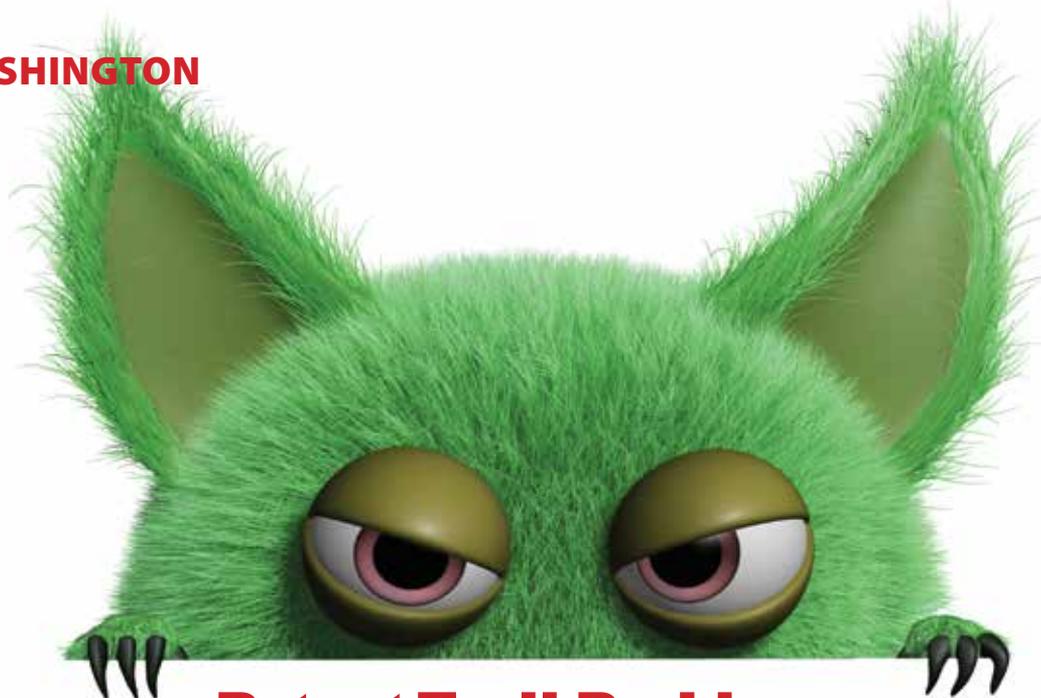
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# Patent Troll Problem a **MYTH**

BLAME THE NARRATIVE ON U.S. TECH FIRMS  
THAT MAKE UP THE INFRINGER LOBBY

BY GENE QUINN

**T**here are certainly some bad actors that abuse the patent litigation process and seek extortion-like settlements; there cannot be any serious discussion to the contrary. Those bad actors, however, are few in number—which you wouldn't know based on media coverage and the never-ending call for patent reform by those who prefer to take technologies they did not innovate rather than pay a reasonable royalty to innovators.

The media, Congress and the public have been misled with respect to the so-called patent troll problem. This has been accomplished by a masterful public relations campaign and a sadly disinterested and unengaged audience that buys sound bites to fuel their predetermined notions and agendas. The truth, however, is that this alleged problem has been created in significant part simply by gross over-definition of what qualifies one to be called a patent troll.

Yes, there are entities that define patent trolls as all patent owners that seek to enforce their patents through litigation or licensing. Does that make sense to anyone? If that is the definition of a patent troll, that means even those entities that are constantly lobbying for more patent reform and complaining about patent trolls are patent trolls themselves. Google and Uber are locked in a patent battle over self-driving automobiles, so does

that make Google and Uber patent trolls? What about General Electric, Apple, Samsung, Microsoft, IBM, Cisco, Oracle, Whirlpool, Kraft Foods, Caterpillar, Seiko Epson, Amgen, Bayer, Genzyme, Sanofi-Aventis, and Honeywell, among many others?

If you stop and think about how some define patent trolls and other bad actors, it becomes an absurdity of epic proportions. Obviously, seeking to enforce patents or licensing patents cannot make you a patent troll and does not mean you are a bad actor. And neither can the fact that you don't make anything—given that pretty much no American technology giant makes anything itself, instead preferring to have products made in China and elsewhere around the globe by others and then imported.

The truth is, America's technology companies that make up the infringer lobby have masterfully created the narrative of the patent troll. Even worse, they not only created the narrative but also created the so-called patent troll problem, with more than 80 percent of patents asserted by patent assertion entities originating from America's technology companies.

So not only is the infringer lobby responsible for the so-called patent troll problem, and not only has it slapped the patent troll label on innovators of the products and services that it takes (i.e., steals), it has successfully managed to somehow avoid anyone noticing that based on its own

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definitions, its members are patent trolls themselves! Although the message is horribly and intentionally misleading, it is impressive how successfully they have managed to insulate themselves while leading the media, judges and members of Congress by the nose as if they were wearing an ox ring.

Why would the infringer lobby want to lose the patent troll narrative? It is enormously successful and allows it to parade dubious reports that don't get any real scrutiny by the mainstream. Simply wave the patent troll flag; facts, truth and intellectual honesty no longer matter.

### Exhibit A: The TROL Act

There is little better proof that the infringer lobby doesn't want to do anything about the so-called patent troll problem than the failure of the TROL Act during the 114th Congress.

The TROL Act, which passed in House Committee, would have put a substantial dent in the true bad actor problem. But the infringers did not support the bill. Conventional thinking is that infringers didn't support the TROL Act because if they did, it would have passed—and they were looking for more comprehensive patent reform. But why not take what you can get, given that the TROL Act would have caused those bad actors to go away?

**We are long overdue for a realistic, substantive discussion about the good done by a licensing industry that facilitates transactions, rewards inventors and returns capital to the investors who supported the invention in the first place.**

The infringers didn't support the TROL Act because it would have passed and been successful in eradicating those bad actors they complain about so often. With the TROL Act passed, the infringer lobby wouldn't be able to get any of the other items on their wish list without the boogey man of the patent troll being available as the straw man foil.

If something like the TROL Act did pass, we could finally get past all of this nonsense about the egregiously bad actors that engage in nothing more than extortion-like activities. Perhaps then we could have a real discussion about patent assertion entities that do own solid patents on meaningful technologies outside the shadow of a caricature of a boogey man made up strictly for PR purposes and to achieve the unilateral dismantling of the U.S. patent system.

We are long overdue for a realistic, substantive discussion about the good done by a licensing industry that facilitates transactions, rewards inventors and returns capital to the investors who supported the invention in the first place. ☺

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# FTC Wins Preliminary Injunction Against World Patent Marketing

JUDGE CITES A 'FRAUDULENT SCHEME' **BY GENE QUINN**

**A**t the request of the Federal Trade Commission, the United States District Court for the Southern District of Florida recently issued a preliminary injunction against World Patent Marketing, an invention promotion company the FTC charged with being nothing more than a scam.

“The record supports a preliminary finding that Defendants devised a fraudulent scheme to use consumer funds to enrich themselves,” concluded U.S. District Judge Darrin P. Gayles. “Accordingly, the Court finds a preliminary injunction is necessary to maintain the status quo pending a trial on the merits.”

The FTC originally charged the operators of World Patent Marketing with deceiving consumers and suppressing complaints about the company by using threats of criminal prosecution against dissatisfied customers. The court temporarily halted the scheme in March, when the FTC filed a complaint alleging that the defendants charged consumers thousands of dollars to patent and market their inventions based on bogus “success stories,” and never delivered what they promised. Many customers ended up in debt or lost their life savings.

“Defendants made a series of misrepresentations to potential customers to induce them to purchase WPM services,” wrote Judge Gayles. “Even after customers made initial investments, Defendants continued making misrepresentations to induce them to purchase more services and to make larger investments.” The judge specifically detailed more than a dozen typical misrepresentations made by World Patent Marketing to customers.

Perhaps most egregious were threats and intimidation World Patent Marketing directed toward complaining customers, per Judge Gayles’ writing:

“When customers became frustrated and complained to Defendants that WPM did not fulfill its promises, many threatened to report WPM’s actions to the Better Business Bureau (“BBB”), offices of state attorneys general, the FTC, and other consumer agencies. In

response, Defendants—including (owner Scott) Cooper and WPM’s head of security—and WPM’s lawyers intimidated and threatened customers to prevent them from complaining and to compel them to retract complaints.”

## Alarming example

Judge Gayles recounted the events surrounding one particular customer. He wrote:

“After months of trying to receive a refund or services, she filed a complaint with the BBB. She received a letter from a second lawyer who told her that seeking a refund constitutes extortion under Florida law and, “since you used email to make your threats, you would be subject to a federal extortion charge, which carries a term of imprisonment of up to two years and potential criminal

**“Defendants made a series of misrepresentations to potential customers to induce them to purchase WPM services.” —U.S. DISTRICT JUDGE DARRIN P. GAYLES**

fines. See 18 U.S.C. § 875(d).” (That refers to Title 18 of the United States Code—the main criminal code of the federal government—Section 875(d).)

Among many other things, this extraordinarily detailed preliminary injunction freezes the assets of the defendants, their officers, agents, employees and attorneys, and all people acting in concert with any defendant. The injunction also prohibits the defendants and all aforementioned connected parties from making misrepresentations and making threats or intimidating anyone making complaints or comments about the products or services offered.

The injunction also orders the preservation of records and requires the defendants and those aforementioned connected parties to notify the FTC of any new business enterprise. The injunction will remain in place as the case is litigated. 📌

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## IoT Corner

Longtime Facebook executive **Andrew Bosworth** has taken over the company's consumer hardware development activities. The move comes during a time of increasing anticipation of a launch of IoT-enabled smart devices in the connected home space.

It has been leaked that the social media firm has been working on Aloha, a video chat device that will rival the Amazon Echo Show. It is rumored that this will be the first of a number of smart home devices to be introduced by Facebook in the near future.

The secretive Facebook hardware team in the mysterious Building 8 is also working on the virtual reality platform Oculus, acquired by Facebook CEO Mark Zuckerberg for \$2 billion in 2014.

—Jeremy Losaw

## Wunderkinds

Sixteen-year-old **Kavya Kopparapu** couldn't forget the eye problems suffered by her grandfather in India, and the diagnostic opportunities missed for tens of millions of people with symptoms of diabetic retinopathy. The disease can lead to blindness if unchecked. Kavya, who grew up in Herndon, Virginia,

teamed with 15-year-old brother Neeyanth and her high school classmate Justin Zhang to train an artificial intelligence system called Eye-agnosis (a smartphone app and 3D-printed lens) to recognize signs of diabetic retinopathy in photos of eyes and offer a preliminary diagnosis. Though the system is far from clinical adoption, early results are positive.



## What IS that?

**Cyle Ziebarth** admits he's seen too many 1980s ZZ Top videos with the spinning guitars. The Grants Pass, Oregon, native "just wanted to add something to that by being able to 'orbit' the guitar around yourself." When he thought to add multiple guitars, the result was a Lazy Susan. Ziebarth says the weight is "not too bad" because it's all on your belt, not over your shoulder. The guitars are attached by a couple of strap locks mounted to brackets that are bolted to the guitar and outer ring of the Lazy Susan. He's willing to make more of them if there is enough interest. For a demonstration: [youtube.com/watch?v=IGiF9v-LyJ4&feature=youtu.be](https://www.youtube.com/watch?v=IGiF9v-LyJ4&feature=youtu.be)

## 22 years old

**Thomas Edison's** age when he was granted his first patent, in 1869, for an electrographic vote recorder that allowed a "yes" or "no" vote using one of two switches. Washington congressmen were not interested in the invention. By the time he died in 1931 at age 84, the man described as America's greatest inventor amassed 2,332 patents, 1,093 of them in the United States.

## WHAT DO YOU KNOW?

**1** Which of these historic figures did not work as a patent examiner?

- A) Eleanor Roosevelt
- B) Albert Einstein
- C) Thomas Jefferson
- D) All worked as a patent examiner

**2** **True or false:** On Oct. 1, 1968, Fathers Dacian Batt and Maynard Tetreault were granted a patent for telephonic equipment in a confessional.

**3** Dr. Martin Luther King's "I Have a Dream" speech, copyright registered Oct. 2, 1963, was delivered in which city on August 28 of that year:

- A) Birmingham, Ala.
- B) Washington, D.C.
- C) Memphis, Tenn.
- D) Montgomery, Ala.

**4** **True or false:** Mr. Peabody, the TV cartoon dog from the late 1950s and early 1960s, invented the WABAC time machine with his adopted human son Sherman.



**5** Which came first: 12-year-old Louis Braille's invention of the reading system for blind people, or 16-year-old George Nissen's invention of the trampoline?

**ANSWERS:** 1) A. Jefferson is commonly known as the first U.S. patent examiner. Einstein referred to his three years in the Swiss patent office as "that worldly cloister where I hatched my most beautiful ideas." 2) True. The priests from St. Bernard, Ohio, had filed for the patent four years earlier; the idea didn't catch on. 3) B. 4) False. He invented the WABAC machine for Sherman, who was not an inventor. 5) Braille's invention preceded Nissen's by more than 100 years. The Frenchman devised his system in 1821; Nissen conceived his idea after a trip to the circus in 1930.

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