# Inventors DIGEST

**MAY 2018** Volume 34 Issue 05

# GAME-CHANGING SPORTS TECH

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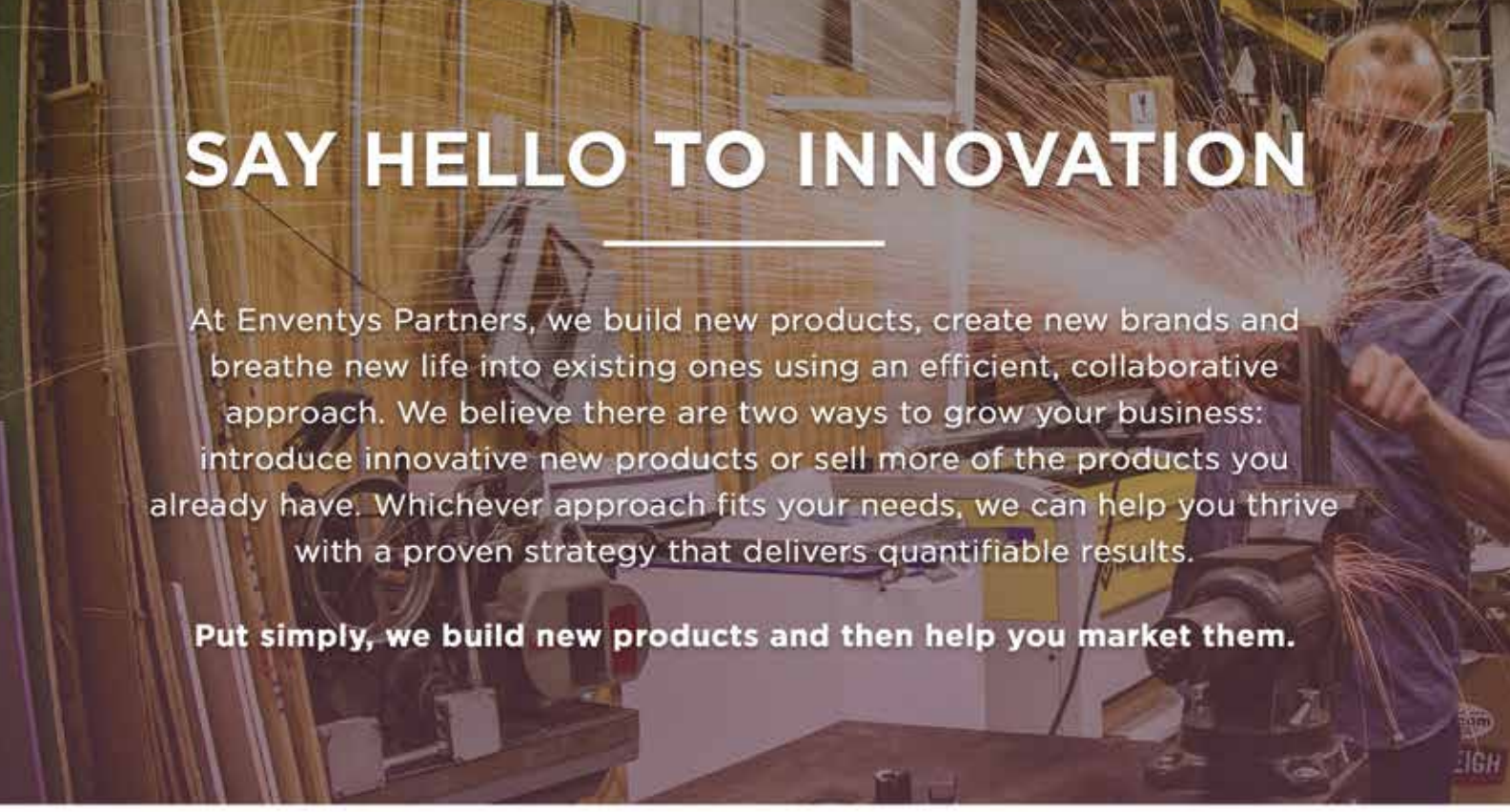

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# The Tech Monster Is Here to Stay

After every half-inning during games at Boston's Fenway Park—Major League Baseball's oldest stadium, dating to 1912—a stadium worker manually changes numbers from inside the scoreboard located at the base of the 37-foot-high left field wall known as the "Green Monster." He sits on his perch and peers through a small opening directly behind the scoreboard wall, watching the action and responding appropriately when the third out is made.

That area behind the wall has gotten a lot of attention, particularly as the years stack up and our society becomes increasingly distracted by the rapid-fire blur of technological advances. VIPs are given tours inside the scoreboard during games. Virtually every national TV broadcast from Fenway—and Chicago's Wrigley Field, which also has a manually operated scoreboard—devotes some time to the board and/or its operator. (By the way, the next time a Red Sox fan tells you that the scoreboard has been around for decades upon decades, you can politely set the record straight: The team quietly replaced the 1934 original with a replica during the 2001 All-Star break because the first one was simply falling apart.)

Embracing tradition is smart for MLB, given that its history dates to 1869. It's part of the game's charm and interest. But baseball isn't stuck in the past. As you'll learn in this month's *Inventors Digest*, the sport now obsessed with analytics has flexed its tech muscles with tracking systems that reveal complex metrics ranging from a ball's launch angle to exit velocity to spin rate.

It's part of a revolution that is consuming all sports, and there will be no turning back. The National Basketball Association's passion for the latest in technology has landed it at No. 10 on the World's Most Innovative Companies list (no other pro sports league appears). The National Football League has had nickel-sized sensors in players' shoulder pads since 2014 to track a wide variety of data. Even the National Hockey League, not generally characterized as a leader in sports innovation, last spring became the first North American league to allow in-game video review by coaches on the bench as a learning and teaching tool.

The phenomenon is so widespread that some question whether it is too prevalent, spawning an overreliance on machinery or altering the flow of games. For example, since MLB followed other pro sports' lead and instituted instant replay in 2014 to help decide calls on the field, critics have said the resultant delays in the action have slowed an already slowing game. But instant replay isn't going anywhere. Meanwhile, the sport is seriously considering an automated strike zone.

The sports package helps celebrate National Inventors Month, which *Inventors Digest* helped establish 20 years ago. On page 31, we honor this year's National Inventors Hall of Fame inductees as well as the 2018 Lemelson-MIT Student Prize winners. After all, sports, inventing and winners go hand-in-hand.

*—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.

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Photo courtesy of Zebra Technologies Corporation

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# BRIGHT IDEAS

## Revol

COLLAPSIBLE DOG CRATE + SNOOZE PAD

*diggs.pet*

Stylish and functional, Revol is simple to set up and collapse, has two doors, three access points and wheels for easy transport. It is made from polypropylene, a plastic that is approved by the FDA for food use; strong steel mesh wire; and light but strong high-quality aluminum.

The crate has a spacious interior with round edges, silver and graphite siding. It can be opened from three sides. The bottom can easily be removed for cleaning.

The small crate (which launched the Kickstarter campaign) and snooze pad will retail for $270, with a planned summer shipping timeline. The small crate dimensions are 28" long, 19.5" wide, 20.75" high. Larger sizes will follow.

## Experia ProLite

LIGHTWEIGHT SOCK, MINIMIZING BLISTERS

*thorlo.com*

Made for serious runners, the Experia ProLite is said to be up to 30 percent lighter than leading ultra-light running socks but still virtually eliminates blisters, chafing and hot spots.

Each section of the sock frame uses a different yarn configuration and fabric density to maximize performance requirements for serious runners. The sock features ventilated instep and side panels; light construction and padding; and NanoGLIDE virtually friction-free fibers to minimize discomfort.

Experia ProLites will retail for $16 a pair, with an estimated June shipping date for crowdfunding Rewards backers.

## MDrill One

NOISE-REDUCTION USB MICROPHONE

*thronmax.com*

Using proprietary VERTIGAIN® Technology—which moves sound waves vertically—MDrill One records up to 10 percent more clearly than other USB microphones.

The mic features five different recording modes—bidirectional, omnidirectional, cardioid, stereo and noise reduction—so users do not have to switch back and forth between microphones. The modes ensure the mic will not pick up background noise while users speak or record. The MDrill provides zero latency through a USB-C connection, so there is no lag time between when a user speaks and the mic records.

MDrill One has 7-color LED mood lighting at the bottom. It has a planned retail price of $259 with an estimated July shipping timetable.

**"Nothing in this world can take the place of persistence. Talent will not. … Genius will not. … Education will not."**

**—CALVIN COOLIDGE**

## Achilles

CHEF'S KNIFE

*achilles-knife.com*

The Achilles knife features an array of high-quality features that include a pinpoint-sharp blade and a unique handle. The full set has three knives, including a bread knife and paring knife.

The knife, made by Sternsteiger, won the 2018 German Design Award for best product design in the kitchen category. The patented "unibody" design is forged from a single piece of metal, featuring a striking hole right where the blade and handle meet.

Future retail prices will be €100 ($124) for the paring knife, €120 ($149) for the bread knife and €249 ($308) for the chef's knife. Shipping to crowdfunding backers is scheduled to begin in September.

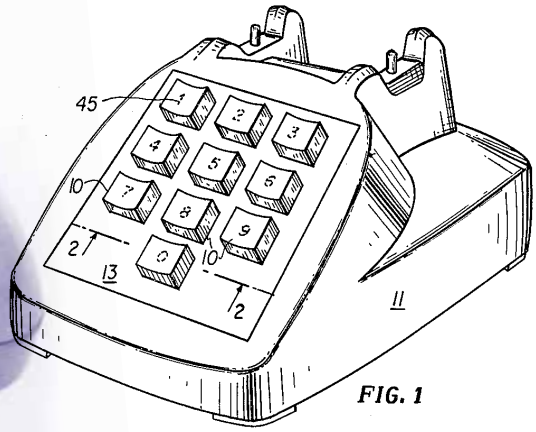




FIG. 1

# Changing the Phone Forever

PUSH-BUTTON FORMAT ADDED CONVENIENCE, ENABLED TODAY'S HIGH-TECH COMMUNICATION DEVICES

**IF SOMEONE** told you that the push-button telephone made its debut in the United States while John F. Kennedy was alive and before the Beatles came to America, your skepticism would be understandable.

After all, the rotary phone lingered for the better part of a century following its 1892 debut. The push-button phone didn't start catching on in American homes until the late 1970s and wasn't in the majority of homes until the 1980s.

It wasn't even ingrained in popular culture in the 1960s and '70s. You never saw Maxwell Smart using a push-button shoe phone on the TV classic "Get Smart" (1965-70); never saw Ernestine, the goofy phone operator on "Laugh-In," using a push-button phone during that show's run (1968-73).

Yet on November 18, 1963—with Kennedy visiting Tampa and Miami, four days before his assassination in Dallas—the Bell System introduced the first commercial push-button telephone. It was installed in Carnegie and Greensburg, Pennsylvania, near Pittsburgh, after several years of testing.

The phone used the "dual-tone-multi-frequency" technology under its registered Touch-Tone® mark, replacing pulse dialing with the tone dialing that has become the standard in all telephones and mobiles today.

## Slow acceptance

The concept of the use of push-buttons in telephony dates to the 19th century. A *London Times* report originating from Paris and dated March 8, 1887, references a "micro-telephone push-button," but the device was experimental and apparently not an automatic dialing system as understood later. The first push-button telephone as part of an automatic dialing system was invented by Bell Telephone in 1941, but those models were only prototypes.

Bell seemed to anticipate the public's reluctance to switch to a different format after some 70 years of rotary dialing. At the 1962 Seattle World's Fair, it had enacted an interactive display to show the advantages of a push-button phone.

## Although introduced in 1963, the push-button phone wasn't in the majority of U.S. homes until the 1980s.

The news media presented some cautions. In a November 1960 article in Britain's *Telcoms Journal*, writer W.J.E. Tobin explained: "Push-button devices are, of course, quicker to operate than the dial which is the standard device over the whole world at present, but it does not follow that calls would be connected more quickly, as this is determined basically by the type of switching equipment used in the exchanges and the type of signalling equipment used between exchanges on multi-link calls.

"This exchange and signalling equipment exists in large quantities in any country that is reasonably well developed telephonically, and much depends on its nature whether it is economic or practical to make modifications to take advantage of the possibilities of push-button sending."

By the early Seventies, industry observers were warming to the notion even if the general public was still slow to embrace it: "Its simple touch action has a number of advantages over the rotating dial," wrote M.T. Bark in the summer 1972 Telcoms Journal. "It can be used with less effort and is very much faster to operate, making it easier for long STD numbers and even longer international (ISD) numbers to be keyed before the fallible human memory has forgotten them. This should reduce the risk of dialing error, one of the most common causes of misrouted calls."

### 20 years of swift change

Until the 2000s, the public was consistently slow to embrace change with phones in general. Although the first cell phone call took place in 1973, it wasn't until roughly the turn of the century that more than half of Americans owned a mobile phone.

Today, 95 percent of Americans own a cell phone of some kind, per pewinternet.org. Many of those are smartphones that enable full internet access and numerous apps to help you perform any number of tasks. For the most part, you can't even use a rotary phone today without the help of an analog-to-digital converter.

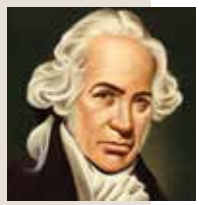
The portability of the phone has also evolved, with the popular flip phone of 20 years ago gradually being replaced by today's devices that resemble a small tablet. Both designs are an ideal fit for the push-button format; future iterations will be as well.

For some, the general obsolescence of rotary phones comes with some regret—not just because they represented a simpler time, but because in some places they were considered a design statement. Per gizmondo.com:

"It's likely that many of you have never used a rotary phone: heard the pulse take the place of the tone, mustered your patience as the dial rolls back it its reset, cursed a number with so many zeroes in it because it takes so long to call. And that's a shame, because rotary phones are awesome: physical of a time when the home phone was home decor." ◆

*—Reid Creager*

## INVENTOR ARCHIVES: MAY

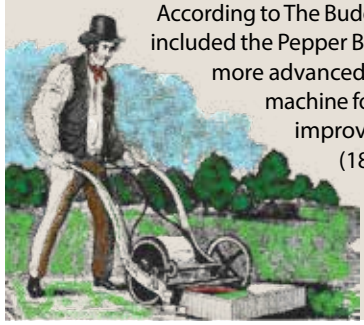


**May 14, 1686:** **Daniel Gabriel Fahrenheit**, who invented both the alcohol and mercury thermometer, was born.

Fahrenheit developed the temperature scale named after him that is still commonly used in the United States. Among his discoveries were that water can remain liquid below its freezing point and that the boiling point of liquids varies with atmospheric pressure.

**May 18, 1830:** **Edwin Beard Budding** of England signed a licensing agreement for the manufacture of his invention, the lawn mower.

Budding did not live to see the full potential of his inventions, especially the lawn mower. Only a few thousand mowers had been sold when he died at 50 in 1846.



According to The Budding Foundation, his other inventions included the Pepper Box pistol (1827), alleged to have been more advanced than Samuel Colt's patent of 1836; a machine for cutting vegetable substance (1840); improvements to the "Carding" machine (1843) used in the wool industry, which are still evident in today's machines, and a screw adjustable wrench (also 1843) that is still produced today in a similar design.

# 10 Questions with...

## ERIN BORGES OF GOGO GIFT BAGS

**BY ELIZABETH BREEDLOVE**

During my recent sit-down with **ERIN BORGES**, entrepreneur and inventor of GoGo Gift Bags, she discussed how she has used social media to build her invention into a successful product found in major retailers that include Target and Bed Bath & Beyond.


The GoGo Gift Bag features tissue paper built into the bag, hiding its contents.

**Tell me about GoGo Gift Bags. What inspired you to create them?** I wanted to create a gift bag that would be more efficient, create less waste, and save time and money—while looking more beautiful than what was already in the market. For me personally, as a busy mom, I am always on the go and would frequently find myself headed to a party but had to stop to pick up a gift and purchase a gift bag and tissue paper on the way. The cost was usually nearly double the price of the gift. So I wanted to create a better solution, and worked on perfecting a prototype that would include tissue paper built into the bag that would bloom across the top to conceal everything inside—a real all-in-one solution!

**What was it like, to take this from an idea or concept to an actual product?** I worked hard on creating a prototype with the excess tissue paper and gift bags I had lying around at home. I worked on perfecting the built-in tissue design and then tested it on my husband. If he could bloom it, anyone could! It was at that point I researched patent attorneys and events that could showcase my product. The National Stationery Show in New York City was the perfect place to start, and Cooley was the intellectual property firm I chose to write my utility patent application. I sourced quotes from a few factories until I was satisfied with the result and then began the process to create packaging, obtain SKUs and establish a relationship with a freight forwarder.

**At what point did you begin promoting the gift bags online or on social media?** As soon as the non-provisional (patent) application was filed, I began building my booth for the National Stationery Show in New York City. It was quite the adventure getting there, but I arrived with my best friend in tow and 500 samples in hand. I was nominated for best new product at the show and quickly created a buzz about a cool new gift bag that blooms! At the trade show, I met several big names in the stationery industry, but one stood out head and shoulders above the rest: IG Design Group. IG Design Group is a global leader in the stationery industry, and I was elated to be in their headquarters just two weeks after the trade show. We discussed the opportunities that we provided each other and formed a partnership months later. After I partnered with IG Design Group and The LANG Companies in 2016, we launched the GoGo Gift Bag website and social media pages to begin sharing the new 2017 designs and where they could be purchased.

**What initially prompted you to begin promoting the gift bags on social media?** Sometimes, all it takes is one person sharing with another person and then, the next thing you know, more people are talking about it. Social media is a great way to leverage meeting new people, sharing ideas and wonderful new products!

**What social network/networks did you start with, and why did you choose to begin with those?** I started with Facebook and Instagram because it was what I was most familiar with, and because I have my own personal page, I knew I could cross-post and share between both my personal profile

> "I created business pages for GoGo Gift Bag and then cross-posted between my personal page as well." —ERIN BORGES

and GoGo Gift Bag pages. I also became more active in women's groups on Facebook and found sharing there provided tremendous support, feedback and relationship-building.

**How did you go about using social media to market your products?** I created business pages and then cross-posted between my personal page as well because I really wanted to share my story with my friends, family and followers. … It also provided a resource anyone can access just for product information.

**Which social network has provided the most success?** I'd say the majority of the interaction has been through Facebook. I also decided to place my marketing dollars at key events rather than online, so the greatest source of ROI for me has been at industry trade shows. This year, I am expanding my efforts with a more elaborate social media campaign to educate the consumers on GoGo Gift Bag to generate awareness and demand for it in the mass market. I'm thrilled to have reached mass retail (Target, Bed Bath & Beyond, Cost Plus World Market) in such a short amount of time, and now I'm focused on maintaining those accounts and gaining new ones domestically and overseas. With the new NFL, NBA, MLB, NHL and college designs coming out June 2018, it should be a year full of smashing goals.

**How did you grow your platforms in the first year?** Engagement was a little slow at first, and that's expected. I think what helped was sharing my personal story because it motivated other entrepreneurs and moms like me. And consistently engaging with my audience, letting them know about the new designs, launching on HSN and Target, meeting other entrepreneurs like Daymond John—you just have to keep sharing your story and what's happening next.

**What has been the biggest surprise for you as you use social media to promote your product?** I think the overwhelming amount of positive support for GoGo Gift Bags and seeing how many people wanted to help find them in Target stores and then share their story has been the biggest surprise.

**What advice would you have for someone else looking to use social media to promote their invention?** Go for it! It's a great way to connect with like-minded entrepreneurs and your target demographic. Try to find other groups or products or entrepreneurs to help build each other up across social media.

**Elizabeth Breedlove** is content marketing manager at Enventys 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.

## 3 KEY TAKEAWAYS

1 **Protect your intellectual property, first and foremost.** As soon as Borges had a prototype for her gift bags, she began researching and choosing an intellectual property firm to help her file a patent. This step is critical before you begin promoting your invention. Once your idea is out in the open, there is no getting it back, so always make sure your intellectual property is protected before you take it to the public.

2 **Use your personal accounts in addition to business pages or profiles.** She used her personal Facebook and Instagram accounts in addition to the GoGo Gift Bags pages to promote her product. This allowed her to reach even more people. With her personal account she could focus on sharing her story, and she was able to use the business pages to share her product.

3 **Use social media to connect with other entrepreneurs and inventors.** By joining women's groups on Facebook and seeking opportunities to build relationships with other female entrepreneurs and busy moms, Borges found a group of people invested in her success who helped share her story with their connections.

PHOTOS COURTESY OF ERIN BORGES

# Our Opportunities Lie in Change

AS INVENTING TOOLS EVOLVE, WE CAN UTILIZE A TECHNOLOGICALLY RICH ERA **BY JACK LANDER**

**ARCHEOLOGISTS** recently discovered what they believe to be stone tools shaped by humans about 3.3 million years ago. The discovery in Kenya appears to set an earlier date for the first humans, Homo habilis, (handy man), which were previously thought to have invented stone tools about 2.6 million years ago. The tools were made by knapping—that is, the striking of the stone workpiece with another stone. The residue of chips found at the site proves that the stones were hand formed.

Skip ahead to about 100,000 years ago, the beginning of modern Homo sapiens, the "wise and knowing"—us. This is the era in which we learned refined speech, invented the bow and arrow, migrated out of Africa, and spread to the four corners of the world.

The last 10,000 years of this era, we left the life of hunter-gatherers and settled down as farmers. We also discovered bronze as a more versatile material for making tools than stone. This occurred about 4,500 years ago in China, and 4,300 years ago in Europe. About 2,200 years ago iron mining and smelting was developed, and iron—and eventually its more durable alloys of steel—took over as the superior material for tool production.

## The rise of automation

The progression from crude stone tools to metal chisels, hammers, knives, axes, etc., was incredibly slow. For about 98.6 percent of our human history, we were "stone age" humans. Nowadays, the progression is even more rapid. The harnessing of steam, then electricity, made the use of motors for forging, milling and turning, the basic early means of shaping metals.

In 1804 Joseph Marie Jacquard, a Frenchman, invented punched card control of looms. Thus began the thinking of how to control machinery automatically. Punched cards could not be adapted to lathes and mills due to the more powerful tool driving forces that were needed. Around 1870, automated lathes began to be controlled by cams and produced turned parts without the continuous presence of a human operator.

In the mid-1950s, punched card numerical control began the automation of milling machines. This system was rapidly superseded by computerized numerical control (CNC)'machining. Today, so-called "machining centers" not only mill and turn metal and plastic parts, they change their own tools.

As automated machinery gained use in modern manufacturing, the factory of the future was envisioned as having only one human and a dog. The human was there to report any emergencies, and the dog was there to make sure the human didn't touch any of the machines. (OK to laugh out loud.)

## Cultivate fertile fields

So, the incredibly slow progress from stone tools to metal tools is offset by the amazingly rapid advance from manually made metal tools to tools and other items made by machines that are mainly unattended by humans. What is next?

We are well into the conversion of assembly methods from manual to robot. A small assembly-type robot today sells for $25,000 and up. The robot does not take breaks, need a lunch hour, come in late and leave early, and does not need health insurance. Its cost is depreciated at a rate of about $1 to $5 per hour, depending on size and number of hours in the work week. I'm not a Luddite, but I can't help but sympathize with those of my fellow humans who will be replaced on assembly lines in the near future. We must adjust, just as all of the workers of the past 300 years adjusted when machinery and other forms of automation took over their jobs. But how?

We are inventors. Our opportunities lie in change. The older and more settled a field, the greater the probability that the lucrative inventions have already been cherry-picked. We are left with the dregs, which may be worth pursuing because established companies aren't interested. What is penny-ante to them

**The older and more settled a field, the greater the probability that the lucrative inventions have already been cherry-picked.**

can be a living to us sometimes. What changes can we expect?

We may prefer fields of change, such as birdhouse technology or do-it-yourself tools. But according to E. O. Wilson, author of "The Meaning of Human Existence," the fields that we will see advancing rapidly are nanotechnology and robotics. (Wilson also adds genetics, but that is a bit remote from the kind of inventions most of us are qualified to work on.)

Now, the technology in each of these fields is demanding of formal education—namely, mechanical, electronic and computer engineering. Lacking education in one or more of these fields, your option is to watch these fields, and spot the changes that lie just outside of the most demanding technical aspects.

### The need for accessories

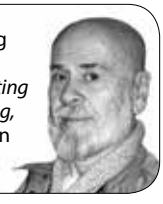
Robots are great manipulators of things they can grasp, but they aren't sold with a stock hand in place. They are amputees at the wrist. Grasping tools may be furnished by the robot maker or its distributor, but the infinite number of items the robotic "fingers" must grasp cannot be furnished by a one-kind-serves-all grasper. And the profits for the manufacturer are in the big-ticket robots, not the accessories. Accessories may be a nuisance to a distributor and even an impediment to sales.

This leaves a field for clever inventors to enter and become experts. How does a clumsy clamp the size of one's hand pick up a washer for a Size 6 screw and place it on the screw? Should the clamping action be driven by compressed air, electromagnet, or hydraulics? The design of mechanical fingers, clamps or grippers—whichever term you prefer—means that we have to affiliate with those who sell robots and help them become successful by inventing the accessories that they don't offer to their customers. Maybe that's more than you feel comfortable doing, but it may also be a prediction of the future of inventing.

Even though I know a bit about robots and their applications, I'm not suggesting that this is the only area of opportunity. My point is more about keeping up with change—in fact, dedicating time and money to learning about a field that interests you. Getting involved leads to the identification of opportunities. You often start on one path and find an interesting side road that needs your kind of inventiveness.

Gone are the days of stone tools. Things are moving at warp speed. Read, study and investigate. But if you feel that you must visit a robot-controlled factory, make sure the dog is muzzled before you enter.

**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.



# Power Ranger

LONGTIME U.K. ENTREPRENEUR DEVELOPS OFF-GRID SOLUTION FOR OUTDOORS **BY JEREMY LOSAW**

The Infinite Air portable wind turbine generator weighs less than 1.5 lbs. It breaks down and folds into a tight package that easily fits in a backpack.

**WHO BETTER** than a person named Jerry Ranger to find an off-grid power solution for hikers and campers?

An avid outdoorsman, entrepreneur and former Royal Marine, Ranger has addressed a need for replenishable power outside of urban areas. Although recharging is often easy in our world of smartphones and battery-powered devices, with power outlets and charging stations readily available, it is a challenge in remote outdoor areas.

When Ranger was the CEO of Powertraveller—a company that designs and manufactures battery power banks and solar recharging systems—he kept hearing customer feedback that the power banks were too heavy and cumbersome for serious outdoor activity. "I soon realized what actually a lot of people wanted to do was to be able to generate their own power on a micro level," he recalls.

This can be done with solar panels, but they have a lot of drawbacks. Most notably, they are only useful in times of low ambient sunlight. "So we started having a look at the wind turbine," he says—an approach that kicked off a three-year development program for what became the Infinite Air.

## Build challenges

The Infinite Air is a high-performance portable wind turbine generator. It weighs less than 1.5 lbs. and breaks down and folds into a tight package that easily fits into the backpack of any hiker or camper. The three-blade turbine comes with a stand that allows it to be placed on uneven terrain, and includes a charging cable with a Lightning connector for Apple products and a micro USB for Android and other devices.

The Infinite Air requires just 15 mph wind speed to generate the five volts of electricity for charging; it can supply up to two watts of power even at low air speed. Combined with the sold-separately Infinite Air Clamp, the turbine can be securely fastened to poles and branches or be used on boats.

Wind power sounds like an obvious source for renewable off-grid power, but it has its challenges. With more than 25 years' experience in the field of off-grid power, Ranger—the oft-awarded founder of U.K.-based off-grid power company Texenergy—is an expert at solutions.

The first turbine prototype that he created was an anemometer type, which uses blades that look like tablespoons and is commonly used for measuring wind speed on weather stations. He combined this with a battery charger and sent it to Bolivia for testing with renowned climber Kenton Cool, who has climbed Everest 12 times.

"He came back and he said, 'Look, you put a battery in here and it's great, but it's still too heavy,'" Ranger says. "So we then went back to the drawing board. We decided we needed to go to blades."

Developing such a system was a better solution but provided a much larger technical hurdle. In order to further develop a blade-based turbine, he employed the help of an aeronautical engineer on the design. The result is a clever blade design that uses two-thirds of the blade length to generate the power, while the other third stalls the flow over the blades at high speed to create extra drag and keep the system from over-speeding in high winds. The system also required a low drag and lightweight gear train to efficiently transmit the power from the blades.

PHOTOS COURTESY OF TEXENERGY

Ranger was working on other products, including a high-performance, hand crank charger. He was able to leverage the learnings from that product and apply them to the Infinite Air, and the product started to come to life—but only after approximately 40 major prototype iterations to perfect it.

## Protecting and perfecting

Patents are an important part of the product strategy for Ranger and the Infinite Air team. He has filed a number of international patents to cover the technology, some issued and some still in process. He also believes that building brand confidence is crucial in the marketplace.

"Once people start using it and they can see it...the quality of the build and the design and everything else to me is paramount," Ranger says. "The barrier to entry is reasonably high. It's not a cheap thing to develop."

He engaged a manufacturing partner early in the design process to help further the product. Ranger was fortunate to have spent a number of years in manufacturing towns in Asia in his previous career, so he was comfortable navigating the nuances of overseas manufacturing.

He engaged an ODM (original design manufacturer) within the first year of development, which helped the velocity of the project tremendously. The Infinite Air is a fine balance between weight, performance and price (about $137 in U.S. dollars; the clamp is about $50). His manufacturing team was able to add helpful expertise to develop as well as manufacture the product.

The Infinite Air officially launched at this year's Consumer Electronics Show in Las Vegas, and is rolling out at a number of other international trade shows this year. However, it was used effectively by extreme outdoor athletes in the toughest conditions for months before the launch.

The product, which has garnered rave reviews, is the flagship product of a line of off-grid power accessories offered by Texenergy. The team is currently designing an off-grid water turbine, as well as other top-secret new products to keep campers and hikers powered up.

*Details: texenergy.co.uk*

**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/.

**"I soon realized what actually a lot of people wanted to do was to be able to generate their own power on a micro level."**

**—JERRY RANGER, TEXENERGY FOUNDER**


# A Magical Diversity Tour

## INVENTOR BOOK FOR CHILDREN SHOWCASES AFRICAN-AMERICANS' MANY CONTRIBUTIONS

**BY EDITH G. TOLCHIN**

**HAVING SPENT** the past 20 years writing about inventors and inventions, it's rare that I stumble upon an industry-related book that's worthy of notice. An inventor book for children is even more uncommon; an inventor book for children that also nurtures their imagination is golden!

"Jaxon's Magical Adventure with Black Inventors and Scientists," the first book of the "Just Imagine…What if There Were No Black People in the World?" series, takes readers on a tour of Jaxon's home while he learns about African-American inventors and scientists through common household inventions.

The lures for children, as author **TAMARA SHILOH** states, are "a magical necklace and magic words (that) are the keys to Jaxon's adventure."

It's been more than 50 years since I've read a children's book, so I was thrilled to interview Ms. Shiloh. A mother, grandmother and great-grandmother, she and her project are a perfect subject for this Mother's Day month.

**Edith G. Tolchin (EGT): How did you get the idea for the book?**

**Tamara Shiloh (TS):** I received an email about 18 years ago with a list of African-American inventors and scientists who I had never heard of before. I was pretty intrigued by it. I had recently learned how to use Microsoft Publisher and decided to write a little booklet for my grandson. It was close to his birthday.

Before I gave it to him, I decided I'd better check out the information, since I didn't recognize any of the names on the list except George Washington Carver. So I checked the internet—but because it was so new, I thought I'd better check the library, too. I went to the library and found a few books and was astonished at how long the list was. I was happy and (angry) at the same time. I couldn't believe there were so many African-Americans who had done so many great things and nobody knew about them.

So I decided to write a children's book about them. When I saw how big the book would be, I decided to break it up into a series.

**EGT: Please tell us about your background.**

**TS:** I was born and raised in Richmond, California. I got the entrepreneur bug after working about 10 years. I attended junior college and got my associate arts degree in small business administration. I had a consulting firm working as an affirmative action consultant for the City of Richmond and then various other businesses in small business consulting.

I started writing when a friend asked me to create a flyer for his business. Then I started writing brochures and newsletters for small businesses and organizations. Around this time is when I decided to write the children's book series about African-American inventors and scientists.

In 2005, I put down the children's books and started writing content for a website and a few magazine articles. I published a magazine for minority women while living in Las Vegas. I was the editor for an online magazine also, and wrote newsletters for various organizations. I lived in Las Vegas for eight years.

I returned home to Richmond. In 2016 I retired as an HR manager and decided, with the coaching of my daughter, to pick up the children's books again and rewrite them, making them more engaging by adding a bit of magic and fantasy.

**EGT: Have you ever invented anything?**

**TS:** No.

**EGT: Have you written any other books before?**

**TS:** I wrote a children's book about Kwanzaa and a few other black history booklets about African-Americans first, and African-American women inventors and scientists.

**EGT: Did you have children serve as beta readers?**

**TS:** Yes, I asked a few children to read and let me know what they thought about the book. They enjoyed reading it. All of them liked the idea that Jaxon can see and talk to the inventors and scientists.

PHOTOS COURTESY OF TAMARA SHILOH

**EGT: Who is the handsome young model representing Jaxon in the book?**
**TS:** That little guy is my great-grandson, Jaiden. The other characters are pictures my illustrator found.

**EGT: Did you self-publish this book? Have you had any help with PR?**
**TS:** Yes, I self-published. I've thought about using a traditional publisher—but I didn't want to haggle over using a different illustrator. I like the way Jo Ann Kairys illustrated the book digitally. I want to continue using that type of illustration.

I use Ingram Spark, a print-on-demand publisher. They have distribution to bookstores, schools and libraries, and they do really good work.

As for PR, I have a friend who is helping me with the social media. But for the most part, it's just me. I've learned a lot over the last year or so, and there's a lot of work involved in getting the word out about your book.

**EGT: Tell us about other books you are writing about inventors.**

**TS:** I also created a journal, activity book and coloring book. I wrote these to keep the kids engaged with the information they read. I figured the companion books would keep them engaged for a while longer and/or make them curious enough to want to learn more about black inventors and scientists. I am also hoping it will help get them interested in science, technology, engineering and math—the STEM programs.

The second book will be more about things inside the house and outside, like the signal light, golf tee, bicycle frame, and so on. The third book will be about African-American women inventors and scientists such as Sarah Boone, Alice Parker and Bessie Blount. The fourth book will be about African-Americans in aviation, such as Bessie Coleman, the Tuskegee Airmen and Mae Jemison. The fifth book will be about black cowboys, including Deadwood Dick, Bill Pickett and Mary Fields. I've added a sixth book that will be about African-American artists, painters and sculptors, like Edmonia Lewis, Archibald Motley and Robert Duncanson.

**EGT: What is your ultimate goal with your books?**
**TS:** I think it's unfair that African-American children grow up not knowing how much their ancestors contributed to the growth of this country. I also think it's unfair that other children grow up thinking that their ancestors are the only ones who contributed to the growth of this country. Learning about other cultures helps with creating and maintaining good relationships and respect for each other. Diversity starts in first grade, not in corporations.

**EGT: When will they be available?**
**TS:** I would like to have all six books published by the end of 2018.

*Details: tamarashiloh.com*

Books by **Edie Tolchin** (egt@edietolchin.com) include "Fanny on Fire" (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.


# Sports Tech in a Major Way

## NBA, MLB, NFL TAKE THE LEAD ON INNOVATION TO IMPROVE INTEREST AND PERFORMANCE

Above: Zebra Technologies' tracking system uses sensors in NFL players' shoulder pads and a chip in footballs to generate data distributed to teams, fans and the media.

Opposite page, top: STATS SportVU, used by the NBA since 2010, is a camera system hung from the rafters that collects data at a rate of 25 times per second by following players and the ball.

Opposite page, middle: Gaming teams compete at the NBA 2K16 Road to the Finals championship. This year, the NBA started the first professional e-sports organization run by a U.S. pro sports entity.

Opposite page, bottom: In MLB, Statcast uses two different tracking systems to measure and provide various data.

**Artreyo Boyd** will never make a basket or an assist on an NBA court, will never steal a pass or block a shot. But there he was, standing on a podium in New York City on April 4 with NBA commissioner Adam Silver after being chosen a No. 1 draft pick.

Boyd was the top selection in the inaugural NBA 2K eSports draft, setting the stage for an e-league in which the world's best players in the NBA 2K video game compete against each other over a four-month season starting in May.

The NBA is generally regarded as the most tech savvy of the major American team sports leagues—not just because of its ever-growing roster of innovations but because of its willingness to embrace experimentation. The league is a pro sports pioneer in many technical inventions and adaptions of existing technologies.

While the NBA seems to be the king of the launches, Major League Baseball is the king of the launch angle. In the past couple of years, the Statcast-measured metric has generated unprecedented attention on players' attempts to lift the ball in an effort to hit more home runs.

A slew of new in-game data on NFL players are about to be released this spring, thanks to tiny sensors in players' shoulder pads that have tracked player movements since 2014.

These are just some of the newest ways that pro sports leagues are using technology to spur added interest to their games and provide a wealth of comprehensive information that can elevate player performance. The highlights:

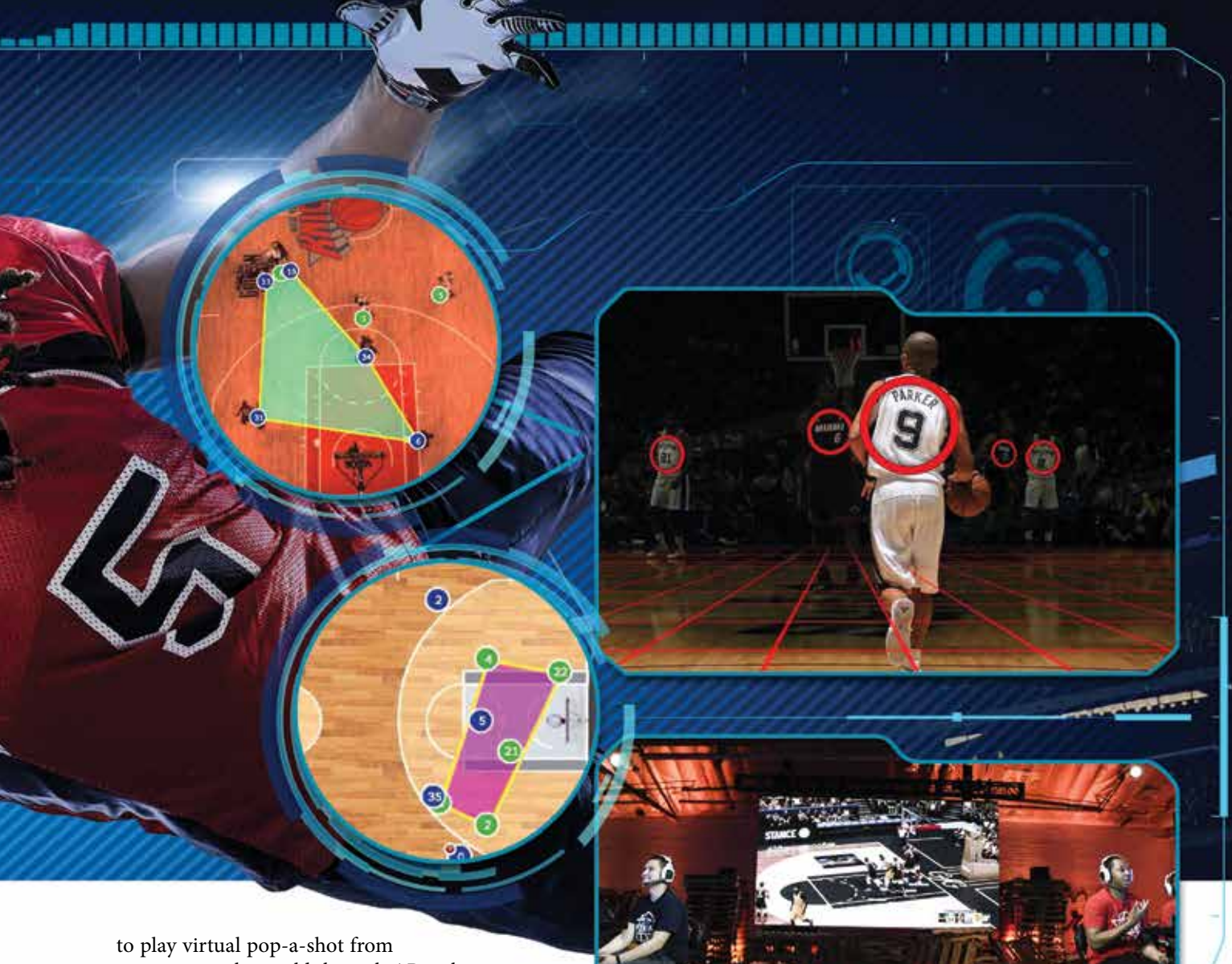
### NBA

The **NBA 2K League** is the first professional e-sports organization run by a U.S. pro sports entity. It drafted 102 "NBA players" and will feature teams that are the competitive equivalents of 17 NBA clubs.

The league's commitment is such that it will pay gamers $35,000 for six months, with housing and benefits paid as well. Games will be played at a couple of central locations in the first season, but the NBA's long-term plan is to have e-sports teams compete in NBA arenas in front of their home fans.

Another virtual first came last October when the NBA announced the launch of the **NBA AR app**, a new augmented reality experience that allows fans

TOP PHOTO COURTESY OF ZEBRA TECHNOLOGIES CORPORATION






DAN STEINBERG/INVISION FOR NBA 2K


to play virtual pop-a-shot from any point in the world through AR technology. It's the first augmented reality game by a U.S. sports league. NBA AR for iPhone is available for free on the App Store.

A month earlier, the NBA announced the "**Nike NBA Jersey with NikeConnect**," a connected jersey that allows wearers to get highlight reels, scores, statistics and exclusive content from and about their favorite players and teams with a tap of their phones on the jersey's tag.

The league has long been state-of-the-art when it comes to tracking data. Starting with the 2010-11 season, it began utilizing **STATS SportVU**—a camera system hung from the rafters that collects data at a rate of 25 times per second and follows the ball and every player on the court. This allows the collection of in-depth statistics, including real-time player and ball positioning through sophisticated software and statistical algorithms. STATS SportVU is also being picked up in college basketball and is a major presence in international soccer.

The NBA is also far ahead of other leagues in virtual reality streaming. After streaming weekly live


PHOTOS COURTESY OF INTEL CORPORATION

## The NBA is generally regarded as the most tech savvy major pro sports league, but others may be closing the gap.

Turner Sports and Intel announced the launch of the NBA on TNT VR app in February. Fans can watch game highlights and recaps, and view full-game replays in virtual reality. Every weekly game features four high-definition Intel True VR cameras strategically placed around the court.

games in virtual reality last season, now its entire season is immersive for League Pass subscribers.

And if you were wondering whether the almost-ubiquitous **Amazon Echo Alexa** had to figure into this somewhere, wonder no more: Skills for Alexa makes the NBA the first pro sports league with every team on Amazon's Alexa. Asking Alexa to enable a team's skill or enabling the skill in the Alexa app allows fans to get schedules, scores, stats, standings and news about their favorite team.

"We're bringing the world courtside," Melissa Brenner, the NBA's executive vice president of digital media, told Fast Company after the business media brand ranked the league 10th on the World's Most Innovative Companies list.

### MLB

Major League Baseball is also becoming a tech-obsessed sports league. In 2014, it became the last of the four major pro sports to implement instant replay technology for determining the accuracy of calls on the field.

Also in 2014, MLB leveraged baseball's growing reliance on sabermetrics when tracking technology called **Statcast** made a partial trial run. It was installed in all 30 stadiums the following year.

Statcast built upon pitch tracking hardware in each stadium that MLB Advanced Media had installed years earlier. It is essentially a combination of two different tracking systems—a Trackman Doppler radar and high-definition ChyronHego cameras. The radar, installed in each ballpark in an elevated position behind home plate, tracks everything related to the baseball at 20,000 frames per second. This is where launch angle comes into play; the radar captures that as well as pitch speed, spin rate, pitch movement, exit velocity, batted ball distance, arm strength and more.

The ChyronHego camera system features six stereoscopic cameras installed in two banks of three cameras apiece down the foul line. The camera system tracks the movement of the people on the field. This allows for the measurement of player speed, distance, direction, and more on every play.

Statcast allows front offices, fans and broadcasters to quantify players' skills in ways that were previously available only to scouts or not at all. Per MLB, in the first three seasons of Statcast (2015-17), more than 2.1 million pitches and nearly 400,000 balls in play were tracked, helping popularize terms ranging from launch angle to exit velocity to spin rate. Perhaps most important, it changed the way many players approach their livelihood from a preparation and mechanics standpoint.

On April 3, MLB announced a deal with China's biggest tech company, **Tencent**, to stream 125 games this season. The NBA, NFL and NHL already had deals with Tencent, which has more than 1 billion active users on its social media networks.

Last May, MLB announced it struck a three-year deal with **Intel** to live-stream games in virtual reality.




PHOTOS COURTESY OF BOOMBANG AND CHYRONHEGO

Fans who are interested in watching 3-4-hour game wearing a headset will need a Samsung Gear VR and compatible smartphone to take in the VR experience, and must also download the Intel True VR app.

In 2016, MLB unveiled prototype protective headgear for pitchers that can protect them from serious injury on batted balls. Made by California-based **Boombang**, the hats—optional for game use—have been tested to hold up to impacts up to 85 mph. That same year, MLB and **Apple** did away with the thick notebooks crammed with paper data that managers and their assistants used to lug around by combining all of the data into a 6.9mm-thick iPad Pro.

## NFL

If you've ever heard a report from the NFL Scouting Combine—a weeklong showcase each February where invited college football players perform physical and mental tests in front of NFL coaches, general managers and scouts—you're aware of the league's emphasis on numbers and other data. For instance, a one-tenth-of-a-second disparity in a 40-yard-dash clocking can make a world of difference.

The emphasis on quantifiable, subjected metrics was underscored this past February, when it was reported that the NFL's Competition Committee agreed to a plan that would allow for the release of league-wide, game-day, player-tracking data from 2016 and 2017 on every NFL player to all 32 teams this spring. During the 2018 regular season, teams will receive the league-wide data on a weekly basis. Player tracking data provide teams numerous information, analysis and research to help support player conditioning and training, player evaluation and assessment, game-planning and scouting.

All of this would not be possible were it not for technology the NFL began using in 2014, when it began gathering the data via nickel-sized sensors placed in players' shoulder pads to track and gather data such as position/location, speed and distance to provide unique real-time insights about what's happening on the field. The partnership is with **Zebra Technologies**. Data generated via Zebra's tracking system are distributed to teams, fans, and media, including the NFL Network, via the NFL's Next Gen Stats brand.

For the 2017 season, the NFL expanded the use of Zebra's tracking system to include ball tracking, in which every game ball had a tracking chip inserted to determine information such as velocity, rotational information, and the height of every pass and kick.

Also last year, the NFL teamed with Intel in using a technology called Intel® True View, in which 38 cameras were installed in 11 stadiums to play 360-degree scenes from the sideline that broadcast television cameras cannot; and announced an iOS app that lets football fans ask questions and get answers from NFL stars. StatMuse recorded the voices of dozens of players via an algorithm that strings together voice answers from snippets of word combinations and phrases the players pre-recorded.

**Top: Statcast uses high-definition ChyronHego cameras to track the movement of people on the field and generate data. ChyronHego offers an optical player-tracking system called TRACAB.**

**Above: A cap/helmet hybrid by Boombang unveiled in 2016 drew praise from MLB pitchers, but the notion of wearing protective head devices in games hasn't caught on.**

# The Thomas Edison of Baseball

DANNY LITWHILER'S KEY INNOVATIONS ARE FIXTURES IN THE SPORT **BY REID CREAGER**

Among Litwhiler's innovations was a bat sawed in the middle that was used as a bunting aid.

**Danny Litwhiler didn't have to think twice. He was calling the cops.**

The Michigan State head baseball coach was reading the student-run State News newspaper in 1974 when he saw a story about a new radar gun being used by campus police to catch speeding drivers. His innovative mind quickly wondered whether the device could also be used to measure the velocity of a baseball, so he contacted the police.

"I found out that the cops' radar guns were powered by the cigarette lighters in their police cars," he is quoted as saying on thisgreatgame.com. "So, we got an MSU police car to drive out on the field to time the pitches, and the readouts were accurate within one mph each time. Within one week, I had the prototype of the JUGS gun in my hands, and today that same prototype is in the (Baseball) Hall of Fame."

The radar gun is now omnipresent throughout baseball—one of more than 100 creations from the game's greatest inventor, who has been referred to as "The Thomas Edison of Baseball."

## A key first innovation

Born in 1916 in tiny Ringtown, Pennsylvania—he said the high school was so small that the team's second baseman was a girl—Litwhiler was one of many ball-playing siblings. He went on to an 11-year major-league career as an outfielder with four teams and in 1942 became the first player to record an errorless season (151 games, 317 chances).

Fittingly, his innovative skills played a role in that. During his errorless streak, which lasted 187 games, he had tied the fingers together on his baseball glove in order to gain more control of the ball. This is widely believed to be the first instance of attaching

PHOTO COURTESY OF BASEBALLHISTORYCOMESALIVE.COM



the fingers, and that glove is also on display at the Baseball Hall of Fame.

Litwhiler compiled a solid .281 career batting average and helped the St. Louis Cardinals win the National League pennant in 1943 and 1944, including a World Series title in '44. His college coaching career was arguably even more successful: a 678-445-9 record (.603 winning percentage) and nine appearances in the NCAA Tournament during his 28-year coaching career, 19 of those at Michigan State and nine at Florida State. He is MSU's all-time winningest baseball coach (488).

Beyond the numbers, Litwhiler was known as a compassionate, empathetic leader who liked to help people and contribute to the game's betterment. His innovations reflected this.

Some of his devices were rudimentary or quirky—a bat sawed in the middle to teach bunting; weighted baseballs to improve pitchers' arm speed; a three-pronged batting tee; a 650-lb., 5-by-3 unbreakable Herculite mirror for pitchers to check their deliveries (the Cincinnati Reds still employ the latter in their system). But he never stopped thinking, tinkering, imagining

## Efficiencies

After taking the Florida State job in 1955, Litwhiler quickly learned that it rains often in Tallahassee. That meant a lot of ruined baseballs, postponed practices and games.

Using calcined clay, he developed a substance he called Diamond Dust that could be used to dry the baseballs and reduce expenses. Another drying agent he invented, Diamond Grit, could be spread over infield wet spots—a substance that is still used in the major leagues.

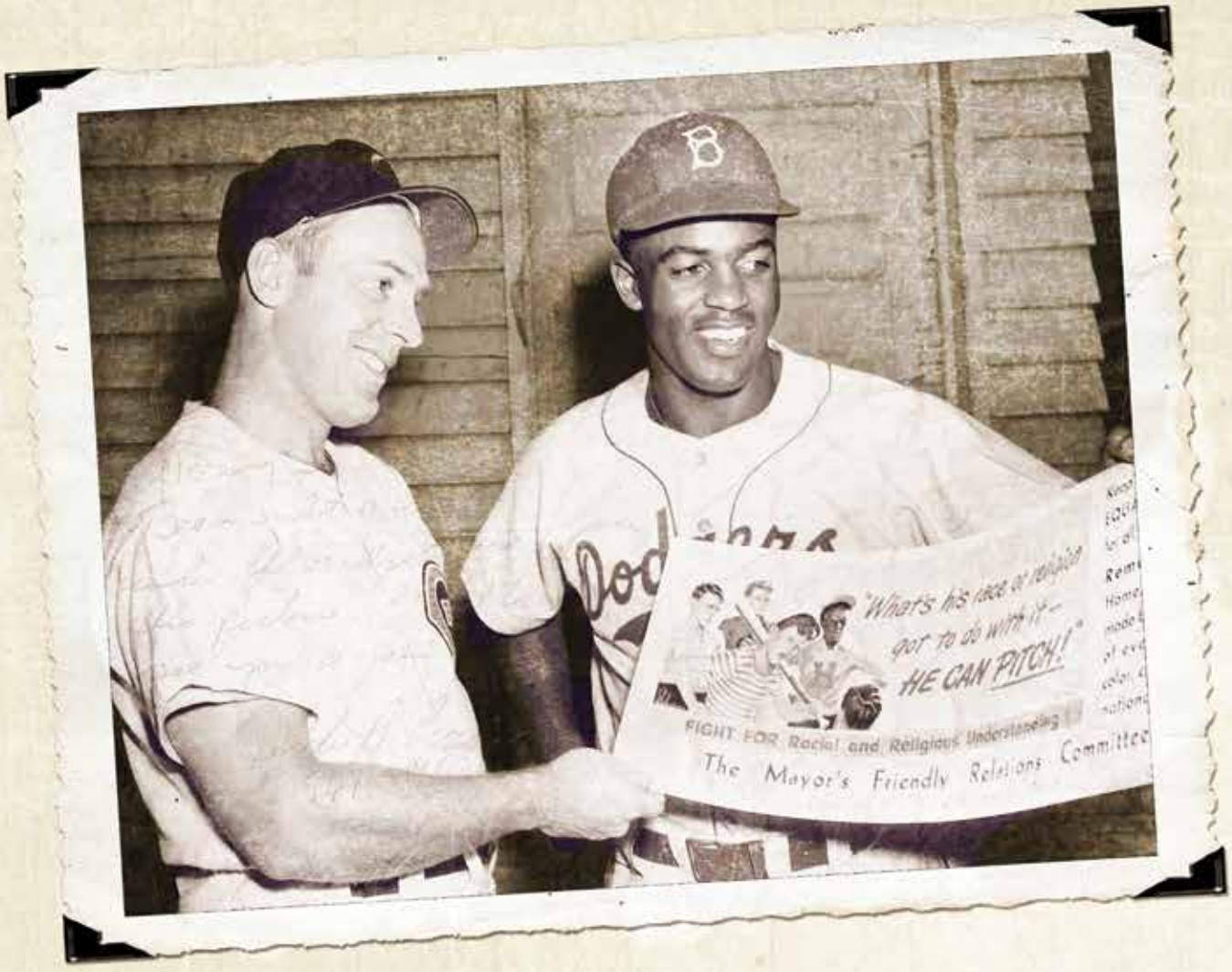
Such innovation saved a lot of time and added to the efficiencies of running a team. With this in mind, in the 1950s Litwhiler updated the old one-batter-and-pitcher-at-a-time batting cage with an intricate screening system. This featured pitching and batting windows that enabled up to five batter and pitcher combinations at a time.

For Litwhiler, it wasn't just about improving the conditions; it was also about improving the quality of play and helping players be at their best. He took a catcher's mitt, added stuffing to it so that it

**Above left: While playing for the Philadelphia Phillies, Litwhiler beats the tag of Philadelphia A's catcher Bob Swift to score a run at Shibe Park in 1943.**

**Above right: Litwhiler (right) and Michigan State pitcher Doug Dobrei discuss using an unbreakable 650-lb. Herculite mirror that enabled pitchers to throw at it and observe their mechanics. Litwhiler's best-known innovation is bringing the radar gun to baseball.**

PHOTOS COURTESY OF PHILADELPHIA RECORD PHOTOGRAPH MORGUE AND SCOUTEE.CO




## An accomplished major-league player and college coach, Litwhiler brought the radar gun into the game in 1974.

Litwhiler said some of his 1948 Cincinnati Reds teammates criticized him for posing with Jackie Robinson in this photo, part of an effort by the city to promote racial tolerance. Robinson had become the majors' first African-American player a year earlier. He inscribed the photo for Litwhiler years later.

Opposite page: Litwhiler's batting cage screening system enabled more batter and pitcher combinations at one time in order to improve efficiency.

had a flat pocket, and made infielders practice with it. His theory was that because of the flat surface, balls hit to an infielder would bounce off the glove—forcing them to increase their focus and stay with the play despite not being able to initially field the ball cleanly.

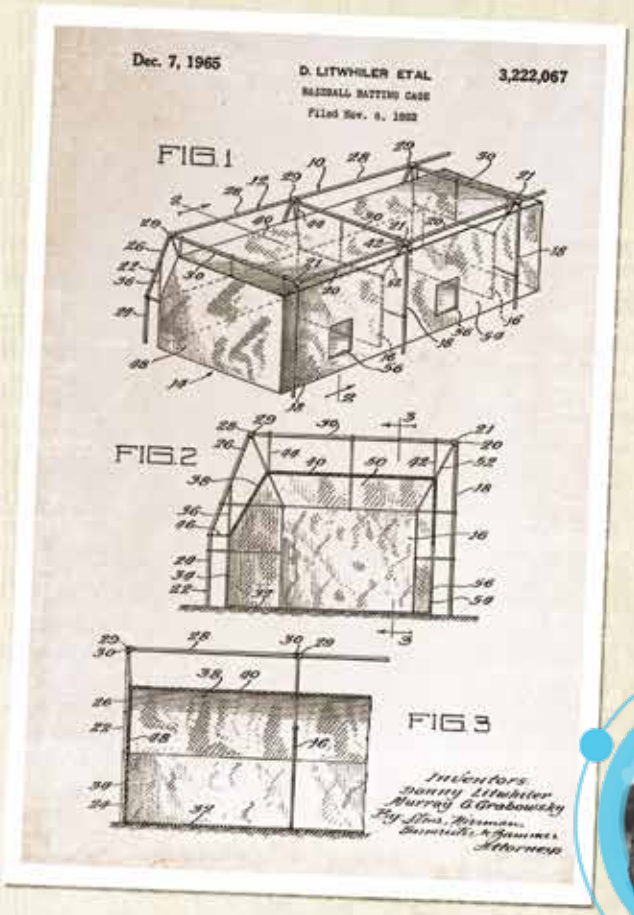
One of the first Florida State players for whom Litwhiler developed the glove was Woody Woodward (cousin of actress Joanne Woodward), who later earned a reputation as a premier defensive shortstop in the major leagues. That was a steppingstone to his becoming the New York Yankees' manager and a general manager for three big-league teams.

Among Litwhiler's other players at Florida State was Dick Howser, who became an eight-year major-leaguer and a World Series-winning manager. Major-league stars Kirk Gibson and Steve Garvey were among those who benefited from Litwhiler's tutelage at Michigan State. The coach's counsel was especially important for Gibson, who struggled early in his MSU baseball career and was thinking of quitting.

Litwhiler had a knack for seeing potential in people as well as in ideas. In an interview with MSU Alumni magazine, Gibson recalled that "Danny said: 'Let me give you 10 reasons why you should not give up baseball.' He sat me down and we talked for about a half-hour. In the next game I hit two home runs, and I hit a home run in the game after that."

Before the end of the next decade, Gibson was a two-time world champion who will forever be known for an iconic home run in the 1988 World Series.

PHOTO COURTESY OF THE CINCINNATI HUMANS RELATIONS COMMITTEE




## All about service

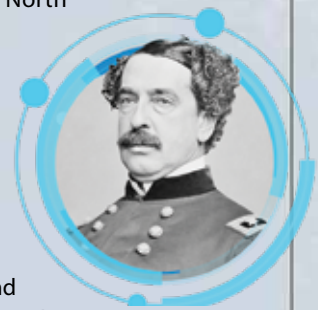
Despite his numerous innovations that had permanent impact on the game he grew up with and loved, Litwhiler died in 2011 at age 95 with just one listed patent (a batting cage). His priority was improving the game and helping players.

He was the international president of the United States Baseball Federation in 1978-83, working hard to make the sport an international game. Some 60 years from the time he began serving as a batboy for his older brothers, Litwhiler was a minor-league instructor for the Cincinnati Reds for five years in the mid-1980s. He helped shape the talent for the 1990 World Series champion team that was in first place from the first day of the season and swept the favored Oakland A's in the Series. That Reds club beat Gibson's team, the Los Angeles Dodgers, by five games to win their division.

"Danny was very innovative, whether it was inventing things like the radar gun or shaping my career," Gibson said. "And he was very innovative in the way he talked to you. He had a way of convincing you."

# Whose Sport is it, Anyway?

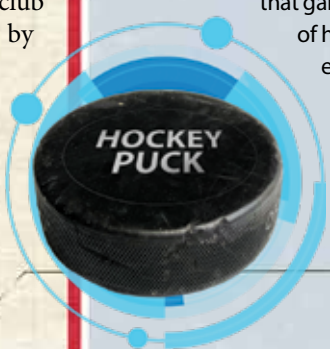
Only one of the four major professional North American sports has a clear-cut inventor.



**BASEBALL:** The game has no clear singular origin, having evolved from the British sport of cricket that uses a bat and ball. **Abner Doubleday**, a general in the Civil War, has often mistakenly been credited as the game's inventor—even by some of its players. But there are no facts to support this and no indication that Doubleday ever considered himself among the game's originators. He has been credited with one first, however: Doubleday reportedly aimed the first Union gun to be fired in defense of Fort Sumter at the beginning of the War Between the States.

**BASKETBALL:** **James Naismith**, a Canadian-born physical education instructor tasked with productively occupying youths indoors during the harsh winters of Springfield, Massachusetts, invented the sport in the winter of 1891. He wrote and developed the game's original 13 rules, which were posted in the March 2017 *Inventors Digest*.

**FOOTBALL:** The objective answer is, there is no answer. China, Great Britain, Scotland and Italy are among the countries credited with inventing the game, but there are so many different derivations of the sport that it's impossible to definitively identify its originator. As for the Americanized game of football that evolved from a combination of rugby and soccer, **Walter Camp** is known as "The Father of American Football." He invented the line of scrimmage and the system of downs.

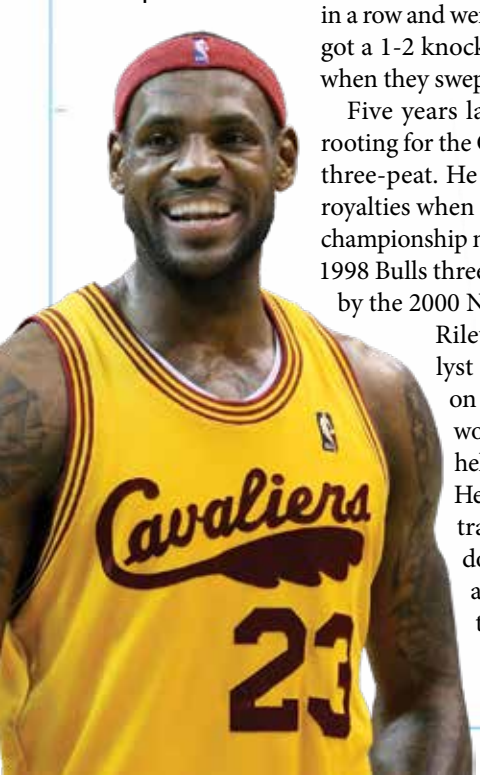



**HOCKEY:** This debate is more of a where than a who. Montreal stakes its claim as the birthplace of hockey because it was the site of the first documented indoor hockey game in 1875. (James Creighton, who organized that game, has sometimes been referred to as the inventor of hockey but never made that claim.) thehockeywriters.com says evidence points to hockey originating in Europe in the 1600s. Windsor, a town in Nova Scotia, Canada, has a highway sign saying it is the birthplace of hockey. Kingston, Halifax, Ottawa and Deline in Canada also lay claim. Drop the gloves! This one's a real donnybrook.


# Got Weird?
## Athletes and Trademarks

### PAT RILEY CASHED IN AND STARTED A TREND

Top, from left: Former NFL defensive end Jared Allen has a wide range of trademarks; Olympics star Usain Bolt has a signature, un-trademarked pose; ex-NFL quarterback Tim Tebow trademarked the term for his familiar kneels. LeBron James (below) trademarked an inspirational motto.




**Although** sports trademarks have a long history, they have recently gotten more interest from the public and athletes—especially when connected with winning and money.

In 1988, NBA coaching great Pat Riley registered the trademark for "three-peat" and "3-peat" when his Los Angeles Lakers had won two NBA championships in a row and were going for a third. The three-peat bid got a 1-2 knockout punch from the Detroit Pistons when they swept the Lakers in the 1989 finals.

Five years later, Riley may have found himself rooting for the Chicago Bulls, who accomplished the three-peat. He pocketed an estimated $300,000 in royalties when the NBA used "Three-peat" on Bulls championship merchandise. He also cashed in on the 1998 Bulls three-peat, and similar accomplishments by the 2000 New York Yankees and 2002 Lakers.

Riley's IP brainstorm has been a catalyst for athletes also looking to cash in on trademarks, which generally protect words, phrases, symbols and designs that help define a personal or company brand. Here are some recent examples (because trademarks can be lost through abandonment, cancellation or expiration at any time, it is not known whether all of the following remain active).

**Jared Allen**

The former standout NFL defensive end chose an interesting phrase to trademark: "Got Strange?" Maybe just as interesting, his application lists camouflage hunting apparel and rodeo apparel as items that feature the phrase to protect.

He has other trademarks related to his professional and charitable pursuits—the logo for his main company, "Jared Allen 69 Inc.," as well as his charity "Jared Allen's Home 4 Wounded Warriors," which builds handicap-accessible homes for military veterans. He also trademarked "Jared Allen's Pro Bull Team," a professional bull-riding team.

**Tim Tebow**

The former NFL running, uh, quarterback, who's now playing minor-league baseball in hopes of making it to the majors, owns the trademark for "Tebowing" through his marketing company, XV Enterprises. The term refers to the kneeling prayer stance Tebow took before NFL games.

Tebow batted .226 in Class A last year and was 1-for-18 with 11 strikeouts in his first big-league training camp this spring, yet he was promoted by the New York Mets to Class AA. Tebowing could soon refer to his praying that he can learn to hit a major-league curveball.

### Usain Bolt

The eight-time Olympic gold medalist may have ended his running career, but he's still determined to capitalize on his trademark portfolio and brand image.

Many of his trademarks show his name in various fonts and phrases such as "Bolt to the world" and the Bolt icon. But according to professor J. Gordon Hylton of the University of Virginia School of Law, Bolt's signature "lightning bolt" pose cannot be trademarked.

### Robert Griffin III

Griffin signed with the Baltimore Ravens on April 4 to be their backup quarterback—more evidence of how far his stock has fallen since he rocked the NFL as a rookie with Washington in 2012.

Exhibit A may be the fact that he let many trademarks lapse from his heyday, most notably "No Pressure No Diamonds." Also free to the public now are "Dream Big Live Bigger," "Unbelievably Believable" and "Light You Up."

He retains rights to his nickname "RGIII" and the phrase "Know Your Why"—and no, we know not why.

### LeBron James

Late last year, the NBA superstar filed to trademark the phrase "Nothing is given. Everything is earned." It's in connection with his James' I Promise School, a partnership with Akron, Ohio, public schools to build an elementary school beginning this fall. The filing was by LBJ Trademarks, which also owns the phrase "Just A Kid From Akron."

Earlier, James trademarked a line of basketball-themed furniture under the name "Home Court by LeBron James." He also trademarked "The LeBron James Family Foundation." The man known as King James has not trademarked that nickname.

### Jeremy Lin

Why, it was Linsanity! When the undrafted Lin—the first Taiwanese-American player in NBA history—suddenly emerged as a catalyst in a string of New York Knicks victories in 2012 and gained worldwide fame, someone came up with that painful catchphrase and the point guard filed to trademark it. Once described by a Harvard coach as the weakest physical player on that team, Lin won a trademark infringement battle to secure rights to the name for merchandizing purposes.

In July 2016, Lin signed a three-year, $36 million contract with the Brooklyn Nets. By the end of the month, the United States Patent and Trademark Office confirmed that Lin had filed to trademark the name … OK, we assume you see this one coming … "Brook-Lin."


### WELL-PROTECTED CHAMPIONS

The following words are marks registered with the USPTO for Villanova University, the 2018 men's college basketball champions:

- Villanova University
- Villanova Wildcats
- Nova
- Villanova Wildcats
- Nova Nation


### Shaquille O'Neal

The NBA legend and commercial pitchman has a long trademark history. O'Neal got a victory in a court of a different kind in 2011, after suing a company that sold "Shaqtus" apparel and collectibles. (When O'Neal played for the Phoenix Suns, he was known as "The Big Cactus" and "The Big Shaqtus.")

He has secured trademarks to protect his many commercial interests: "Dunkman," for apparel and accessories; "Shaquille O'Neal All Star Comedy Jam," for his live, touring comedy show; "ShaqFu," for books, soft drinks and video games; "Shaq Attaq," for clothing and footwear; "Shaqfighter," for video games, entertainment services and an animated series. He reportedly trademarked his signature, too.

### Danica Patrick

Her Danica Racing, Inc. owns the rights to "Warrior by Danica Patrick," a trademark filed in 2016 that covers clothing items ranging from performance wear to boots, shoes, rainwear, sleepwear, pet accessories and more. Her name is also a trademark of Danica Racing.

Patrick plans to retire from auto racing after this year's Indianapolis 500, partially to concentrate on her Warrior line and wine business.

WARRIOR
by danica patrick


### Darrelle Revis

The imagery is clever: A star cornerback is so adept at defending wide receivers that said receivers become figuratively lost on Revis Island. Revis got "Revis Island" trademarked in 2013 after a three-year wait. (A lawyer for Revis reportedly said such matters routinely take that long. Wrong.)

The phrase has appeared on items that include swimwear, sleepwear, T-shirts and shoes. Revis, 32, became an NFL free agent after last season.


### Michael Phelps

The most decorated Olympian ever with 23 gold medals and 28 overall, Phelps holds the rights to the "MP" logo, which appeared on his swim cap during the 2016 Rio Olympics. It's a trademark for his brand of premier swim gear and training equipment.

He also trademarked the name "Michael Phelps Swim School," a chain based in Baltimore.

### Michael Strahan

The former NFL Pro Bowl defensive end didn't win any points for humility when trademarking the phrase "Stomp You Out" within months of his New York Giants defeating the New England Patriots in the 2008 Super Bowl (the Patriots were 18-0 to that point). The trademark and brand cover clothing.

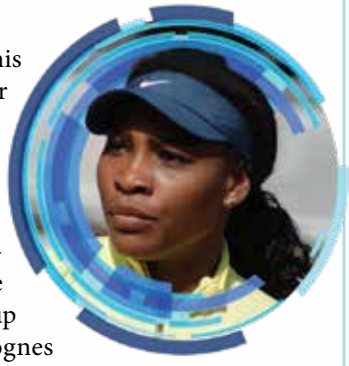
Now a national morning TV co-host, Strahan filed to trademark "Collection by Michael Strahan" last July, two years after launching the clothing line at JCPenney. The trademark and brand are held by Gaptized, Inc., for which Strahan is president (he's recognized by the gap in the middle of his front teeth). Gaptized owns many other marks.

### Lance Armstrong

The "Livestrong" brand is among the most famous in sports. Armstrong founded the cancer charity in 1997 and was chairman until 2012, when the road-racing cyclist stepped down after being banned from sanctioned Olympic sports for life as a result of long-term doping violations. All seven of his Tour de France wins were voided.

The Lance Armstrong Foundation still holds the rights to the "Livestrong" trademark.

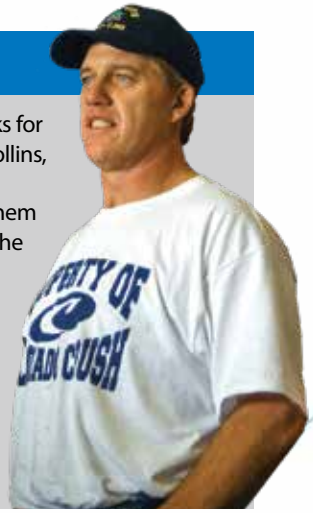
### Serena Williams



Per the USPTO, the tennis star filed a trademark earlier this year for Aneres for the purpose of starting a cosmetics brand. Aneres is Serena spelled backwards.

The range of products is believed to include skincare prep and make-up removing products, colognes and perfumes, makeup kits, bath soaps, lipstick, lip gloss, eye shadow, eyeliner and mascara. Williams earlier filed documents to trademark the brand name for a clothing line but has now re-filed.

## JOHN ELWAY, PUNKED?

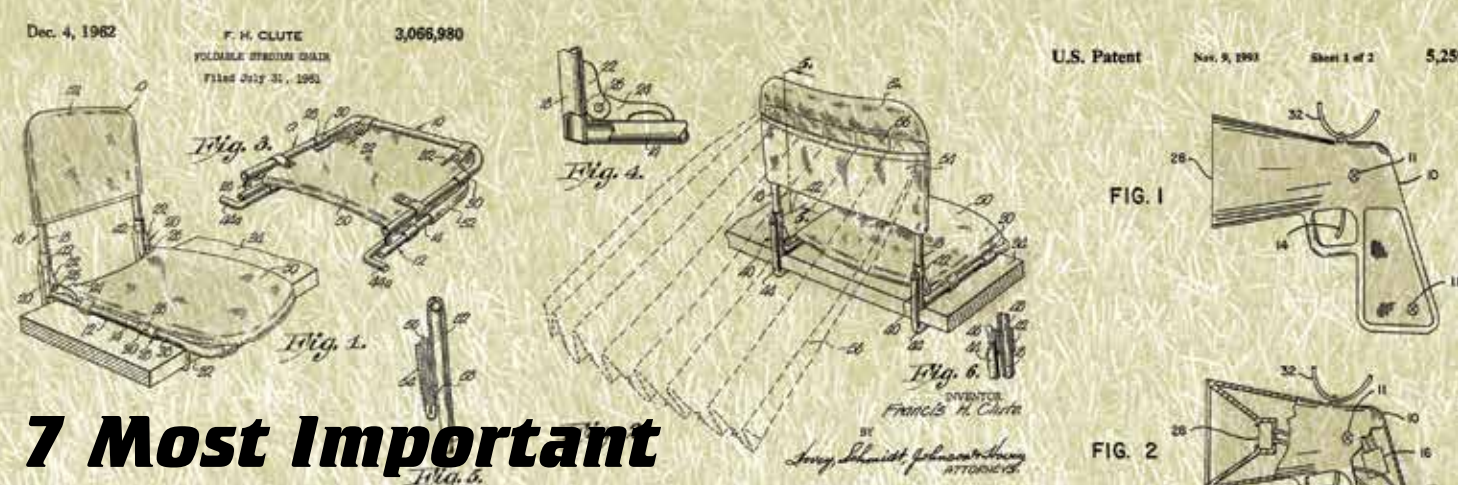


The two-time Super Bowl champion quarterback and Denver Broncos general manager has registered marks for furniture, spice rubs and restaurants under his name. That is of little concern to a punk-rock band from Fort Collins, Colorado, named Elway.

In 2011, trademark attorneys hired by Elway the football executive sent a letter to the band and asked them to stop using the former star's surname. The letter wasn't a cease-and-desist request, just a suggestion that the band adopt a new name.

Band leader Tim Browne replied that the group isn't interested in football and that there's no mention of John Elway in their recordings or artwork. Browne reportedly found it flattering that the football icon knew of a band that typically plays "in front of about 30 people in a basement."

The band still apparently exists, with the same name and self-deprecating identity. From elwaytheband.bandcamp.com/: "Elway started back in 2007 as a drunken mess called 10-4 Eleanor. They released a few... records under the old moniker before changing their name in 2010 after signing with Red Scare Industries. 3 LPs, 2 EPs, 500+ shows in 23 countries later, they are still a drunken mess."




# 7 Most Important Football Patents

*The following were compiled by legal technology company Juristat (juristat.com)—which noted that in this context, the word "important" actually meant "amusing." A big thanks for Juristat's permission to share these with you.*

### 1. Foldable stadium chair

*(U.S. Patent No. 3,066,980)*

Foldable stadium chairs are one of the oldest and most useful examples of "sports tech." We all know that stadium seats can be uncomfortable, especially those of the high school or community variety. Not only are the bleachers hard, but during the late fall they can also get quite cold. … We suggest that you do your body a favor and invest in one of these.

### 2. Disposable flask

*(U.S. Patent No. D651,522)*

Probably the most common complaint about sporting events is that alcoholic beverages at most professional stadiums are criminally expensive. Most people, however, simply accept this price-gouging as a fact of life, as most stadiums do not allow outside beverages and a hidden flask is certain to set off a metal detector. It is in situations like these where this handy plastic disposable flask becomes especially useful. Of course, we can't condone breaking any laws and would never encourage anyone to willfully disobey stadium rules.

### 3. Noise-limiting circuit for earmuffs

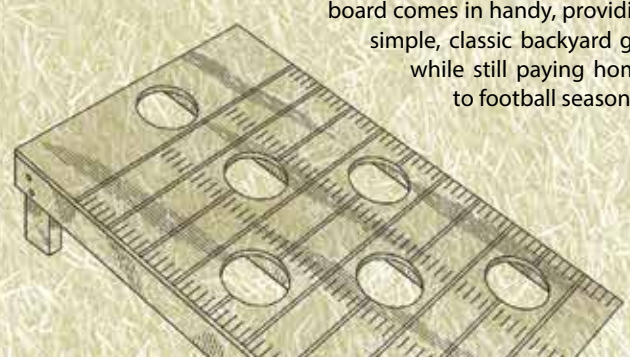
*(U.S. Patent No. 4,928,311)*

We all know that football games can get loud. If you find that you frequently feel overwhelmed and startled by the random outbursts of screaming for little apparent reason during sporting events, we suggest that you find one of these noise cancelling gadgets. The inventors here went above and beyond by designing this device to be used with earmuffs.

### 4. Football cornhole board

*(U.S. Patent No. D706,355)*

Sometimes you're not always in the mood for all of the hassle of actually going to a game--figuring out weather-appropriate clothing, rounding the whole family up, schlepping everything down to the stadium, standing in lines, dealing with other people, etc. That's where the football cornhole board comes in handy, providing a simple, classic backyard game while still paying homage to football season.



### 5. Mascot cheer simulator

*(U.S. Patent No. 5,259,807)*


We found a battery-operated "clamor-making" device that fans can use to cause a commotion when they just don't feel like yelling. Most noisemaking in football stands is done through generic methods—air horns, whistles, megaphones, etc. This device is intended to give a particular team's cheers a personal touch by mimicking whatever sound a team's mascot makes. … Since loudly mimicking an animal mascot with one's own voice is simply not realistic, practical, or medically advisable, the mascot cheer simulator is an indispensable tool for the fan committed to realism.

### 6. Drainable artificial turf assembly

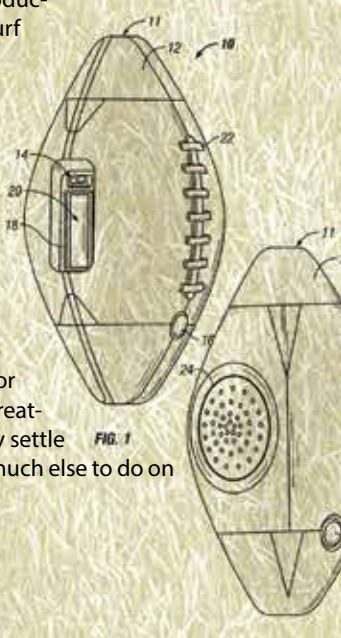
*(U.S. Patent No. 4,946,719)*

"Drainable artificial turf assembly" is actually the scientific name for AstroTurf. Although many feel that AstroTurf is more aesthetically pleasing than grass because of its brilliant green color (it's basically plastic surgery for nature), its inventors were more concerned with drainage than aesthetics.

No one wants to play on a soggy field, and traditional methods of installing collector drain systems were expensive. AstroTurf changed this by introducing a comparatively inexpensive artificial turf that provided for rapid drainage.

### 7. Electronic football capable of measuring throwing statistics

*(U.S. Patent No. 6,582,330)*




In all seriousness, this electronic football that measures throwing statistics is actually a very useful invention. It records various statistics, including the distance the ball was thrown, the speed it was thrown, and the length of time it was in the air. It would be the perfect practice tool for a young athlete. In less seriousness, its greatest utility probably lies in its ability to easily settle bets between middle-aged men with not much else to do on a Sunday afternoon.

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# 2 DECADES OF HONORING INVENTING

Inventors DIGEST

**THIS YEAR MARKS** the 20th anniversary of National Inventors Month, an American celebration of invention and creativity that was started by the United Inventors Association of America, the Academy of Applied Science and *Inventors Digest*.

In the spirit of that celebration, we present the latest in a long line of accomplished inventors: the 2018 Class of the National Inventors Hall of Fame and the winners of the 2018 Lemelson-MIT Student Prize. The 2018 Hall class will be honored May 3 at the National Building Museum in Washington, D.C. The Lemelson-MIT program awarded a total of $80,000 in prizes to 14 undergraduate and graduate student inventors selected from a large and highly competitive pool of applicants from across the United States.

## 2018 NATIONAL INVENTORS HALL OF FAME INDUCTEES

**Marvin Caruthers:** National Medal of Science winner who developed the chemical synthesis of DNA.

**Stan Honey:** Emmy winner in sports television graphics who invented the virtual yellow 1st-and-10 line.

**Warren S. Johnson:** Pioneered temperature regulation technologies; co-founder of Johnson Controls.

**Howard S. Jones, Jr.:** Developed antennas that conformed to the shape of the object they were on; used in rockets, missiles and spacecraft.

**Sumita Mitra:** Invented the first nanoparticle dental filling material.

**Arogyaswami Paulraj:** Marconi Prize winner who invented MIMO wireless technology, a foundation for WiFi and 4G mobile networks.

**Mary Engle Pennington:** Pioneer in safe preservation and storage of perishable foods. Jacqueline W. Quinn: NASA scientist who developed environmentally safe water decontamination technology, emulsified zero-valent iron (EZVI).

**Joseph C. Shivers, Jr.:** Invented Lycra® fiber or spandex.

**Paul Terasaki:** Invented tissue-typing for organ transplants and the Terasaki Tray.

**Ronald Rivest, Adi Shamir and Leonard Adleman:** Invented RSA cryptography, used in almost all internet-based transactions.

**Ching Wan Tang and Steven A. Van Slyke:** Invented organic light emitting diodes (OLEDs) now used in computers, cell phones and televisions.

## 2018 LEMELSON-MIT STUDENT PRIZE WINNERS

### GRADUATE WINNERS

**Tyler Clites, Massachusetts Institute of Technology:** Developed a new approach to amputation called the Agonist-antagonist Myoneural Interface, comprised of a novel surgical technique for limb amputation and a complementary prosthetic control system.

**Maher Damak, Massachusetts Institute of Technology:** Developed a polymer additive that can be mixed with pesticides and other agricultural sprays to help them adhere to plants more effectively.

**Kayla Nguyen, Cornell University:** Invented the EMPAD, a fast, highly efficient detector that enhances imaging for a range of microscopic applications.

**Guy Satat, Massachusetts Institute of Technology:** Invented All Photons Imaging, a system that can image through dense fog that is intended for augmented driving, autonomous vehicles, drones, airplanes and helicopters.

### UNDERGRADUATE TEAM WINNERS

**Melissa Austin, Eric Cao, Talia Kirschbaum, Theodore Lee and Harrison Nguyen, Johns Hopkins University:** Developed N-Stent, a comfortable and discreet nasal dilator designed to improve breathing for those who suffer from nasal obstruction.

**Kali Barnes, Stephanie Cai, Akash Chaurasia, Conan Chen and Eric Chiang, Johns Hopkins University:** Developed a device to help surgeons successfully perform corneal transplant surgery.

# A Great Concept Refined

## TEAM OF DESIGN AND PROTOTYPING EXPERTS HELPED GET CONNECTED TERRARIUM READY FOR MARKET

**BY JEREMY LOSAW**

**ONE OF MY HOBBIES** and great passions is gardening, so I was thrilled when Rhode Island software developer Suriyont (Suri) Mujjalintrakool brought his connected terrarium prototype to the Enventys Partners office in Charlotte for development and marketing services. Dubbed the SmartTerra, the IoT-enabled terrarium brings the beauty and theater of the natural world into a controlled environment to be enjoyed in the home or office.

Suri and his partner, Chattrapat Jirathanyapat (nicknamed Moo), did a great job building a working prototype. The marketing and development help would maximize the device's potential.

Suri and Moo wanted to create a terrarium that was peaceful and beautiful while being maintenance-free. "Just having a regular terrarium is not good enough for me. ... I had to add something, some sense of nature into it," Suri said.

### Design challenges, triumphs

The prototype they built to prove the concept featured an Arduino (an open-source platform for building electronics projects) as the base for the control system and had an LCD in the lid, with a knob for user input. Suri programmed different themes to change the color of the LED lights for different moods and even created a rainstorm routine that would flash the LEDs like lightning and engage a pump to sprinkle the terrarium in light rain. It even had speakers to play soothing nature sounds and thunder claps during the lightning storm.

The terrarium had all of the functional elements he wanted, but it needed a little extra to be successful in a crowdfunding campaign. The challenge for the Enventys Partners development team was to keep the core of Suri's great concept and function but add smartphone control and feedback to the device—and create an iconic and inspiring design.

The re-design started with the industrial design team. Led by Rae McNeil, the design team thoroughly explored a number of different forms, shapes and aspect ratios. The purpose of the device is to let the form of the plants dominate, so simple and light forms quickly became the preferred options.

"When designing the SmartTerra product, we really wanted to capture the essence of what the client really wanted to do, and that was a Zen-ful, open, peaceful atmosphere," McNeil said. "What we arrived at was a really simple, elegant uplifted platform that puts the plants on a pedestal."

The chosen design direction featured a split base, with the central pillar doubling as the water fill point. A central spine in the rear ties the base to the thin lid, letting the tank and the plants take center stage.

The design was then transferred to the engineering team for functionality. Computer-aided design leader Clay Trotter worked closely with the industrial design team, using SolidWorks CAD software to detail out the base, fill port, main tank and lid. Of particular attention was ensuring that the parts could be made easily by injection molding.

The biggest design challenge was allowing water and electrical connections into the lid for the rain and LEDs while still allowing it to hinge and hold in the open position. The final design included a custom metal friction hinge with passageways carved out for the electronics and water that would not pinch any of the conduits.

**The SmartTerra intelligent terrarium brings the beauty and theater of the natural world into a controlled environment for home or office.**

From left: Suri Mujjalintrakool and Moo Jirathanyapat built a great working prototype; CAD work helped detail many parts; the electronics team chose the ESP32 platform in designing the circuit board.

**"When designing the SmartTerra product, we really wanted to capture the essence of what the client really wanted to do, and that was a Zen-ful, open, peaceful atmosphere."** —RAE MCNEIL, ENVENTYS PARTNERS DESIGN MANAGER

While the CAD work was being finalized, the electronics team designed the circuit board. Because the device needed to have both Bluetooth and Wi-Fi capability, the team chose the ESP32 platform. This inexpensive module gave the team connectivity and plenty of inputs and outputs to control the device. The main circuit board was designed to fit perfectly in the central spine, and a daughter board was designed to hold the RGB (red, green and blue) LEDs in the lid.

Once the mechanical and electrical systems were designed, it was time to prototype.

### Prototype fine-tuning

Most of the physical parts were machined from plastic. This technique was chosen over 3D printing because large 3D prints can be prone to warping, and the main tank needed to be optically clear—which is not easy with 3D printing. The parts were then test-fit and assembled, and after a little bit of tuning were painted in gloss and matte white to simulate the texture change that will be on the molded parts. A chrome vinyl cut decal of the logo was then added to the lid to complete the assembly.

The circuit files were sent to a quick-turn PCB manufacturer, and we had boards back in Charlotte in about 10 days. The electronics were placed on the board and put in our reflow oven to solder them in place. The code for the sensors, speakers and pump were uploaded onto the board, and the team began its rigorous testing regime.

The team spent about a week working on the rain track, adjusting the diameter of the holes and the speed of the pump to get the rain to look natural. Step by step, the rest of the functionality was added to the prototype.

This culminated in the product launch on Kickstarter. The prototype was looking and working great, but we knew we needed an inspiring plant layout in the unit to really show off the great functionality. The team reached out to Linda Barnett, a terrarium artist in nearby Concord, North Carolina. She came to the Enventys Partners office and created a beautiful Zen forest, complete with a tiny pebble pathway and an Asian-inspired figurine. She even did a time-lapse build of a desert scene with succulent plants as an additional asset for the campaign.

The Kickstarter campaign, launched on February 6, raised about $20,000 in the first few days. Halfway through the campaign, the development team demonstrated the product on Kickstarter Live and took questions from the audience. It successfully funded with 328 backers and nearly $100,000, almost doubling the funding goal.

With consumer interest verified, the team has changed focus to finalizing the design files for manufacturing in anticipation of working with a factory to mass-manufacture the device.

# Searching for That Secret Sauce

## DOCUMENTED EXAMPLES PROVE THERE IS NO SUREFIRE FORMULA FOR INVENTION SUCCESS

**BY JOHN G. RAU**

**LAST MONTH,** I covered the subject of why so many start-ups fail. Many of the reasons are the same as why innovation in general so often fails, which has been well-documented in this space over the years.

Sometimes it is just as frustrating to see an invention idea fail as it is to see one succeed. Witness the Pet Rock, which couldn't get a patent because it had no clearly defined use—yet the inventor made millions of dollars.

So what's going on here? What is it we need to know? Is there a "secret sauce" to making inventions successful and, if so, what is it?

No secret sauce is required for inventions that occurred by accident, such as super glue, microwave ovens, Slinky, pacemakers, corn flakes, Wheaties, Post-It notes, vulcanized rubber and even penicillin, to name a few. All were discovered while scientists were experimenting on something else entirely.

### Hype, acclaim no guarantee

Even when an invention receives a lot of hype or even national acclaim, it can end up lacking some kind of ingredient in that elusive secret sauce.


Probably the most well-known and well-documented example is the Segway PT, a two-wheeled, self-balancing battery electric vehicle launched in 2001 in a blizzard of publicity and described as the future of transport.

It failed for a variety of reasons, including: expectations were too high; it was a product, not a solution; there was no clear need or well-defined target market; it was an invention rather that an innovation; and it ran into regulatory issues relative to road and sidewalk usage in some countries. The Segway PT never gained significant market acceptance and, as a result, is now more of a curiosity product in the marketplace.

In his November 2014 blog "Why bad inventions are good" (bbc.com), Richard Fisher tells the story of a product called the NeoNurture baby incubator that was claimed to save the lives of millions of children worldwide. The invention made the top of the list of *Time* magazine's 2010 "50 best inventions of the year," was featured on CNN, ABC News and in exhibits around the world, and was hailed as "genius" in many medical circles.

This device was made from miscellaneous car parts and other nuts and bolts. Unlike expensive hi-tech incubators, the NeoNurture device was powered by a motorcycle battery, used headlights for heat, and had a door chime for an alarm. This made it ideal for hospitals in rural Africa and other parts of the developing world, where repair parts are hard to find. It won plaudits worldwide but never got beyond the prototype stage and failed to catch on in hospitals.

**The Pet Rock made millions of dollars, yet a nationally acclaimed baby incubator never caught on.**

In the opinion of the inventor, Timothy Prestero, the problem was that "Every doctor and hospital administrator in the world who has seen the TV show 'ER' knows what a medical device should look like," and "They don't want effective technology that looks like it's made from car parts. … It sounds crazy, but some hospitals would rather have no equipment than something that looks cheap and crummy."

Prestero said he learned a key lesson learned from this experience: Engineers and designers need to recognize that "the adoption of technology is governed by existing cultural norms."

## It's about creating value

In its blog, aoninvent.com provides an insightful summary as to why great ideas sometimes fail:

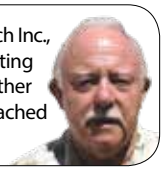
"Failure is not reserved exclusively for bad ideas. Even the best ideas in the world have no intrinsic value. Value is created only by developing an idea into a tangible product or service that solves problems and enhances the lives of others.

A nationally acclaimed baby incubator never caught on, in part because it looked too rudimentary.

"But none of that matters unless the consumer is made aware of the product and has an opportunity to purchase it in a convenient manner at a price-point that represents an acceptable perceived value."

Perhaps this is the "secret sauce!"

**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.



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# China?

## Let's Clean Up Our Own IP First

RECENT FEDERAL CIRCUIT RULINGS GIVE PATENT OWNERS HOPE

**BY LOUIS CARBONNEAU**

**MANY OF YOU** have heard that the Trump administration's new trade war aims squarely at China as payback over what is alleged to be systematic IP theft, per this complaint launched at the World Trade Organization.

"China appears to be breaking WTO rules by denying foreign patent holders, including U.S. companies, basic patent rights to stop a Chinese entity from using the technology after a licensing contract ends," the U.S. trade representative's office said in a statement. "China also appears to be breaking WTO rules by imposing mandatory adverse contract terms that discriminate against and are less favorable for imported foreign technology." Not surprisingly, China expected such a move and vowed to contest the complaint while levying its own set of tariffs to counter those announced by the United States.

Some may find this move by the current U.S. administration—in a rare moment of actual policy making—a sign of optimism for the U.S. IP market. Although IP rights are the backbone of our innovation engine and must be protected against unfair competition by foreign powers, one can only hope that our administration/government agencies start by cleaning its own backyard, no?

U.S. inventors live with a patent system that has been erected as an invalidation machine—whether they succumb during inter partes reviews in front of the much-maligned Patent Trial and Appeal Board or are axed by the federal courts under the Alice doctrine (based on the 2014 U.S. Supreme Court decision of the same name), which states that inventions that cover "abstract ideas" are not per se patentable subject matter.

Sadly, until recently, nearly 80 percent of all patents challenged under the "abstract idea" argument have fallen prey to the courts' decisions, generally by way of summary motion at the beginning of a case. This means that most plaintiffs filing suit against infringers were simply told to pack their bags very early in the process, denying their right to a day in court. As a result, with the prevalence of this new doctrine, there is little incentive for an operating company

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**Infringer defendants may no longer be able to count on summary motion to dispose of lawsuits quickly and inexpensively, as previously prevailed.**

approached by a patent owner to negotiate a license in good faith; the odds of killing the patent(s) at stake are so high and the costs to do so are still very low compared to a full trial on the merits.

Needless to say, this has had an important ripple effect on patent valuations by bringing them down significantly and on the very appetite for patent owners to initiate a lawsuit, even if the infringement is blatant (most recent data show that patent litigation in the United States is down more than 40 percent so far compared to last year). For example, we at Tangible IP often receive offers on our portfolios for sale from non-practicing entities (a party holding a patent for a product or process but with no intention of developing it) who claim that they cannot offer any cash up front for the acquisition—because the risk of losing on Alice grounds is too high and they need to keep their powder dry for the fight, so to speak. Just a few years ago, these offers would have comprised a significant cash component.

However, there may finally be some light at the end of this rabbit hole. Patent owners have recently received some good news from the United States Court of Appeals for the Federal Circuit. Two decisions from the court in *Berkheimer v. HP* and in *Aatrix Software v. Green Shades Software* stated that deciding whether a patent may simply embody an "abstract idea" may also be a question of facts, not just one of law.

Why is this important? A question of law can be adjudicated upon by a judge on summary motion, while a mixed question of law and facts must go before a trial jury. This means that defendants may no longer be able to count on summary motion to dispose of lawsuits quickly and inexpensively, as previously prevailed after the *Alice* decision. Facing the prospect of a full trial on the merits and the possibility that a jury of peers may be more sympathetic to an inventor than a judge, infringers could be forced to revisit their assumptions and realize there is value in that licensing discussion after all.

While everyone waits for the upcoming Supreme Court decision regarding the constitutionality of the PTAB itself in *Oil States Energy Services v. Greene's Energy Group*, we believe these decisions in the meantime—should they become the new normal—could have a significantly positive impact on patent valuations going forward, especially in the software arena where patents have been hit the hardest.

Time will tell if *Alice* is back in Wonderland after all.

## I'LL SEE YOU IN COURT

**Blackberry** is still flexing its patent muscles, and its latest targets are social media companies. It recently filed suits against **Facebook**, **Instagram** and **WhatsApp** for alleged willful infringement of some mobile communications patents. … Another noteworthy suit was **Tinder**'s parent company, **Match** (of eponymous Match.com), against competitor **Bumble**. This is one that won't be easy to swipe left. … **Apple** was also pretty busy lately, launching its own lawsuit in the U.K. against **Qualcomm** over SEP patents, while it was the recipient of distinct complaints filed from **Portal Communications** and **Inventergy**.

### Buyers and sellers

The big recent news was the acquisition by publicly traded NPE **InterDigital** (after a recent executive shake-up) of the whole technicolor licensing patent portfolio of 21,000 patents—which is one of the largest—around video coding technologies. The reported deal structure was an upfront cash payment of $150 million, plus 42.5 percent of future revenues in the consumer electronics field.

Another well-known NPE, **Dominion Harbor**, turned to former patent aggregation behemoth **Intellectual Ventures** and acquired a large swath (more than 1,000 assets) of patents formerly owned by **American Express**. … In previous weeks and on a smaller scale, we witnessed several transactions involving well-known players: **Samsung** bought a small portfolio of former **Yahoo** patents (now belonging to **Altaba**), while **Google** acquired virtual reality camera maker **Lytro** for $40 million in what seemed to be mostly a technology and IP deal (i.e. almost no employees moved to Google). This would likely qualify as a fire sale, as Lytro was valued at more than $360 million after a $200 million investment round just a year ago.

In China, it was reported that the Chinese Academy of Sciences put 36 of its patents up for auction and they were snapped in less than three hours for a total price of 5.03 million yuan ($794,600 U.S.). Before anyone jumps to the conclusion that the Chinese market can move assets a lot faster than in other jurisdictions, it is important to remember that under the current Chinese IP 5-year plan, one can receive up to 5 million yuan in government subsidies for bringing innovations to market. In other words, the full acquisition price was indirectly paid for by the Chinese government in this transaction.

### Winners and losers

Publicly traded NPE **Finjan** scored another big win with the announcement of a large patent settlement (reported elsewhere to be $65 million, with a potential for another $45 million) from security firm **Symantec**. Finjan is one of the few NPEs that seem to have found a winning formula inside and outside the court. Its stock was up 20 percent on the news; however, it still hovers at a fraction of its former glory from a few years back, reflecting a more generalized pessimistic view by investors of the IP monetization market.

Health-tech seems to be the latest expansion strategy of several large telcom companies, as reflected by the 300-plus patent filings by the Big 3 (**Alphabet**, **Apple** and **Microsoft**) from 2013 to 2017. Though the number is relatively small compared to their annual filings, these three are definitely not health care companies and it is interesting to see that they intend to play an increasing role in that arena.

### On the legislative front

One would be remiss not to mention the introduction of two separate bill proposals in Congress (yes, Congress still works!). The first one, dubbed the **Small Business Innovation Protection Act**, is a "feel-good" law that helps small businesses protect their intellectual property by improving education related to obtaining and protecting patents. The bill requires the U.S. Small Business Administration and the U.S. Patent and Trademark Office to work together to leverage existing outreach programs to better educate small businesses on domestic and international patents.

The second, the **STRONGER Patent Act**, is much more substantial and was introduced in the House after earlier introduction in the Senate. It is sponsored by both U.S. Reps. Steve Stivers (R-Ohio) and Bill Foster (D-Ill.), who indicated that the STRONGER Patents Act is needed now because "recent changes to patent laws have made patents harder to defend and enforce, and they have devalued American intellectual property." They also enumerate perceived shortcomings of the PTAB, including that "the PTAB now routinely throws out patents that have been duly awarded by the U.S. Patent and Trademark Office using loopholes and weaker disparate standards," that "it has canceled patents after district courts upheld the patent," and that patent owners are forced to frequently battle both in court and at the PTAB with conflicting decisions." BIO, the industry association representing the biotech businesses, came out publicly supporting the bill.

Although this bill joins a large group of other legislation intended to further reform patent law, it is noteworthy that the most recent bills introduced in Congress tend to support stronger patent rights, which would suggest that the anti-troll narrative may have finally met its Waterloo. But never underestimate the power of lobbying. Nobody should presume how this is going to end.

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

# USPTO Action is New Hope for Patents Under Iancu

## AGENCY WITHDRAWS AS INTERVENOR IN TELEBRANDS CASE

**BY GENE QUINN**

**A LITTLE OVER A MONTH** into his term as director of the United States Patent and Trademark Office, Andrei Iancu signaled he is taking potentially significant steps to reconsider and re-envision post-grant proceedings conducted by the Patent Trial and Appeal Board.

The April 2017 *Inventors Digest* reported the legal battle between Josh Malone, the inventor of Bunch O Balloons, and Telebrands Corp., the power behind "As Seen on TV." Through his company Tinnus Enterprises, Malone created one of the most popular new toys on the market in years. Using his innovation, it is possible to fill 100 water balloons in less than 60 seconds. The invention works like a charm and flies off the shelves of big-box retailers such as Costco, which during warm-weather months prominently displays Bunch O Balloons at the entrance.

Telebrands Corp., the power behind "As Seen on TV," has lost repeatedly in federal district court to Josh Malone's company Tinnus Enterprises. Malone is the inventor of Bunch O Balloons.


Telebrands—a company with a reputation within the industry for making knock-offs of successful products without regard to the existence of proprietary rights—has lost repeatedly in federal district court to Tinnus, and has lost at the United States Court of Appeals for the Federal Circuit. Every judge and every jury that has decided cases in this ongoing battle has ruled for Tinnus.

When not in front of federal judges and juries (i.e., at the PTAB), Telebrands has fared better. Nonetheless, the PTAB recently published final written decisions upholding claims from two of Tinnus' patents—U.S. Patent Nos. 9,242,749 and 9,315,282—the same patents that a federal jury found infringed and which led to an award of $12.4 million in damages last November. These decisions represent a rare case in which the PTAB agreed with a jury, which ought to give Telebrands pause.

But what really ought to give Telebrands pause is the fact that it has lost the support of the USPTO at the federal circuit.

### Big changes ahead for PTAB?

Last August 29, the USPTO filed a brief at the federal circuit as an intervenor, arguing on the side of the post-grant review petitioner Telebrands. (Post-grant review is a trial proceeding conducted at the PTAB to review the patentability of one or more claims in a patent on any ground that could be raised under Section 282(b)(2) or (3) of the patent code.) Since at least 2012, the USPTO has favored those challenging patents rather than standing behind the patents that have been duly issued by patent examiners.

But on March 29, USPTO Solicitor Nathan Kelley filed a motion with the federal circuit seeking to withdraw from the appeal as intervenor. "The USPTO stands by the position that the indefiniteness approach advocated in our brief is correct in the context of examination," the motion said. "But because the PTAB's approach to claim construction and indefiniteness during post-issuance proceedings under the America Invents Act is something the agency is actively considering, the director has decided not to advocate for a particular approach in this appeal."

The approach to indefiniteness refers to the fact that the USPTO does not follow the Supreme Court's most recent pronouncement on determining indefiniteness in *Nautilus, Inc. v. Biosig Instruments, Inc.* Instead, the PTAB explained that it believed the proper test for indefiniteness remained the test outlined by the federal circuit in *In re Packard*, which was decided before the Supreme Court's *Nautilus* decision.

Director Iancu is engaging in something that might be called a

**"We are at an inflection point with respect to the patent system itself. As a nation, we cannot continue down the same path … and we will not continue down the same path."**

**—ANDREI IANCU, DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE**

listening tour, speaking with various groups as he attempts to formulate strategies and anticipated rule-making efforts. It is widely expected by insiders that Iancu will bring change to PTAB proceedings in an effort to realize a more balanced procedure—perhaps even sweeping change. The fact that the USPTO is now openly announcing that it is actively reconsidering the PTAB's approach to claim construction and indefiniteness should be welcome news to all inventors.

In a speech at the U.S. Chamber of Commerce on April 11, Iancu said: "We are at an inflection point with respect to the patent system itself. As a nation, we cannot continue down the same path if we want to maintain our global economic leadership. And we will not continue down the same path."

To this point, the America Invents Act—which created the PTAB and post-grant administrative trials—has only been administered and interpreted under a single administration: the Obama Administration. It will be interesting to see what the patent system will become as it begins to be molded by President Trump's point man on innovation policy. I'm betting we will see something quite different, especially different from the patent system that evolved during President Obama's second term.

**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.

# Mohawk Tribe Wins Stay in Sovereign Immunity Fight

## SUPERVISING PATENT JUDGES ENGAGED IN OFF-THE-RECORD DELIBERATIONS

**BY GENE QUINN**

**IN AN ACTION** with bigger-picture ramifications, the United States Court of Appeals for the Federal Circuit issued an order on March 28 staying further proceedings at the Patent Trial and Appeal Board relating to the Restasis patents now owned by the Saint Regis Mohawk Tribe. The stay will remain in place until at least one day after the oral argument scheduled for this June.

The court will consider whether the stay will remain in effect or be lifted based on the merits of the case.

The dispute between the Saint Regis Mohawk Tribe and Mylan Pharmaceuticals arose last September when Allergan transferred the Restasis patents to the Tribe so a claim of sovereign immunity could be raised, which would circumvent PTAB jurisdiction. The tribe filed a motion to dismiss the various inter partes review proceedings instituted against the Restasis patents by the PTAB at Mylan's request. (IPR is a trial proceeding conducted at the PTAB to review the patentability of one or more claims in a patent only on a ground that could be raised under Sections 102 or 103 of the U.S. Code.)

In a controversial and questionable decision, the PTAB panel assigned to the case refused to recognize the Mohawk claim of sovereign immunity. It has since been learned through Freedom of Information Act requests that the three administrative patent judges assigned to the case engaged in off-the-record deliberations with supervising APJs, which on its face seems to clearly violate the Administrative Procedures Act.

After losing the motion to dismiss, attorneys for the Mohawk Tribe filed an immediate appeal with the federal circuit and also sought a stay from the PTAB. The PTAB denied the stay and was within days of moving to hold a final hearing on April 3, which now will not happen.

For now, the Mohawk Tribe has scored an important victory. Given the politicization of this case and the fact that the PTAB has traditionally bent to political pressure, it is virtually certain the board would have invalidated all the claims of the Restasis patents in order to send a message of disapproval.

Given the high stakes and unique legal question presented, it seems virtually certain the judges of the federal circuit were aware of the Mohawk sovereign immunity issue as it weaved its way through the United States Patent and Trademark Office and before reaching the court. If that is true, a stay could well signal that there is some serious question about the refusal to recognize claims of sovereign immunity at the PTAB. Although it can be unwise to read too much into an order to stay proceedings, this is a big win in a legal fight that eventually seems destined for consideration by the Supreme Court.


**Although it can be unwise to read too much into an order to stay proceedings, this is a big win in a legal fight that eventually seems destined for consideration by the Supreme Court.**

Perhaps by the date of the federal circuit oral arguments in June, the patent office will have completely responded to the now long-overdue FOIA requests pending that might shed a clearer light on who actually decided the issues in the Restasis IPRs, and why so many supervising APJs were allowed to participate in deliberations without it ever being made known to the parties, known to the public, or placed on the record.

# Tech Behemoths, Beware of Myopia and Hubris

## MEGA-CORPORATIONS THAT AVOID INNOVATING OFTEN PAY A STEEP PRICE, HURT THE PATENT SYSTEM

**BY GENE QUINN**

**WALL STREET** rewards those that chase earnings and profits quarter by quarter, without regard to a long-term corporate strategy. This is no doubt why some of the largest high-tech companies in the world have lobbied for a weakening of the U.S. patent system.

These short-sighted tech companies cannot envision a day when they won't be dominant. Such hubris can only exist in the absence of reflection and an understanding of history. How many of the once-mighty tech darlings ever thought they would cease to be dominant, or even cease to exist?

- Kodak invented the digital camera. But through ineptitude and a specific desire to turn back the clock and ignore trends, it ceded the industry to others, ultimately filing bankruptcy.
- The name Wang used to be synonymous with computers—at its peak, it generated $3 billion annually in revenues and employed 33,000 people—but today, it is little more than a Wikipedia entry that conveys information useful for a 1970s and '80s trivia night contest.
- Even the trendy Napster became high flying and concerned itself too much with copyright infringement, so it completely missed the usefulness of the peer-to-peer file sharing technology on which it was sitting.
- Sun Microsystems taught the world how to turn a multi-billion dollar company into a multi-million dollar company as it shifted away from the hardware and proprietary solutions to embrace open-source software.

These are but a few examples of high-tech companies that lost. What they have in common is an unwillingness to plan for the future. In some cases, they hoped to stave off the tides of change to cling to old-world models, which have also ruined companies such as Sears & Roebuck—which, at one time, was the real world equivalent of Amazon.com.

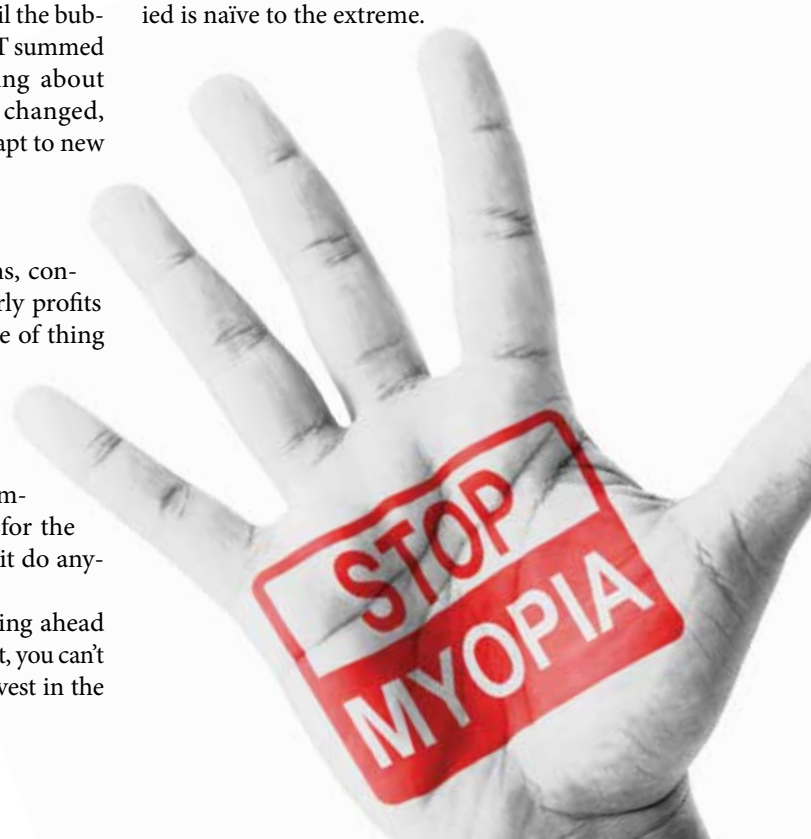
In other cases, they chased fads that seemed trendy until the bubble burst. Perhaps CNET summed it up best when talking about Yahoo! The internet changed, but Yahoo! failed to adapt to new realities.

### Copycat mentality

For a variety of reasons, constantly chasing quarterly profits is myopic. It is the type of thing that leads to very bad decisions and sometimes even unethical or fraudulent behaviors. It also leads to a complete inability to plan for the future. But how could it do anything otherwise?

If you are only looking ahead three months at the most, you can't expect to identify or invest in the next big thing or even have any clue what that next big thing might even be. Chasing numbers quarter to quarter is a recipe for disaster and incompatible with innovation.

Such myopia isn't the only short-sighted predilection giant tech companies display. Affirmatively weakening the patent system in order to avoid upstart competitors that are lean, full of ideas and willing to take risks to succeed is not just myopic; it is stupid. Sure, copying the work of others today may make business sense when trying to meet or beat earnings expectations, but expecting others to continue to invest, innovate and take risks when what is produced is simply copied is naïve to the extreme.



**Affirmatively weakening the patent system in order to avoid upstart competitors that are lean, full of ideas and willing to take risks to succeed is not just myopic; it is stupid.**



Corporations that are the darlings of the NASDAQ are too invested in old-world, or at least older-world, business models. These mega-giants do not innovate; they copy.

When Google and Samsung entered the marketplace with the Android OS smartphones, was that innovative? No, not by any proper definition of what it means to be innovative. The fact that the smartphones they sell were new to them didn't mean they were new to the world or the marketplace. Apple was the innovator, and the rest of the market were those seeking to mimic the innovator. Mimicking is not innovating—and it is shocking that the mega-giants of the tech world have been able to convince judges, juries and Congress otherwise.

## Risk-taking minimized

Large companies cannot innovate because they simply do not create an environment that encourages or supports thinking outside the box and taking risks, both of which are required for innovation. If we want a disruptive innovation that lifts markets and economies for the benefit of everyone, we need policies that reward and even favor individuals, start-ups and small businesses.

Outside-the-box thinking and risk taking occurs on the micro level, not the macro level. But again, that should hardly be surprising. When the inventor is fewer degrees of separation away from the manager who can green-light the project, more successful projects are undertaken and fewer successes are weeded out.

The lack of ability to innovate and layers of bureaucratic red tape explain why large corporations that dominate a particular market generally engage in only incremental, sometimes minimal, innovation. Such minimal or low-level incremental innovation moves at a slow pace, just ahead of consumers becoming disengaged with whatever the current offering presents. Policies that allow this to be the predominant innovation do not benefit society; they affirmatively trap society into cycles of sub-optimal innovation. Such a stagnant innovation ecosystem is the antithesis of an economy with a strong patent system that recognizes, grants and stands behind strong patent rights.

Strong patent rights block competition, which requires competitors to push the innovation envelope in order to compete. The strength of a patent is directly correlated with the quantum of innovation that a society will see. As the U.S. patent system has decayed during the past 12 years, the United States has not seen paradigm-shifting, disruptive innovation. As the Chinese patent system has grown stronger, more investment and innovation into areas such as artificial intelligence are occurring there.

Although it seems impossible to believe, many of the great tech giants of today will either at some time be just ordinary companies in mature markets or will cease to exist. Burning white-hot like a soon-to-be-burned-out star, hopefully these tech giants that myopically chase quarterly earnings and are hell-bent on dismantling the U.S. patent system won't take down our innovation economy with them.

## MAY 2018 TRADE SHOWS

**May 7-11**
**International Plastics Showcase (NPE)**
*From emerging technologies to utility for inventors*
Orange County Convention Center
Orlando, Fla.
No phone contact for show
Submit form online
npe.org

**May 8-10**
**National Hardware Show**
Las Vegas Convention Center
First-time exhibitors: 203-840-5363
nationalhardwareshow.com

**May 22-24**
**Licensing International Expo**
Mandalay Bay Convention Center
Las Vegas
888-644-2022
licensingexpo.com

**May 22-24**
**Society for information Display (SID)**
*For products such as televisions and computer monitors*
Los Angeles Convention Center
800-350-0111
sid.org

# IoT Corner

The release of third-generation development kits by Popular IoT hardware platform **Particle** (particle.io) have elicited massive support from the IoT development community. The kits are used to create cellular-connected electronics projects and products.

The three new boards—dubbed the Argon, Boron and Xenon—are a big step forward in cost and performance for developers. All three boards, powered by Nordic Bluetooth 5, have Feather-compatible footprints to make it easier to attached peripherals such as LCDs. They also include mesh networking capability for easy device-to-device communication. The Xenon is the base model that retails for just $9; the Argon adds Wi-Fi capability for $15; and the Boron includes LTE cellular connectivity for $25.

The new lineup was announced in February, and the first preorders for June delivery are sold out. The second production run for July delivery was nearly sold out by early April. —*Jeremy Losaw*

# Wunderkinds

It's not your conventional innovation, but like so many success stories it was inspired by good intentions: 14-year-old **Andrew Young Jr.**, a student at the Alexander Central School District near Batavia, New York, saw his grandmother burn her fingers while handling a hot toaster. His solution was the "Toaster Shooter," which sits at a slight angle and shoots the bread into the air and onto your plate so no one has to touch a hot toaster. His innovation, one of five finalists chosen from almost 13,000 other submissions in the nationwide Dreamvention contest, won the $250,000 first prize last December 12.

PHOTO COURTESY OF DREAMLIGHT

# What IS that?

It's either a high-tech blindfold, massager or sleep mask, right? Those who chose the latter can advance to the bonus round. The **Dreamlight**, which bills itself as the world's smartest sleep mask, utilizes light, sound and genetics in its goal of providing optimal sleep. Features include light therapy to calm the user into meditation; soothing, customized soundscapes; and a DNA-data partner to better determine users' sleeping habits and give customized recommendations.

**45** The number of cryptocurrency patents filed by **Bank of America** in the past decade—more than any other company—according to the Bitcoin Patent Report earlier this year. The bank is not normally associated with blockchain technology.

# WHAT DO YOU KNOW?

**1** **What is the fastest-growing United States patent category during the past five years?**

**A)** 3-D printing **B)** e-cigarettes
**C)** Artificial intelligence **D)** None of the above

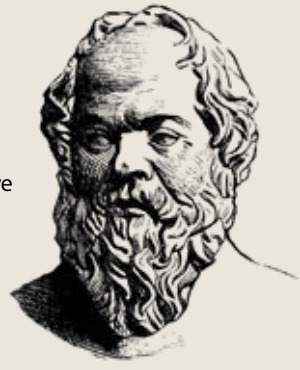
**2** **Which inventor died with the most wealth—John Pemberton (Coca-Cola) or Caleb Bradham (Pepsi-Cola)?**

**3** **True or false: Thomas Edison invented the light bulb primarily for home use.**

**4** **The quote "Necessity is the mother of invention" is most commonly attributed to which Greek philosopher?**

**A)** Socrates **B)** Aristotle
**C)** Plato **D)** None of the above

**5** **True or false: Invention and innovation are the same thing.**



**ANSWERS:** 1. B. Their compound annual growth rate of 45 percent may be due in part to full legalization of marijuana in some states and prescription access in others. 2. Probably Bradham, but neither cashed in. Pemberton became addicted to morphine after a Civil War injury, later sold the company, and died basically penniless in 1888. Bradham (like Pemberton, a pharmacist) declared bankruptcy and sold the company following an 830 percent spike in sugar prices after World War I. He returned to work as a pharmacist and died in 1934. 3. False. Edison did not invent the light bulb, though his was the first practical and affordable one. 4. C. 5. False. Invention is the creation of an idea or product for the first time; innovation is the use of an idea or method.

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