

Inventors

DIGEST

Hits and Errors

BASEBALL INVENTIONS

-HOT AND NOT SO HOT

Invention-Con

YOUNG INVENTORS
IN USPTO SPOTLIGHT

Flowbee Frenzy

GEORGE CLOONEY CUTS
HIS HAIR WITH WHAT?



\$5.95

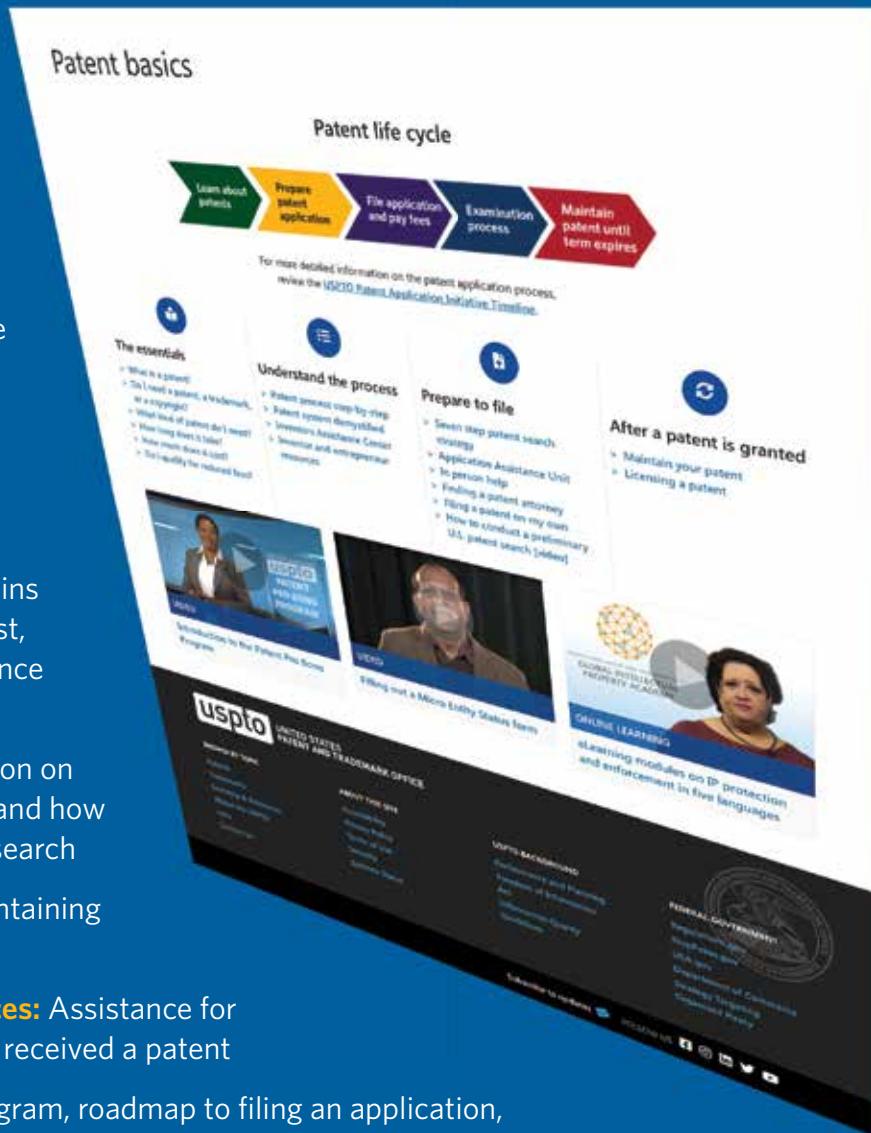
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Visit the updated patent basics webpage

The United States Patent and Trademark Office (USPTO) website at www.uspto.gov features a newly redesigned patent basics webpage, reachable with just one click from anywhere on the site.

The new-look, easy-to-navigate page breaks down the steps of the patent application process to make it understandable for newcomers to patenting. The page links to useful content including:

- **Pre-application education:** Explains the different types of patents, cost, timelines, and how to get assistance with applications
- **Application resources:** Information on the Application Assistance Unit and how to conduct a preliminary patent search
- **Post-application resources:** Maintaining and licensing your patent
- **Post-grant entrepreneur resources:** Assistance for inventors and startups who have received a patent
- **Videos:** The Patent Pro Bono Program, roadmap to filing an application, and how to fill out a Micro Entity Status form



This is just one example of the USPTO's ongoing effort to make the site as helpful and easy to use as possible. Let us know what you think about the new page — email us at OCCOfeedback@uspto.gov.

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Give no quarter to Patent Pirates.

Or they'll take every
last penny.

Our ideas and innovations are precious. Yet Big Tech and other large corporations keep infringing on our patents, acting as Patent Pirates. As inventors, we need to protect each other. It's why we support the STRONGER Patents Act. Tell Congress and lawmakers to protect American inventors.



SaveTheInventor.com

Invention-Con Goes Young

Special student programming inspires in annual instruction-rich event

AT 15, GITANJALI RAO has already given so much to this world. Now it was time for her to receive a surprise gift.

Molly Kocialski, director of the USPTO's Rocky Mountain Regional Office, reached behind a screen during an interview with Gitanjali on the first day of the USPTO's recent Invention-Con 2021. She presented her with a beautifully framed display that people three, four, and five times her age would love to have.

It was her first patent.

The presentation to *Time* magazine's first Kid of the Year in 2020 was a signature moment of this year's Invention-Con, a USPTO celebration August 18-20 that featured special student programming. The 15-hour online event captivated more than 1,000 hopeful and confirmed inventors and entrepreneurs who registered. All were treated to a showcase of innovation, instruction and inspiration.

Gitanjali had been officially granted her first patent the previous week, on August 10, for a device that can detect lead in drinking water. Now an incoming junior at STEM School Highlands Ranch (Colorado), she was 11 when she learned about a contaminated water crisis in Flint, Michigan.

She eventually designed a device that uses an arduino processor and carbon nanotubes to detect lead before sending a report to a smart phone app. Gitanjali told the USPTO's Kocialski that she

has always wanted to help people. After conceiving and working on her invention, applying for a patent was the next logical step.

"One of my thought processes was, 'How do I secure my ideas? How do I secure what I've come up with—this process that I've created?'" And that's where the idea of applying for a patent came from."

Gitanjali was among several young people whose stunning innovative minds and enthusiasm were on display. Fifteen-year-old Bishop Curry, who invented a device to help prevent hot car deaths, said he routinely gets up in the middle of the night to write down ideas. Twelve-year-old patentee Jennifer Wen, who with her 17-year-old brother Brian Wen invented a type of bookmark with Velcro that marks the last word read in a book, and said she wants to become a patent attorney.

Instruction was a recurring theme in the event, including tutorials delivered by USPTO and national intellectual property experts on establishing and protecting patents, trademarks and copyrights. Workshops covered issues ranging from building a brand to public relations to plant patents.

Virtual attendees were also reminded of the numerous resources available to them including pro bono services and recurring online classes involving patents, trademarks and how to bring your product to market.

NaThanya Ferguson, a supervisory innovation development program manager in the USPTO's Office of the Chief Communications Officer, discussed those resources in her concluding remarks. "Right after you have that 'aha!' moment, think of us—your USPTO," she said.

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Fifteen-year-old
Gitanjali Rao, *Time*
magazine's first Kid of
the Year in 2020, was
a featured interview
during the USPTO's
Invention-Con 2021

August 18-20. The
15-hour online event
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and entrepreneurs who
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of innovation, instruc-
tion and inspiration.



TRADING CARD

NO. 21

Beulah Louise Henry

IT WOULD have been a fitting coincidence. Perhaps because Beulah Louise Henry became so well known as the female Thomas Edison, many internet sources list her month and day of birth as February 11—the same as Edison's.

That information is inaccurate. According to the National Inventors Hall of Fame, which posthumously inducted her in 2006, she was born Sept. 28, 1887 in Raleigh, N.C. (Edison was born in 1847).

But it is accurate to say that the woman dubbed "Lady Edison" in the 1930s received 49 U.S. patents and was responsible for at least 100 inventions. The diversity and quality of her works were as impressive as that quantity.

Henry began life with an impressive lineage—the direct descendant of President Benjamin Harrison on her mother's side and Patrick Henry on her father's side. She first wanted to be a writer, a talent in evidence with her most famous quote: "If necessity is the mother of invention, then resourcefulness is the father."

Self-educated and naturally inquisitive, she was sketching invention ideas at age 9.

Henry was granted her first patent at 25, for a vacuum-sealed ice cream freezer. The machine (U.S. Patent No. 1,037,762) featured a freezing chamber surrounded by an insulating structure, with minimal use of ice.

A year later in 1913, she received her second and third patents for a handbag and an umbrella, both with interchangeable covers. She then moved to New York, where she started Henry Umbrella & Parasol Co. and later B.L. Henry Co. of New York.

Henry had several inventions involving improvements to machines. These included the protograph, a device attached to a typewriter that produces four additional typewritten copies without carbon paper. She invented the first bobbinless sewing machine.

Among other inventions that displayed her great range were a clock specifically designed to

help children learn to tell time; continuously attached envelopes; a hair curler, and a can opener.

Scientists and patent officials were amazed by Henry's mechanical and technical expertise, especially because she had no technical training.

"I invent because I cannot help it," she said.

Requests for the trading cards can be sent to education@uspto.gov. You can also view them at uspto.gov/kids.



WHAT'S NEXT

LEARN ABOUT DESIGN PATENTS: This free, virtual event, conducted from 1-3 p.m. ET on September 23 by a USPTO design supervisory patent examiner, will explain what a design patent is and how it differs from a utility patent. Please register by September 22.

TO REGISTER: uspto.gov/about-us/events/learn-about-design-patents-4

TRADEMARK BASICS BOOT CAMP: Modules in this free, eight-part virtual series resume with Module 1 on October 5, with subsequent modules every Tuesday in October and November from 2-3:30 p.m. ET. Users can attend any or all specific modules that meet their needs.

- **October 5, Module 1:** For small business owners or entrepreneurs interested in learning about trademarks and how to apply for a federal registration.
- **October 12, Module 2:** The overall trademark registration process, from filing to registration.
- **October 19, Module 3:** Important principles related to trademark searching and effective use of the USPTO's Trademark Electronic Search System (TESS).

TO REGISTER: uspto.gov/about-us/events/trademark-basics-boot-camp

Visit uspto.gov/events for many other opportunities to attend free virtual events and/or training.



NEWS FLASH

Landmark Anniversary

September marks 10 years since signing of America Invents Act

President Barack Obama signs the America Invents Act into law at Thomas Jefferson High School for Science and Technology in Alexandria, Virginia, Sept. 16, 2011.



INDEPENDENT INVENTORS want to have a voice in patent and trademark legislation. They want a process that is set up to make it easier and faster to get their products to market. They don't want patent backlogs. They want a speedier and less-expensive alternative to district court legislation. They want the ability to grow globally. They want a patent and trademark office that encourages and supports American innovators.

These were all hallmarks of the 2011 Leahy-Smith America Invents Act (AIA), which celebrates its 10th anniversary on September 16. The legislation, signed into law by then-President Obama, included some of the most significant reforms to U.S. patent law since 1836.

It was no coincidence that several independent inventors were onstage with the president and in the audience as he signed the legislation. The AIA was a collaborative effort with input from the inventors it was designed to serve.

"The AIA is a great example of getting stakeholders, the agency and Congress all in the same place on 'What are the meaningful changes to be made to improve the system?'" Dana Colarulli, executive director of Licensing Executive Society International (LESI), said on the fifth anniversary of the law.

Final provisions of the law were the result of years of careful consideration.

"Congress did not create the AIA in a vacuum. It sought significant stakeholder input," Lisa K. Jorgenson, deputy director general at the World Intellectual Property Organization, recalled.

"It substantially changed our patent laws affecting many stakeholders. There was a lot of discussion and debate going on about what should be included and excluded from the final version of the bill but in a way that would maintain a healthy, robust, and really well-balanced patent system."

The AIA's signature accomplishment was changing the United States to a first-to-file patent system instead of first to invent, which standardized it with patent systems throughout the industrialized world. This aided in consistency between the filing processes of the United States and other countries, helping domestic inventors to grow globally.

The AIA also helped put patent applications on a faster track.

It permitted the USPTO fee setting authority and, working with Congress, the ability to retain all fees collected. That budgetary control allowed the agency to collect what it needed to

hire more examiners and bring state-of-the-art IT resources to the agency, helping to reduce the patent application backlog of newly filed applications by 28 percent since its all-time high in January 2009.

The Patent Trial and Appeal Board was created by the AIA in an effort to save time and money by expediting disputes on patent validity. Its processes and results have drawn some criticism. But as Joseph Matal, former counsel of the Senate Judiciary Committee, said:

“The patent system is very complicated. The AIA touched on a number of sensitive issues, and a lot of those issues are very difficult. It just takes a long time to drill through them and figure out what’s the right solution—something that’s going to work going forward and that’s fair to everyone.”

Another AIA component intended to help independent inventors keep costs down is its Patent Pro Bono Program, which provides free attorney representation to help small businesses with limited resources that need help applying for a patent on an invention.

The AIA also helped expand recruitment and outreach efforts for the USPTO through the establishment of regional offices. Among other benefits to the agency, the offices provide useful resources to inventors and entrepreneurs and foster more innovation in local communities. They are located in Dallas, Texas; Denver, Colorado; Detroit, Michigan; and San Jose, California. Further expanding on these efforts, the USPTO also recently established their Eastern Regional Outreach Office, which operates out of USPTO headquarters in Alexandria, Virginia.

The PTAB

Understanding the roles and processes of the tribunal formed in 2012

THE LANDMARK America Invents Act produced a tribunal within the USPTO that was also unprecedented—the Patent Trial and Appeal Board (PTAB).

Formed on Sept. 16, 2012, the PTAB is designed to streamline the process for determining issues of patentability. Its predecessor tribunal was called the Board of Patent Appeals and Interferences (BPAI).

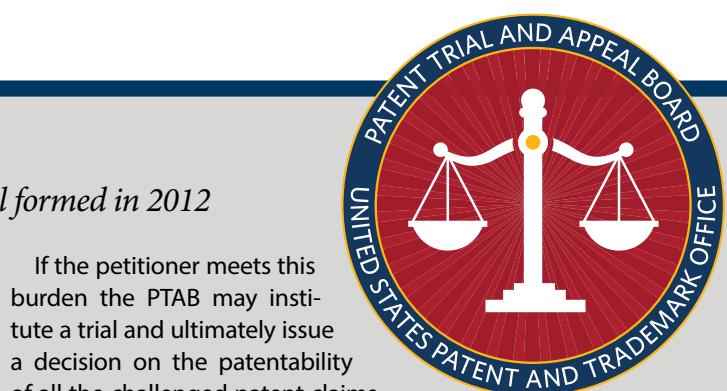
The PTAB employs more than 200 administrative patent judges (APJs). Those APJs are appointed by the Secretary of Commerce in consultation with the director of the USPTO.

APJs are required to possess an active license to practice law, substantive experience in patent law, technical expertise, and have at least a bachelor’s degree in an engineering or scientific discipline. They thus are experts in both law and science.

The PTAB adjudicates two main types of cases concerning the patentability of an invention:

Ex parte appeal. After an examiner twice rejects a claim or issues a final rejection, the applicant can seek review by the PTAB. The PTAB will determine whether the examiner erred in rejecting the claimed invention and issue a written appeal decision. The PTAB may affirm or reverse the examiner.

AIA trial proceeding. A third party may challenge the patentability of the claims in an issued patent—in short, asserting that the USPTO should not have issued the claims. The petitioner must show as a minimum threshold that at least one of the challenged patent claims is likely unpatentable.



If the petitioner meets this burden the PTAB may institute a trial and ultimately issue a decision on the patentability of all the challenged patent claims. During the trial proceeding, the patent owner may defend the patentability of the issued patent claims. At the conclusion, the PTAB will issue a final written decision and uphold some, all, or none of the challenged claims.

Briefs and oral argument. During both appeals and trials, the parties present arguments and evidence in written briefs. The parties also can request an oral hearing to verbally explain their positions to a three-APJ panel. During the oral hearing, the APJs may ask questions of the parties to help them in deciding the case.

Rehearing and appellate review. Following the issuance of a PTAB decision, either for an ex parte appeal or an AIA trial proceeding, the losing party may request rehearing by the same three-APJ panel and/or by the USPTO director. Additionally, the losing party may seek review of the PTAB’s decision by the U.S. Court of Appeals for the Federal Circuit.

For more information about the PTAB, please visit uspto.gov/patents/ptab/ptab-inventors. The PTAB also hosts webinars to explain its proceedings, address best practices, and answer questions. Please check out the webinar schedule at uspto.gov/patents/ptab/procedures/2020-ptab-boardside-chat.



I Thought I Knew. I Thought Wrong.

Inventors are often unconventional. Jack Lander is very much an inventor.

Participating in a panel discussion at the United States Patent and Trademark Office's virtual Invention-Con on August 19, the longtime *Inventors Digest* columnist with 13 patents eschewed the common wisdom about where new inventors should first look for help.

"They run out to a patent attorney, and that's the wrong way to go," he said. Instead, they "should start with looking for sources of information, one being *Inventors Digest*."

We appreciate the plug from someone who is always plugged in, and always loyal. Best known for his patent involving mechanisms for a disposable laparoscopic surgical instrument—dramatically reducing the need for incisions that cut the skin—Lander has written proudly for this magazine for 26 years without missing an issue.

As I watched and/or listened to the three-day event, I was impressed with the seemingly unending expert opinions and advice on all things intellectual property. Some of them raised eyebrows.

But in the end, I was most amazed by lesser-known facts that raised awareness, including mine.

The main types of intellectual property are patents, trademarks and copyrights, correct? Nope. There are also trade secrets, such as private company information and processes.

There are two kinds of patents—utility and design—right? Wrong again. Don't forget plant patents. I was also surprised to learn that you don't have to invent a plant to get a plant patent; you can also get one by discovering a plant and asexually reproducing it.

Did you know you can get a trademark registration for distinctive aspects that include sound, colors, motion and even scent? (The first trademarked smell in America, issued in 1990, was a plumeria blossom-scented embroidery thread.)

Invention-Con was a delight as we witnessed the energy and brilliance of featured teen inventors, as well as the diverse convictions of seasoned experts. But Jack Lander would be the first to tell you that in inventing, you can never have enough good information and resources. No one does this better than the USPTO.

—Reid
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Inventors

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

Alliance's IP Mission Goes National

Intellectual property is the key to the knowledge economy™ and the future of the nation. IP is one of a handful of tenets embedded in the U.S. Constitution.

However, IP has many challenges to properly incentivize, not inhibit, innovation. The U.S. Intellectual Property Alliance (USIPA) nonprofit has a mission to help the United States become a much better IP ecosystem for the benefit of all citizens.

USIPA is launching innovative programs based on 20 years of success in Georgia and through the Georgia Intellectual Property Alliance.[®] It will build on their collective accomplishments of increasing IP awareness, education, collaboration, diversity and inclusion. The USIPA will now take these programs

nationwide, and we will bring national and local IP organizations together to maximize the best of all of them.

With your help, we will execute upon our mission and build a world-class IP ecosystem that serves all classes of diverse creators, protectors and enablers in the United States to help all Americans get what they need as fast as possible and at a fair price.

—BRUCE BERMAN, EXECUTIVE COMMITTEE MEMBER, USIPA

(*Editor's note:* The USIPA, organized by some of America's strongest leaders in IP rights, was formed early this year. For more information, go to usipalliance.org.)



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WORKING TO HONOR THE PURPLE REIGN

The announcement that an independent music publisher and talent management company acquired a significant portion of **Prince**'s estate isn't just the latest in a slew of recent similar deals involving legacy artists. It's a stated attempt to take care of the artist's legacy, his heirs and his intellectual property rights.

Billboard reported that Primary Wave acquired 42 percent of Prince's

estate, per court filings in late July, after buying out virtually all of the interest from three of Prince's related heirs. By owning the largest single interest in the estate, the company gets rights to his publishing, master recording income stream, name, likeness and brand once the estate comes out of probate..

The deal is particularly noteworthy, given that the singer who died in 2016 was always vigilant about his intellectual property rights and had a long battle with his former record company. He did not have a will when he died.

Remember when Prince changed his stage name in 1993 to an unpronounceable symbol, prompting the

media to refer to him as The Artist Formerly Known As Prince? This was due to the disagreements with his label, Warner Bros., which he said had too rigid of a production schedule and abused its right to use his name.

Prince's longtime lawyer and manager L. Londell McMillan told the *Wall Street Journal* he wants to resolve the estate's legal issues with the IRS, and plans to work with the late singer's heirs to market his music to new audiences.

"No matter what, we are going to fight to preserve the legacy of Prince," McMillan told the newspaper. "We would like to bring the purple back and actually do things the way Prince did." —Reid Creager

BRIGHT IDEAS

Nextube

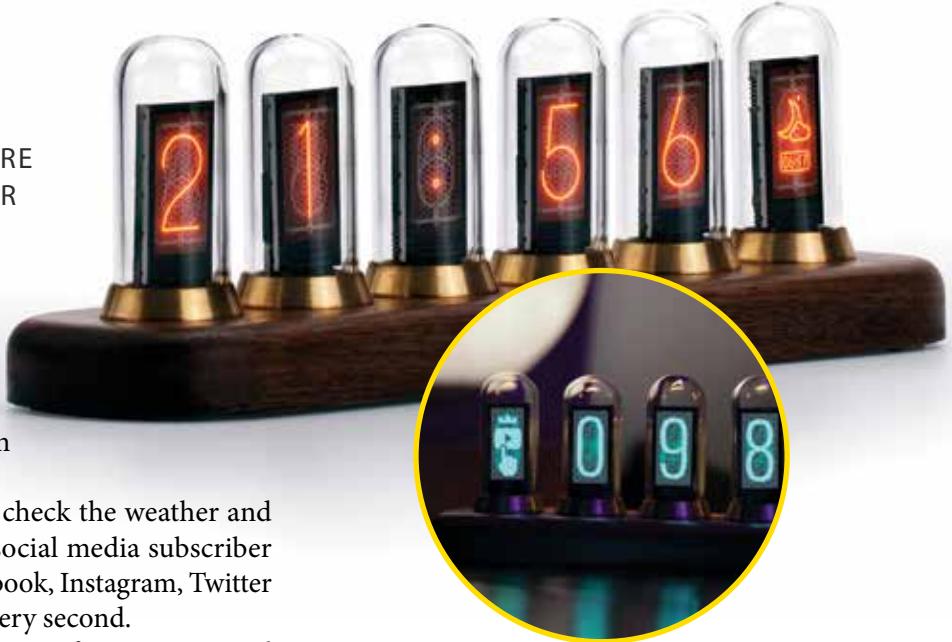
RETRO NIXIE CLOCK, TEMPERATURE DISPLAY, SOCIAL MEDIA COUNTER
rotrics.com

Inspired by the 1950s-'70s Soviet Nixie tube clock, Nextube uses modern IPS screens to revive the warm orange glow of old tech while displaying key metrics of modern life. The display is available in many fonts and colors.

Nextube can arrange your schedule, check the weather and light up your space. It has a real-time social media subscriber counter for your YouTube channel, Facebook, Instagram, Twitter or TikTok account. Data are updated every second.

A sensitive rhythm module reacts to music of any genre in real time, transforming every tune into light.

Nextube will retail for \$189. Shipping for crowdfunding Rewards backers is set for December.



"Invention is a process; you don't get there overnight."

—LOUIS FOREMAN

DreamGlass Lead Pro

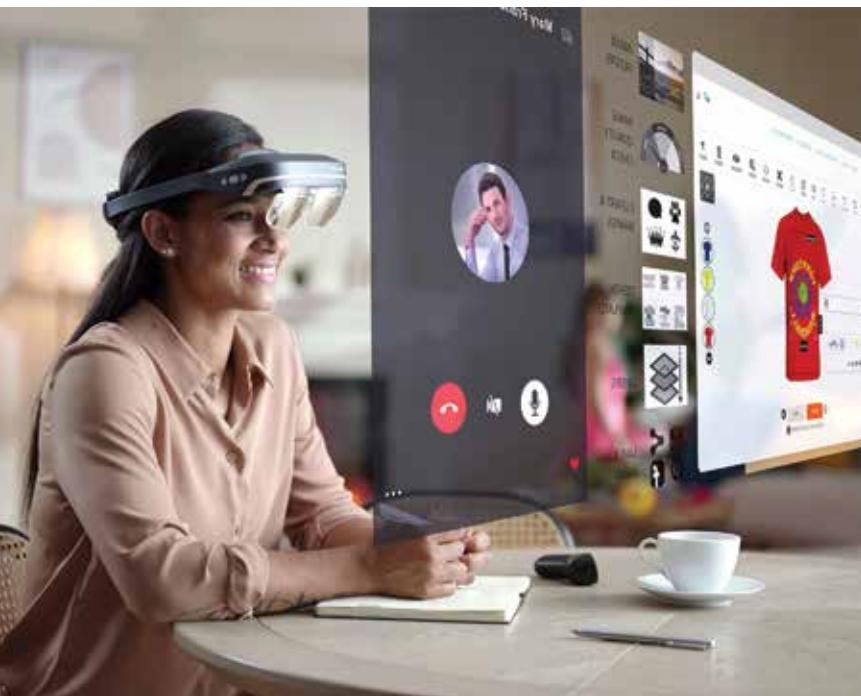
4K ALL-IN-ONE AR GLASSES
dreamworldvision.com

Billed as the world's first 4K all-in-one AR glasses, the new version of DreamGlass brings new features that include a 200-inch display.

A 90-degree field of vision naturally merges augmented details into the real world. Major apps, such as YouTube, Netflix and TikTok, Facebook, are all supported.

During fitness efforts, the device lets you move freely with no wires to slow you down. The AR glass instantly tracks your head movements, so the 200-inch screen moves with you no matter which direction you are looking into, providing intuitive coaching.

DreamGlass Lead Pro, scheduled for shipping to crowdfunding Rewards backers in December, will retail for \$1,199.



CORKY X

SUNGLASSES-MOUNTED
REARVIEW MIRROR FOR CYCLING
thebeam-europe.com

This mirror ensures you don't have to look over your shoulder to see traffic or other cyclists from behind.

CORKY X sits at the corner of your visual periphery. Minimum tolerance assembly prevents vibration even when on rough terrain. The lightweight 14g design doesn't cause your glasses to tilt.

The device can facilitate completing interval sets because you can focus completely on the road ahead and data targets on your cycling computer, while remaining in an optimal riding position.

CORKY X will retail for 65€ (approximately \$76 U.S.), with planned shipping from France for crowdfunding Rewards backers in September.



POSSIBLE DELAYS

Coronavirus-related factors may result in changing timetables and later shipping dates than companies originally provided.



Drinkie

SMART, SELF-CLEANING
WATER DISPENSER
cheerble.com

Drinkie automatically cleans your pet's dish while you're away. Featuring a patent-pending Pulse System, the dispenser rinses your pet's dish as many times as you set by the smart app.

The device delivers clean water to your pet's dish right from the freshwater tank. Stray whiskers, food particles and germs can't get into the pet's dish; they are rinsed away into a separate airtight wastewater tank.

With 106 oz. (3 liters) freshwater storage and 35 oz. (1 liter) wastewater storage, Drinkie can provide sufficient water to your pet for up to five days.

Drinkie, which will retail for \$169, is to be shipped to crowdfunding Rewards backers in January 2022.



Going With the Flowbee

KITCHY HAIR-CUTTING PRODUCT BUTTRESSED BY PANDEMIC
—AND A SURPRISE CELEBRITY ENDORSEMENT

BY REID CREAGER

"STOP IT! YOU DON'T USE IT!" an incredulous Tracy Smith said to George Clooney during a "CBS Sunday Morning" interview that aired last November.

Like anyone who ever spent any time around the superstar actor, she didn't know what to believe.

The TV reporter was astonished when Clooney told her he uses a Flowbee to cut his

hair. He said he had been using the device—a vacuum cleaner attachment that comes with 10 plastic spacers—for 22 years.

Was he serious?

This is a man who once pulled a hideous painting out of the garbage, signed it, claimed he had painted it, gave it to a friend and enjoyed seeing it on his wall for five years while the obliging friend cringed. Practical jokes are who he is when he isn't playing someone else.

But Rick E. Hunts probably didn't care whether Clooney was serious or not.

Hair-trigger reaction

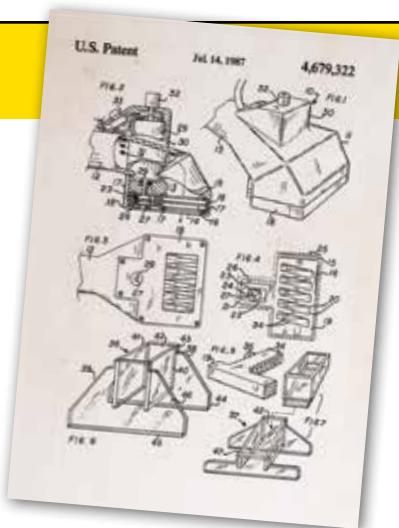
Hunts got his patent for the Flowbee in 1987, when he was a carpenter in San Diego. At one point he was reportedly selling the hair vacuums out of his car.

He began marketing them in 1988 via cheesy infomercials that paid off. Sales reached 2 million units by 2000. In addition to the product's low cost, convenience and do-it-yourself savings, the vacuum all but eliminates any cleanup issues; astronauts have used similar devices in space so that stray hair does not interfere with sensitive electronics.

PATENT PATHWAY



U.S. Patent No. 4,679,322, "Hair Clipper," begins with this abstract (short summary): "A precision hair clipper for cutting the hair of a subject to a uniform length which comprises a housing defining a flow chamber attachable to a vacuum hose."



Flowbee is based in Kerrville, Texas, according to its website—the same website that crashed late last year from massive activity after Clooney's revelation and subsequent demonstration of the Flowbee on a late-night talk show, the latter proving he wasn't kidding. The fact that many barbershops and salons were closed at the time due to COVID-19 made for a marriage of perfect timing.

(How fixated is the public on comments made by celebrities? Last December, a YouTube video by a four-man group calling itself "The Behavior Panel" discussed verbal and body language clues to determine whether Clooney was telling the truth. At last count, it received 67,874 views.)

A company Facebook post last December 7, eight days after the "CBS Sunday Morning" spot, showed a photo of Clooney. Underneath, it said:

"We're not going anywhere—just working very hard to get our products back in stock for those of you who'd like one. To all of our valued customers that have used & believed in this amazing product of ours for the past several decades, and the new customers that are sure to come—we'd just like to say Thanks & Stay Safe!"

No more selling from the car

Internet records show Hunts, 66, has most recently lived in Eagle Point, Oregon. *Inventors Digest*'s request for comment from him was not returned.

It's safe to say that between the Clooney endorsement and the Delta variant of COVID-19 threatening to close some barbershops and salons again, Hunts is a busy guy.

Earlier, Troy Hunts, vice president of Flowbee, told TMZ: "The actor's public shout-out in support of the product resulted in sales going up tenfold" due to what he called "the Clooney Effect."

You have doubtless read in this magazine that celebrity testimonials don't automatically guarantee marketing success. But the Clooney Effect here was different because not only is he almost universally liked, his comments were an organic part of a non-commercial interview—resulting in a seemingly unintentional partial infomercial.

The hairs on the back of Rick E. Hunts' neck must have been standing up. ☺

INVENTOR ARCHIVES: SEPTEMBER

Sept. 12, 1961: U.S. Patent No.

3,000,000 was granted to Dr. Kenneth R. Eldredge of Palo Alto, California, for an automatic reading system for utilities. He was a staff scientist at the Stanford Research Institute.

His invention allowed for the conversion of human language into machine language, vastly improving the efficiency of automatic data-processing machines. The patent, now expired, was filed by General Electric Co. in 1955.

Dick West of United Press International wrote in a humor column that the patent was for "an electric instrument which makes it possible for banks to bounce checks faster than was hitherto possible.

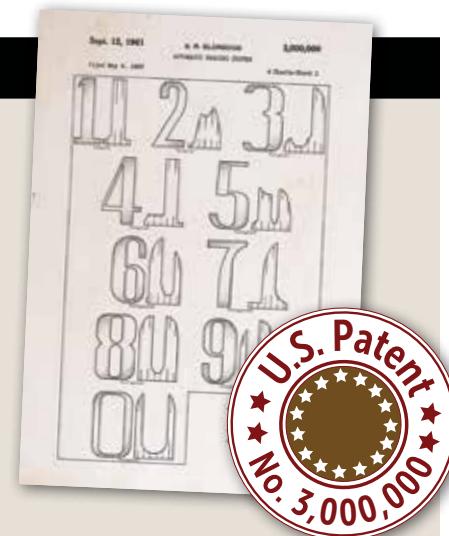
"Actually, the machine does more than bounce checks, but that is the part I found impressive. It means that some of us depositors who take

a calculated risk now and then will have to start getting to the bank a little earlier on payday.

"The machine was described in a press release as being 'no larger than a watermelon,' but this is misleading. The model I saw on display ... was somewhat bigger than a breadbox."

West lamented that U.S. Patent No. 2,999,263, issued to John Raymond Smith of Rockingham, North Carolina, was not the milestone patent. "It is a hair brush with a built-in vacuum cleaner for removing loose dandruff." (*Editor's note: A predecessor to the Flowbee?*)

"Other new inventions include a portable rest room, a combination dust pan and brush, and—wonder of wonders!—a device to keep dogs away from trees. These are things the world long has needed."



The 4 millionth U.S. patent was issued 15 years later, and the 5 millionth another 15 years after that (1991). The 6th millionth patent was issued in 1999—a much shorter duration from the previous million milestone and the beginning of a rapid increase in the pace of issued patents.

The Language (and Vision) of Inventing

2 ROCKS THAT BECAME A HAND AXE WERE A FOUNDATION FOR INVENTIONS, AND LATER THE SPOKEN WORD **BY JACK LANDER**

TWO AND A HALF million years ago, a human picked up two rocks from a nearby stream. One was selected as the workpiece, the other as the hammer.

The person oriented the workpiece upright on a boulder and struck several sharp blows to its top. It split into two pieces, one about a quarter of the workpiece's mass. Then began the challenging job of chipping away at one side of the smaller chunk to form a sharp edge.

The finished tool was what anthropologists call a hand axe—often referred to as humankind's first invention.

We date the origin of the first humans, *Homo habilis* (handy man), from the invention of hand axes because their rough craftsmanship demonstrates the first evidence of the planning and making of an artifact of any kind by humans.

Vocal language's start

Our brains were about half their present size back then; the inventive mind was not an experienced mind. We did not have speech or language with which to talk to ourselves for fueling our imagination and refining the crude tool. Little improvement of hand axes was evident for nearly a million years.

A breakthrough occurred when stones were shaped as triangles or ovals and their edges were sharpened on both of the long sides. Although these tools were still referred to by anthropologists as hand axes, they apparently were the "Swiss army knife" of their day—used to cut meat and trim it from the bone, cut kindling wood, and possibly defend against predatory animals or other humans.

Then, about 400,000 years ago, the Neanderthals branched off from the hominin main line and

settled in Europe. Estimates of when refined vocal language began range from 150,000 to 50,000 years ago.

The tongue, palate, throat and voice box are soft tissue and do not fossilize, so we don't know for certain when humans were capable of speech as we know it today. But it makes sense that if the *Homo sapiens* species (us) dates to around 315,000 years, we probably acquired the physical components of refined speech before we developed and refined it. More likely, the two evolved together.

It seems logical that a spoken language was helpful, if not essential, for major migrations to occur.

Planning the slow journey and settling the immigrants was facilitated by the use of refined language. About 80,000 years ago, Africans began to migrate to various parts of the world. Europe was the popular choice—probably because it was relatively close and had large game, which may have become scarce in Africa.

Numbers beget civilization

About 45,000 years ago, invention of the bow and arrow and atlatl (spear thrower) were also aided by language. Imagine inventors of that time comparing ideas on the best wood for making the bow and where to find it, and arguing about the size and shape and their personal choice of flint for knapping spear and arrow tips.

Language no doubt contributed to the relatively rapid spread of farming as a means of having a more predictable food supply, and it reached a startup peak around 10,000 years ago.

As farming increased in efficiency, farmers produced surpluses. Trade was established, and a means of counting and recording was invented around 4,500 years ago.

The language of numbers had its simple start. Trading centers became towns and cities, and civilization had its unintentional beginning.

As life in the cities became more complicated, the language expanded to provide nouns for names for new things, verbs for instructions, commands, and questions, and adjectives and adverbs for emphasis. But language was not fascinating until about 2,500 years ago, when the Greeks invented geometry.

For the first time, numerals, symbols (alphabetic letters), and images were combined to form a more advanced means of communications—one that would serve as a basis for trigonometry, which followed about 300 years later. And trigonometry formed the basis for much of engineering, construction and even inventing.

A battery of refinements

Another refinement to language began in 1800, when Alessandro Volta invented the first battery.

Volta's battery enabled inventors to experiment safely with low voltage, and soon Michael Faraday in England invented the electromagnet and a flea-power motor.

Then, in 1826, German physicist Georg Simon Ohm wrapped up the various attributes of electricity, volts, amps, ohms, and watts into a simple algebraic expression known as Ohm's Law. It is based on the principle that one volt of force can press one amp of current through one ohm of resistance.

Now, our language included a universal formula that could be used by any experimenter or inventor to predict and arrange the flow of electric current through a circuit as simple as an electromagnet, or as complicated as a computer.

The invention of radio enriched our language with more principles and units of measure such as farads for capacitance (from Faraday), henrys for induction (from Joseph Henry, American physicist), and hertz for frequency (from Heinrich Hertz, German physicist).

In 1869, Russian chemist Dimitri Mendeleev invented the periodic table, leaving gaps for predicted elements that eventually were filled in. As with geometry, the table added a graphic component to our language and way of thinking.



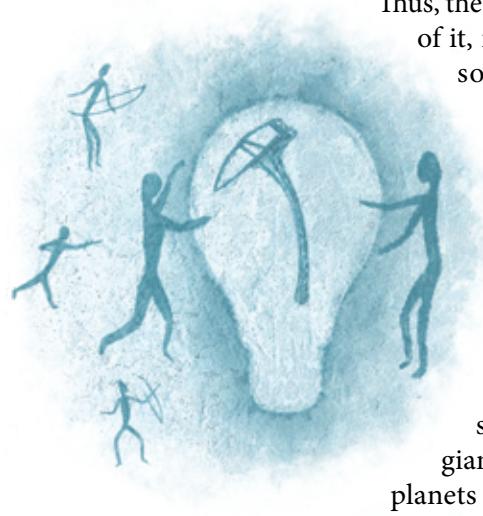
The inventor's language, as I think of it, is a vision of form as well as sounds and their symbolic equivalents.

I'm sure there are many other significant refinements to our language, but I'll end here with the computer and integrated circuit chip—which have popularized the concepts of algorithms and programs, the language of logic.

Mighty shoulders

Other than my incomplete history of the evolution of language, I see in the above a parallel skeletal outline of the evolution of inventing.

It began with a couple of pieces of stone, and now we have robots and space travel. We don't know for sure that our ancestors of 2.5 million years ago relied on a mental image of the hand axe before making it. But it would seem probable, because verbal language was not yet in their toolkit for thinking about and shaping a piece of stone.



Thus, the inventor's language, as I think of it, is a vision of form as well as sounds and their symbolic equivalents.

Many an inventor has "seen" his or her invention in a daydream or a sleep dream before sketching it or defining it in words. Isaac Newton said: "If I have seen farther than others, it is because I was standing on the shoulders of giants." He saw our solar system planets in their elliptical orbits and translated his visions into mathematical formulas for gravity and motion.

We inventors have inherited a rich, versatile and precise language for use in our patents, sell sheets, licensing agreements and self-conversations. And we are standing on the shoulders of giants: Edison, Tesla, Bell and Morse, of course.

But other giants were denied fame because their inventions did not, in their heyday, catch the imagination of the public. For example: Reginald Fessenden, the Canadian who invented amplitude modulation (AM) that enabled us to hear voice and music on our radios; Grace Murray Hopper, known as the woman most responsible for the first compilers and the program language COBOL; Charles Steinmetz, the theorist largely responsible for alternating current proliferation; and hundreds of others who remain unsung.

May we stand on the firm shoulders of those inventors, look far ahead, and use to the best advantage the vision and language of inventing. ♦

Jack Lander, a near legend in the inventing community, has been writing for *Inventors Digest* for 26 years. His latest book is *Marketing Your Invention—A Complete Guide to Licensing, Producing and Selling Your Invention*. You can reach him at jack@Inventor-mentor.com.



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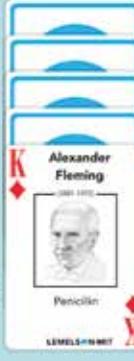
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Solitaire With Good Company



52 INVENTORS IN COMPUTER GAME BY SOLITAIRED
AND LEADER IN INVENTION EDUCATION



NO ONE KNOWS FOR SURE who invented the card game solitaire—or even when, for that matter. But everyone knows that a solitaire game with inventor cards is a great idea.

That's the product of Solitaired.com and the Lemelson-MIT Program, which has partnered to highlight famous inventors and promote inventive thinking.

Solitaired Outreach Manager Philip Hargrove said the computer game was created "as a way to help inspire students who enjoy playing games and also help them learn about inspiring inventors."

Each playing card features an inventor and one of his or her notable inventions. The name of the inventor is at the top of each card; students can hold their hands over the bottom of the cards to test themselves on what each person's invention was.

"We tried to go for a blend between the very famous to the lesser known yet equally important," Hargrove said.

Jonas Salk (polio vaccine), James Naismith (basketball) and George Washington Carver (peanut butter products) might be some of the easier ones. But the deck avoids obvious inventors such as Thomas Edison and Benjamin Franklin, perhaps in an attempt to enlighten players about other inventors and their accomplishments.

Among those included:

- Willem Kolff, inventor of the machine for kidney dialysis

- Edith Flanigen, inventor of Zeolite Y, a molecular sieve used for refining petroleum
- Peter Cooper, inventor of Jell-O
- Shuji Nakamura, inventor of the LED light
- George de Mestral, inventor of Velcro
- Frank Epperson, inventor of the Popsicle
- Dean Kamen, inventor of the iBOT mobility system used in the Segway

It's fitting that Alexander Cartwright is featured on the ace of diamonds. According to Lemelson-MIT, he established the modern baseball field (or diamond) in 1845.

But why is Paul Winchell, inventor of the artificial heart, the king of spades? And why is glamour actress/spread communications co-inventor Hedy Lamarr the king of hearts and not the queen of hearts? All part of the fun.

(By the way: PlaySolitaire.org says card Solitaire began in the 18th century in the Baltic area of Europe, perhaps as a type of fortune telling. JustSolitaire.com says Solitaire made its earliest appearance in writing in around 1783, when it is described in a German book of games.)

The term is derived from the French word solitaire, meaning alone or lonely. The game is often called Patience, especially in Britain.)

To play, go to solitaired.com/solitaire/lemelson-mit.

Solitaired Outreach Manager Philip Hargrove said the computer game was created "as a way to help inspire students who enjoy playing games and also help them learn about inspiring inventors."

YouTube is Growing. Are You Growing With It?

GET PEOPLE TO VIEW YOU AS THE EXPERT
IN YOUR FIELD OF INNOVATION **BY ELIZABETH BREEDLOVE**

SINCE ITS FOUNDING in 2005, YouTube has grown to become one of the top websites in the world with more than 2 billion monthly logged-in users and more than a billion hours of video watched each day.

More than 100 countries around the world have localized versions of YouTube, and the platform is available in more than 80 languages. More than 500 hours of video are uploaded each minute. (Source: blog.youtube/press/)

As the site continues to grow, are you growing with it? Or will you be left behind?

If you're just getting started on YouTube, you may be confused about where to begin. You'll need to start by creating a YouTube channel, planning your content and filming and posting videos.

Fortunately, YouTube provides a plethora of resources dedicated to answering everything from the most basic questions to the most complex. Visit support.google.com/youtube to learn how to create and grow your channel, manage your account and settings, monetize your channel, troubleshoot problems and much more.

Top tips for using YouTube to grow your brand:

Be a trusted resource. Perhaps the most important thing you can do if you want to find success marketing on YouTube is to position yourself in this way.

Your goal with every piece of content you post should be to get people to view you as the expert. When they trust your company, they'll trust your product and be more likely to purchase from you or support your business in another way. Even if they don't make a purchase right away, they'll be more likely to come back to your videos or website later.

Your content should be a direct response to what people are searching for on YouTube and even the internet as a whole.



To set yourself up as a trusted resource, make sure you're posting high-quality content. Don't just upload random footage from your office, but keep it relevant to how you are trying to position yourself. Edit your videos and be sure they are polished. At the same time, don't be too promotional; your YouTube channel shouldn't just be an ad repository.

Use what people are searching for as your content guide. Your content should be a direct response to what people are searching for on YouTube and even the internet as a whole.

To determine this, start with any videos you've already uploaded to YouTube. How well are they performing? Which ones get the most views? Which ones get the most comments? Analyze your video stats as you begin to determine what sorts of content to create.

From there, you can begin to use Google for keyword research to determine good topics to cover in your videos. Use the terms or phrases you believe people are searching for to begin, then take note of Google's suggested autocompletions or the related searches suggested at the bottom of the page. Continue to explore related words, phrases and searches to build out a content calendar of relevant video topics.

Once you've created your content, upload it in such a way to make it easy to find.

Make sure your titles and descriptions accurately describe your videos using words and phrases your audience is likely to search. Add relevant keywords and hashtags in the description to make your videos even easier to find. Then, for each video, use high-quality, accurate thumbnails that clearly explain what your video is about. These don't need to be overly wordy or artistic, but they do need to look sharp and have a short description of your video. Copying the title is often perfect! ☺

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



OTHER YOUTUBE TIPS



- **Make sure you post regularly.** This doesn't mean you need to post five times a week, or even necessarily once a week, but you should produce content as often as is feasible. Uploading a video even once a month is better than once a year. Plus, the more content you have on your YouTube channel, the more opportunities you'll have to post responses to your audience's search queries, which will make it more likely they'll find your videos.
- **Optimize your channel.** YouTube allows you to personalize and customize your channel homepage, and you should take advantage of this. You're able to customize your channel's layout—including your channel trailer, featured video and channel sections. You can also personalize your branding by uploading a profile picture, a banner image and a channel watermark. You can display basic info like your channel name, description and website.
- **Stay on brand.** Everything from your videos to your channel description to your profile picture and banner image should point back to the overall brand you've created. They should be visually cohesive and paint a picture of your brand.
- **Make it easy for people to get in touch with you.** As you update your channel description, add your website, email addresses, other social channels and other contact information. Make yourself accessible!
- **Know your upload time parameters.** By default, YouTube allows you to upload videos up to 15 minutes long. If you'd like to upload longer videos, you'll need to verify your account, which you can do at youtube.com/verify. Uploading a longer video isn't always the best thing...it should be about quality, not quantity.
- **Group relevant videos into playlists.** Then, when YouTube users find one of your playlists, they'll be prompted to watch more of your videos, in the order you suggest. This is a great way to get your audience viewing more of your content.
- **Look to your competitors or other similar accounts for inspiration.** Note what seems to be working for them, then do it better.

Stretch Solution

FORMER WORLD-CLASS RUNNER'S INVENTION

HELPS SUFFERERS OF PLANTAR FASCIITIS

BY JEREMY LOSAW

PLANTAR FASCIITIS took Jim Cooper from being a world-class distance runner to being unable to walk. Now both his toes and a career as an inventor are inclined upward.

Cooper was an All-American in track and field at the University of North Carolina, ran in three Olympic trials, and was an alternate for the 1988 Games in Seoul, South Korea. His competitive career ended when he developed plantar fasciitis, an inflammation of tissue that connects the heel to the toes and causes a stabbing pain. Between 2 million and 3 million Americans are treated each year for it.

"I degraded to a point where I had plantar fasciitis in both feet so bad that I couldn't even run, couldn't walk without limping," Cooper said.

He has launched a product called the Dorsiflex that helps relieve pain for sufferers of plantar fasciitis, and other foot and lower leg ailments.

Dorsiflex is a stretching device for the foot and lower leg that allows the foot to be stretched in three dimensions. It has a comfortable soft rubber pad on the base and a hinged toe bed. The toe bed adjusts from flat to a maximum incline of 55 degrees to provide a deep stretch for the foot.

A series of 20 fingers in the toe bed allow it to also be twisted laterally to give the foot a lateral incline during stretching for additional stretch options. Legs can be added underneath the base to raise the whole bed for an even deeper stretch.

All this adjustability allows the user a multitude of stretches that work the muscles and tendons in the foot simultaneously and effectively. Although the device is primarily for plantar fasciitis, it also works for Achilles tendinitis and other foot and lower leg issues.

Specialist couldn't help

Plantar fasciitis dogged Cooper for more than 30 years. He ultimately went to a specialist in Atlanta who treated many runners.

"He did everything. Gave me the shot, gave me the orthotics, gave me the stretches to use, gave me the boot to sleep in, all the traditional efforts. They just weren't working."

With his background in business and engineering, Cooper is a problem solver. He started working to find a way to treat plantar fasciitis in a more effective way.

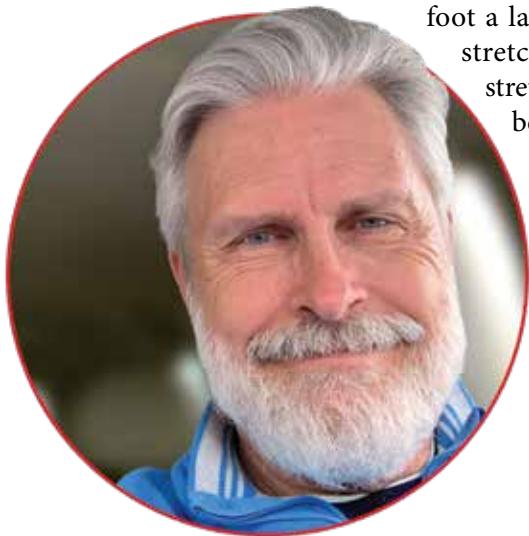
His approach to the problem was both analytical and elegantly simple. He observed his foot position when it hurt the worst and noticed that it was when his toes were inclined upward, toward the front of his shin. He took some free-standing weights, placed them against a wall, put his toes on the weight and did a wall lean stretch with his toes now in an inclined position.

The results were miraculous.

"I felt stretching like I never felt before. So I started stretching like that ... and I was getting better every day," Cooper said.

Although carrying heavy weights around just for stretching was unwieldy, he made a prototype for himself out of wood and a door hinge

"I degraded to a point where I had plantar fasciitis in both feet so bad that I couldn't even run, couldn't walk without limping." —JIM COOPER





that allowed him to stretch with his toes in the same upward-pointed position. It worked just as well as the weights. He eventually made a few more devices to share with friends and even filed a patent for the device.

Cooper was getting good feedback on the efficacy of the prototypes and attempted to start a business and sell them. However, the venture never got off the ground due to lack of funds, lack of skill in marketing, and a product that was not quite ready for prime time.

Turnaround call

Dorsiflex was revived in 2012 when Cooper got a call from Steve Sims, a former customer of the device. Sims loved the Dorsiflex concept, had some ideas to improve it, and wanted to work with Cooper to get it into the marketplace.

They realized that no one was stretching the foot in three dimensions, so they added fingers to the foot bed to allow the toes to be angled laterally. The first version of this design used five fingers, which did the job but was very uncomfortable on the foot.

The corners of the fingers dug into the skin, so they increased the number of fingers to 20 and made a smoother transition. "That really was a huge leap forward in terms of comfort," Cooper said.

With the toe bed figured out, they finished the design of an aluminum version of the device, patented the new functionality, and made a few hundred of them with a contract manufacturer to sell.

Dorsiflex was now in the marketplace and getting great reviews, but Cooper wanted the

device to weigh less, be less expensive to manufacture, and have an iconic style.

He found a local design firm in Charlotte, Enventys Partners, and contracted with it for product development and marketing services. The product was completely redesigned to have a sleek, low profile with a rigidized plastic chassis and a comfortable, durable, overmolded foot pad with a smooth transition from the base to the footbed. The parts were optimized for mass production; more than 2 lbs. were removed from the original.

The new design was released on Kickstarter in Summer 2021 and raised \$97,926 from 856 backers.

Delivery coming soon

Cooper is focusing on the manufacturing and marketing of Dorsiflex. He is working with an Asian factory for mass production of the device and expects to deliver the product in the fourth quarter of this year.

At least seven athletes at the Tokyo Olympic Games used first-generation versions of the device—including medal favorites in track and field events—and he is tuning up his digital assets and working with other select athletes to help raise the profile of the product. ☐

Details: thedorsiflex.com

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



Seeing an Opening

MOM'S COAT FOR KIDS AVOIDS THEIR HAVING TO TAKE THEM OFF TO GET INTO A CAR SEAT

BY EDITH G. TOLCHIN

IBECAME A MOTHER to two children in the 1980s, when rudimentary car seats became mandatory equipment. Strapping in a child securely was always an issue due to bulky winter coats.

But until your car is warm, would you really want to bring a baby into a cold car without a coat—the only way to securely strap in him or her—to conform to government regulations requiring straps to fit snugly against a baby's body? Buckle Me Baby Coats, invented by Dahlia Rizk of the New England area, is a welcome solution to this years-long dilemma. Daymond John of "Shark Tank" agreed!

Edith G. Tolchin (EGT): How did the Buckle Me Baby jacket come about?

Dahlia Rizk (DR): I'm a single mom with three children who was careful about winter car seat safety when my children were little. One day at a Child Passenger Safety Check, a technician educated me about the winter coat danger.

I tried taking my kids' coats off at every stop we made, but my kids were not cooperating. So, one day I thought to myself, if the zipper wasn't in the middle this wouldn't be a problem. I rushed home and modified an old coat we had, and I was excited to see that it worked!



"I tried taking my kids' coats off at every stop we made, but my kids were not cooperating. ... I rushed home and modified an old coat we had, and I was excited to see that it worked!" —DAHLIA RIZK

EGT: How does this jacket work with car seats?

DR: With a Buckle Me Baby Coat, parents can put on the coat at home, then use it in the car seat without taking off the coat.

Once the child is seated in the car seat, parents:

1. Pull their child's arms through the harness the way they usually do.
2. Pull the front panel of the jacket aside.
3. Buckle the harness as usual.

The back of Buckle Me Baby Coats is thinner than the front (but still just as warm). The front panel is pulled out of the way, so the harness sits right on the chest and shoulders. These two features make it possible to use the harness more easily, at the same setting tightness as if your child is wearing no coat at all. This way, the coat does not interfere with the car seat in any way.

See a complete demo at bucklemeocoats.com/pages/tutorials.

EGT: How many prototypes did it take before you had a viable product?

DR: My first prototype worked the way I wanted it to and passed crash testing!

EGT: Are there any other similar children's jackets on the market?

DR: There are a few other car seat coats on the market, but Buckle Me Baby Coats are the

only solution where the car seat harness is directly on the child's chest and shoulders with no coat material between the child and his or her harness.

EGT: Have you ever had a business before this?

DR: I started a counseling private practice with my friend 12 years ago so we could both manage our own schedules and families. We hit all our five-year goals in one year and decided to open the opportunity to other counselors who also needed flexible schedules.

After creating my first sample, I posted a video with my nephew on Facebook to see if other parents would be interested in the idea—and it quickly went viral! I had no production lined up but had people asking to order. So, I did a quick Kickstarter campaign to capture those orders while lining up a factory and creating my first patterns.

EGT: Tell us about your experience on "Shark Tank" (December 2020). How did you prepare?

DR: I have loved "Shark Tank" since Season 1, so I was practicing for the show long before I even had a product. I started applying three years ago, and this is the year they invited me on the show. I am not super comfortable with public speaking so I practiced my pitch in front of anyone who would hear me out, repeatedly. It was an incredibly fun and supportive experience!

EGT: Did "Shark Tank" require a particular minimum dollar amount of sales to qualify you for the show? Did you get a deal?

DR: No. Entrepreneurs can ask for any amount at any valuation they want. I had asked for \$100,000 in exchange for 10 percent of the Buckle Me Baby Coats business. Daymond John offered me \$100,000 for 20 percent and I took his offer.

EGT: Please share your patenting experience.

DR: The coats are fully patented with a utility patent, which is great. My patent is also a



foundational patent, meaning that it's the first patent out there for coats designed for the car seat.

EGT: Since this is a children's product, do you test each production batch for Consumer Product Safety Commission certification?

DR: Yes! The coats are crash tested and CPSIA (Consumer Product Safety Improvement Act) compliant.

EGT: Where are you manufacturing? Any production obstacles?

DR: The coats are manufactured in China. I was manufacturing in the United States the first year, but production was slow and expensive. To be able to reach more parents, I needed to bring my price down and make more coats faster, so production was moved overseas.

EGT: How many different styles and colors are you producing? What is the retail pricing, and where are you selling?

DR: The coats come in three styles:

Toasty is our original design, which retails for \$69.99. In 2021, Toasty will be available in Little Darling (blush pink), Latte Love (light grey) and Baby Shark (blue).

With a Buckle Me Baby Coat, parents can put on the coat at home, then use it in the car seat without taking off the coat. Once the child is seated in the car seat, parents pull their child's arms through the harness the way they usually do; pull the front panel of the jacket aside; and buckle the harness as usual.

INVENTOR SPOTLIGHT

Toastier provides more coverage for the neck and head against harsh, whipping winds with a chunky, turtleneck-style, rib-knit collar. It also has extendable sleeves for longer wear across seasons and retails for \$89.99. In 2021, Toastier will be available in I Lava You (red) and Stargazer (purple).

Toastiest has a hood with magnetic attachments—so it comes off automatically in the car seat—as well as an extra-cozy Sherpa liner and Made in the U.S.A. designer flannel in the back. Toastiest also provides more coverage for the neck and head, with the extendable sleeves. It retails for \$149.99. In 2021, Toastiest will be available in Little Dipper (burnt orange), A-Doe-able (light pink) and Tough Cookie (taupe).

In the United States the coats are available on my website, through Amazon and Buy Buy Baby, as well as in specialty retailers across the country. In Canada, the coats are available through Clekinc.com and Snuggle Bugz.

EGT: Have you increased your product line beyond just jackets?

DR: As a self-funded single mama, it's been hard. I have so many ideas, but the company is growing so fast that all the profits go back into making more coats. I do have a few products in development and hope to have them rolled out by 2022!

EGT: Do you have any suggestions for developing a children's product?

DR: Most "parentpreneurs" I know started their journey like the way I started mine: They were super careful about how they raised their kids and saw a need that should be filled. I recommend talking to other parents to see if they see the same need you see. Then, just go for it! ☺

Details: bucklemecoats.com

Edith G Tolchin has written for *Inventors Digest* since 2000. She is an editor (opinionatededitor.com/testimonials), writer (editolchin.com), and has specialized in China manufacturing since 1990 (egtglobaltrading.com).



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U.S. JAMES DYSON AWARD

INVENTOR CREATES WOOD-LIKE MATERIAL WITH UNIQUE ENVIRONMENTALLY FRIENDLY PROPERTIES

GABE TAVAS got a world of education before college, when he was living in an indigenous community in Ecuador.

He envisioned a career in industrial design—until residents told him of their concerns about their lack of sustainable products and deforestation. “I saw how they had to burn plastic garbage in piles near their homes to avoid accumulation,” he said.

Before long he was learning about biodesign, a field that uses living organisms to grow materials for products. This was the inspiration for Pyrus—a petroleum-free, wood-like material sustainably produced with repurposed bacterial cellulose waste from the kombucha industry that is the winning entry in the 2021 U.S. James Dyson Award competition.

Gabe Tavas's creation, Pyrus, is a petroleum-free material with repurposed bacterial cellulose waste from the kombucha industry.

Pyrus fights deforestation by replacing exotic woods that are disappearing from rainforests such as the Amazon. It has the versatility of wood with ability to be laser cut, CNC machined, and sanded to a smooth finish to create jewelry or other small products.

Sourcing wood

After his nine-month volunteer experience in Ecuador ended in August 2018, he visited New York City to meet biodesign practitioners and refine the formula for Pyrus in the Genspace laboratory.

To achieve his goal, Tavas said he had to fully understand the makeup of wood.

“Every piece of wood has two essential ingredients: cellulose, which provides its basic shape



and framework, and lignin, which acts as a glue for all the other components. These are the most common organic molecules on Earth, and trees and other plants are not the only way to source them.

"There are certain bacteria, especially *Gluconacetobacter xylinus*, used by some companies to produce acidic drinks like kombucha which produce coherent (and slimy) sheets of cellulose on top of any liquid they are living within. All they need is some space, air, and sugar, which can be sourced from food waste like rotten fruits and bread."

To make Pyrus, the sheets of cellulose are blended to an even consistency and then embedded in an algae-based gel. As the gel dries, it hardens significantly and is placed under a mechanical press to form a flat sheet of wood. This material can then be sanded, cut, and coated with resins just like its tree-based counterparts.

Blending cultures

After learning about bacterial cellulose, Tavas began growing a supply of it using cultures bought online, water from his local "Fab Lab" at the University of Illinois at Urbana-Champaign, and apple slices from his university's dining halls.

"Over two weeks, the bacteria fed off the apples in several small water containers to create cellulose sheets at the surface. I often grabbed these sheets, dried them, and then exposed them to several different ingredients such as food dyes, resins, salts and oils to see if they could become more rigid, water-resistant, and colorful like wood."

"Many days were full of just sheer experimentation. The breakthrough came after I did casual readings on pykrete, a fancy name for sawdust frozen in water. Under the right conditions, pykrete rivals concrete's impact resistance and strength, and was even considered for projects by the U.S. military."

"Freezing cellulose in water though is a short-lived approach, so I decided to suspend cellulose

in a gel instead. The result was the first samples of Pyrus."

Multiple advantages

Tavas's invention has advantages over other wood substitutes. It does not trace any origins back to trees and does not use any petroleum-based or toxic chemicals.

Other materials, such as medium-density fiberboard (MDF) or oriented strand board (OSB), reduce waste by gluing sawdust and shards together. But they still ultimately depend on tree cutting to exist. In addition, the binders for some of them contain formaldehyde, which can be released during cutting and endanger woodworkers.

Plastic woods are non-biodegradable, release greenhouse gases during production, and might also contain dangerous chemicals.

Other materials try to mimic wood by using other plants such as flax rather than trees.



A nine-month volunteer experience in Ecuador dramatically demonstrated to Gabe Tavas the importance of sustainable materials.

But those plants could be expensive to harvest and may require retting that adds excessive nutrients to the environment. Companies making this kind of wood also tend to produce thin veneers combined with other materials, not dense standalone sheets.

What's next

Tavas wants to remain a difference maker in a sustainability movement that is more than sustainable: It's crucial.

His priority is to put Pyrus into environmentally friendly product forms that meet consumer needs and are commercially viable.

"My team and I are currently using laser cutters at local design studios to make items like jewelry and coasters sold through the retail store of The Plant, a business incubator in Chicago focused on recycling waste," he said. ☀

Hits and Errors

BY REID CREAGER

WHEN IT COMES TO NEWER INVENTIONS, MLB'S PLAN TO AUTOMATE BALLS AND STRIKES LEADS THE LEAGUE IN CONTROVERSY

WHAT'S THE most passionately debated baseball invention of the future? OK, Biff, let's go to the video right off the bat.

Put down your *Inventors Digest* for a second, or switch over from this story you're reading on your phone, and go to this link. We'll wait here.

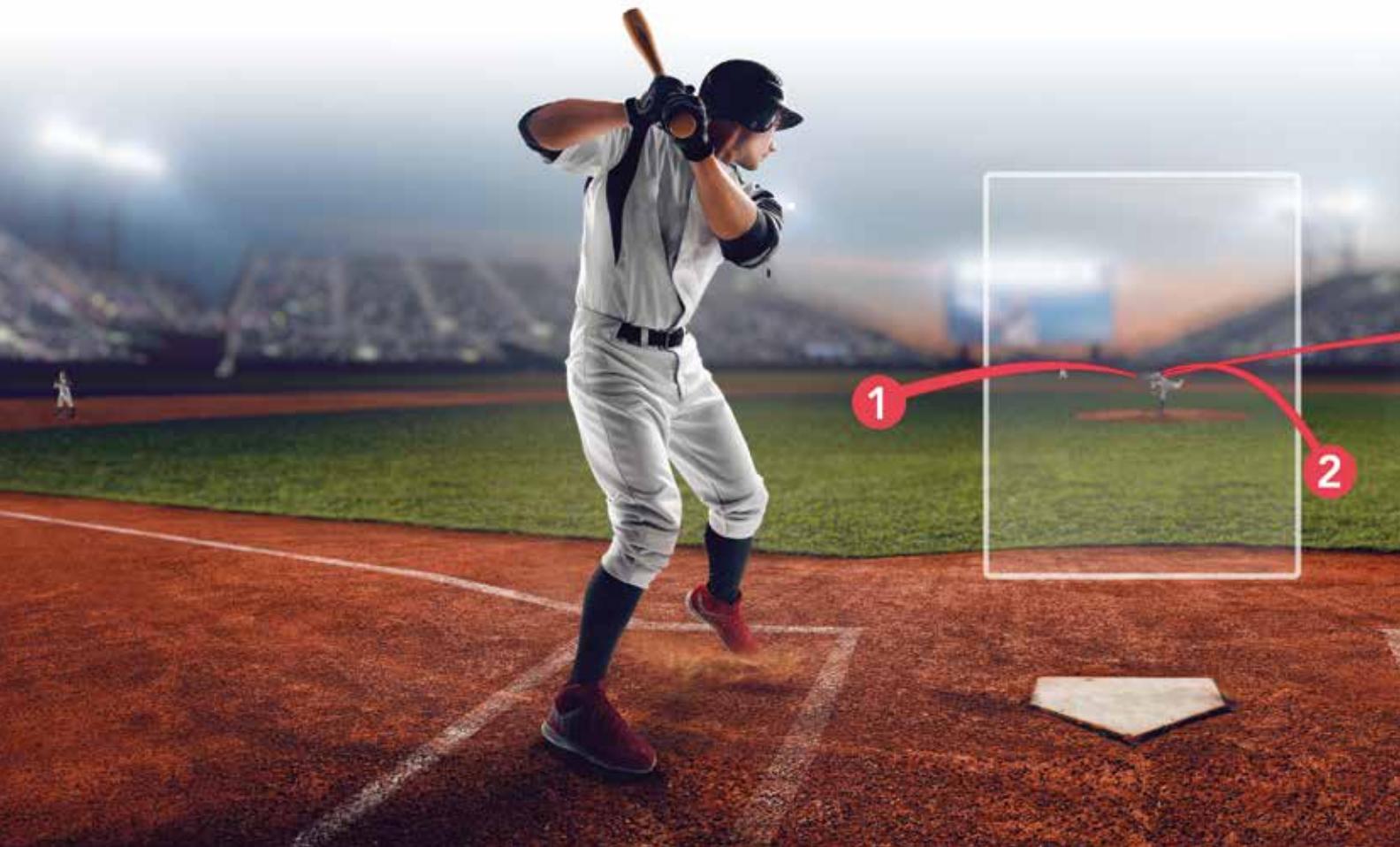
youtube.com/watch?v=KpiTzyiK-uQ

Has your jaw closed yet? Yes, folks—that was a called strike three.

It's understandable if you sputter or slobber in astonishment (though the latter is not recommended if you're holding a phone). Welcome to the latest future technological adventure from Major League Baseball, Inc.

The automated balls-strikes system responsible for that baffling call is currently in use in the low minor leagues, with eyes on implementation in the majors within a few years.

Granted, automated balls and strikes are seldom this horrendous. But you can get an idea of potential future problems and just how much the refinement process needs work.



Revolution begins

July 10, 2019: With the first pitch of the Atlantic League of Professional Baseball All-Star Game at PeoplesBank Park—home of the York (Pennsylvania) Revolution—a baseball revolution was under way.

The called strike, thrown by York's Mitch Atkins, was the first pitch using MLB's Automated Ball-Strike (ABS) technology. The ball was sent to the National Baseball Hall of Fame in Cooperstown, New York.

The umpire raised his right hand to signal the strike, but that judgment was relayed to him via a wireless earpiece.

An official in the press box monitored a laptop running the TrackMan radar system that electronically determined the call. Pitches were tracked through a large Doppler radar screen high above home plate. The radar system measured a player's height and created a strike zone.

The experimental technology is the result of Statcast, MLB's camera-based analytics system

introduced in 2015. Statcast can measure player movements and ball flights in intricate detail. It records pitches mistakenly called balls after crossing the middle of the plate, and pitches taken extremely high, low or wide of the plate mistakenly called strikes.

A study by the *Boston Business Journal* using Statcast and Pitch f/x data showed that in the 2018 season, MLB umpires made 34,246 incorrect ball and strike calls for an average of 14 per game, or 1.6 per inning.

On Opening Day 2020, MLB introduced more upgrades for pitch tracking and other tech arenas. The new-and-improved Statcast platform replaced TrackMan radar with optical tracking sensors from Hawk-Eye Innovations and cloud infrastructure from Google Cloud.

According to MLB: "The Hawk-Eye Statcast system has demonstrated significant accuracy improvements in pitch, hit, and player tracking, and its pose tracking capabilities open up an exciting new frontier for analysis.

Automated Ball-Strike technology remains a work in progress at the minor-league level as MLB continues to introduce more updates for pitch tracking. MLB, which has tools for analyzing ball-and-strike accuracy, wants improvements at the expense of the human element.



Additionally, MLB is consolidating its infrastructure on Google Cloud to leverage Google's industry-leading machine learning, analytics, application management, and data/video storage capabilities to increase reliability and manage governance at scale."

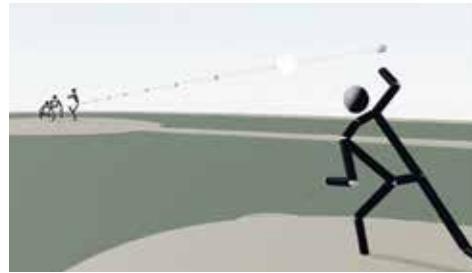
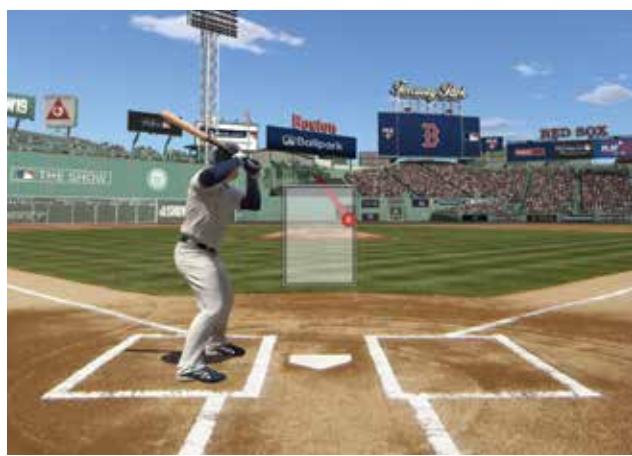
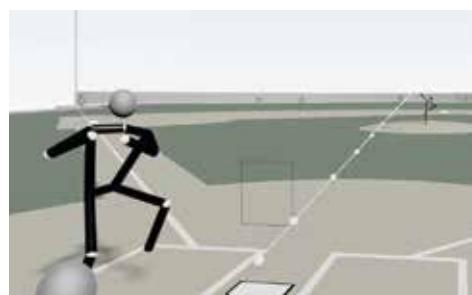
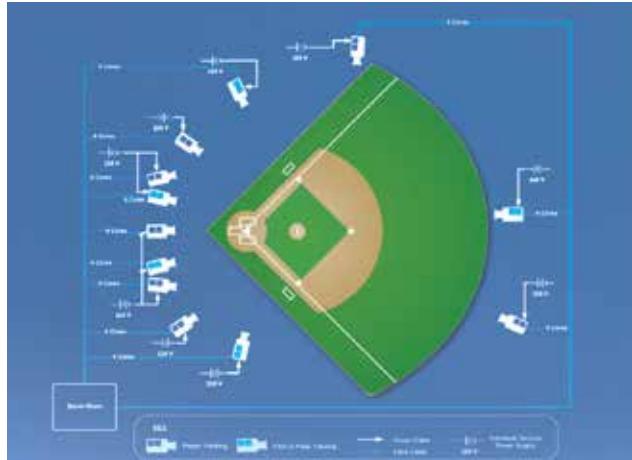
Hawk-Eye's Synchronized Multi-Angle Replay Technology (SMART) video replay and distribution system has been used by MLB to support the challenge system used in its Replay Review since the 2014 season.

Like many new devices and processes that are called inventions, ABS is technically more of an innovation that had its roots in prior inventions. It's an outgrowth of the graphic boxes we have seen on televised baseball games on the right side of the screen that show where a pitch crossed through and/or landed in relation to the strike zone.

Inventors Digest found U.S. Patent No. 7,341,530B2, titled Virtual Strike Zone and approved on March 11, 2008. It explains the familiar problem it attempts to solve:

With MLB's Automated Ball-Strike (ABS) technology, an official in the press box monitors a laptop running a system that electronically determines the call. The home plate umpire receives the call via a wireless earpiece.

Clockwise from top left: The Hawk-Eye Statcast system utilizes a total of 12 cameras around the park for full-field optical pitch, hit, and player tracking; a typical Hawk-Eye camera installation; a simulator visualizes tracking data; pitch tracking is a key measuring tool and component in baseball telecasts.



"When watching a baseball game on television, it is not clear to the viewer where the exact boundaries of the strike zone are. Furthermore, it is not clear whether the umpire correctly determined whether the pitch was a strike or a ball."

The Abstract description explains how it works. "A system adds a graphical image of the strike zone to a video or other image of a baseball game. The system determines location of the strike zone and the ball in real space. The locations of the strike zone and the ball are depicted in the video.

"Based on knowing the locations of the strike zone and the ball, the system can determine (sic) whether the pitch was a strike or a ball."

Dubious advantages?

Reaction to the innovation has been largely predictable.

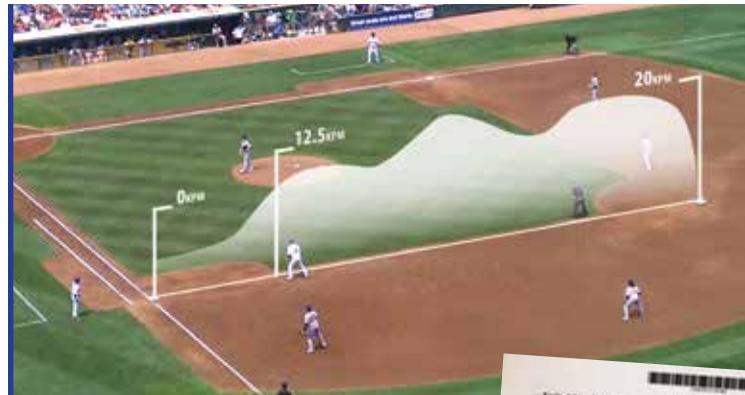
Players and coaches either diplomatically say ABS will take some getting used to, or they bluntly say they hate it. (High Point Rockers pitching coach and former Cy Young Award winner Frank Viola showed no ambiguity, becoming the first to be ejected for arguing balls and strikes in an ABS game on July 17, 2019.)

Many fans mourn another invention that kills the human element—not long after instant replay came along to lengthen games, all but end entertaining arguments with umpires that were a tradition since the sport's origins, and often blow the call anyway.

MLB's take has been understandably self-promoting, with some of ABS's stated advantages arguably dubious.

One of the purported goals of eliminating the human element in calling balls and strikes is to stop arguments from managers, coaches and players about those calls, which lengthen games. (Reducing game durations has been a stated goal of MLB for several years, even though commercial breaks are much longer than they used to be and the introduction of instant replay adds time as well.)

The alleged time-saving merit of automated balls and strikes is a head-scratcher for several reasons: 1) It's rare that traditional balls-strikes arguments significantly delay a game; 2) Many fans prefer seeing arguments



SABERMETRICS. WHY? A PATENT FOR SABERMETRICS. WHY?

Can sabermetrics be patented to the extent that baseball journalists can no longer write about those statistics?

Those who feel sabermetrics are an oft-unnecessary extreme for evaluating baseball performance—this writer included—can only dream. But a patent issued on August 11, 2020, sought to limit the open nature of exchanging that information.

Baseball patents generally apply to technological advancements in viewing and measuring various aspects of the game; baseball sabermetrics have been basically patent free. But Greiner Agencies was issued U.S. Patent No. 10,737,167 for a "baseball pitch quality determination method and apparatus" based on a relatively common baseball metric.

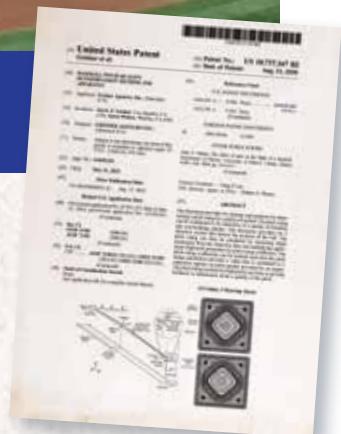
A group called QOP (Quality of Pitch) Baseball announced the patent in a Sept. 13, 2020, then tweeted and sent infringement warning messages to baseball journalists who study and write about pitch quality.

Why did QOP pursue patent protection? Well, after receiving the patent, the group announced: "This now certifies QOP as THE metric for calculating pitch quality. Look for QOP during future MLB broadcasts."

If this was an attempt to land a lucrative licensing deal or agreements with MLB or any baseball broadcasting outlets, it so far has failed.

Stephanie Springer, a former patent examiner at the United States Patent and Trademark Office, wrote about the subject at length last December for Baseball Prospectus—including the patent's history, owners and possible ramifications. She said QOP made a big mistake in trying to limit the free exchange of ideas:

"QOP has quite possibly sustained self-inflicted, irrevocable damage to its reputation within the baseball community, all but guaranteeing that QOP will not be used in sabermetric writings, and will likely be met by a frosty reception at any future sabermetric conferences. While they may allege that they merely want to contribute to the community, actions speak louder than words."



TECH TIME

Here are other examples of recent baseball innovation and its byproducts, either associated with MLB or used by its teams. We promise it's not all as scary as that pitch you saw on YouTube.

Launch angle: Sports fans began hearing this term in 2015 when Statcast—which, among other things, can measure ball flights in intricate detail—was introduced. But the concept has an earlier history, as evidenced by U.S. Patent No. 8,561,310 from 2013: “Method to determine the launch angle of a golf putter face during a putting stroke.”

The notion of launch angle adds an interesting element for statheads, even if the science of it is complicated enough to confuse, well, scientists.

A launch angle of zero is basically a line drive at the pitcher’s knees. A grounder is a negative figure, and 90 degrees is a pop-up straight above home plate.

Alas, the greater the understanding of and emphasis on this complex phenomenon, the more hitters try to swing with an uppercut motion to hit

more home runs (as opposed to a level swing that increases the chances of making contact). After all, it has long been an axiom that “chicks dig the long ball.” So do bank accounts.

More alas: MLB home run totals have soared to unpalatable extremes. 2019 marked the most prolific home run season ever with 1.39 home runs per game.

And more alas (or, strike three): MLB’s strikeout rate has climbed eight percentage points in the past 16 seasons—from 16.4 percent in 2005 to 24 percent in 2021 at last count.

K-Vest: We’ll call it the Elvis System, because it can be customized to focus on aspects including pelvis rotation and torso bend.

The K-Vest uses sensors on a batter’s upper torso, pelvis and lead arm and hand to capture motion for a detailed analysis of swing efficiency. Each sensor gathers 200 data points per second, transmitted to a laptop and turned into a 3D rendering of swing mechanics. Most MLB teams use it.

Rapsodo: According to *Fast Company*, every MLB team uses Rapsodo—as well as more than 100 individual players, 500 colleges and about 400 baseball academies.

Situated on the ground between the pitching mound and home plate, Rapsodo’s units combine radar with a camera to generate data on ball speed, velocity and spin for pitchers and velocity, spin, launch angle, and projected hit outcome for batters. Many other technologies focus on body mechanics. Edgertronic and Rapsodo focus on the ball.



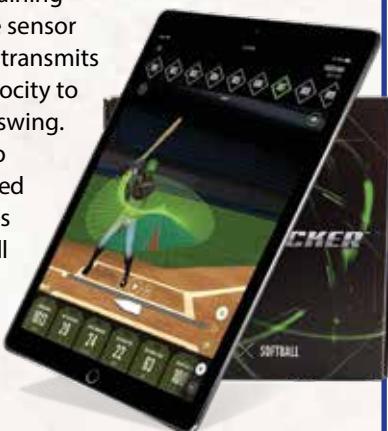
Edgertronic: Most MLB teams use the high-speed video camera's slow-motion visuals to see how a pitcher's grip changes as he releases a ball, or how subtle adjustments in finger position affect ball rotation. The Edgertronic SC1 is capable of capturing up to 22,000 frames per second.



Swing Tracker: This sure is a long way from the days when Hall of Famer Tony Gwynn was considered a tech pioneer for reviewing his in-game at-bats on VCR tapes.

The Swing Tracker sensor is a training aid used by many MLB teams. The sensor attaches to the knob of a bat and transmits data about angles, planes and velocity to produce a 3D model of a player's swing.

The product's manufacturers also cleverly came up with a feature called "damage potential," which estimates flight distance and the path of a ball while training. Manufactured by Diamond Kinetics, Swing Tracker is affordable at \$99.99, and \$4.99 per month for software.



Exit velocity: Americans love speed. Just ask the millions of NASCAR fans. So, given MLB's recent obsession with trying to keep up with the Joneses, what took so long?

Exit velocity—a measure of the speed of the ball off the bat—and launch angle were both introduced at the same time, and are paired as the reigning MLB metric king and queen. They are also both inextricably linked: Analysts say a launch angle range of 25-35 degrees is the sweet spot for home runs when paired with an exit velocity of 95 mph or greater. The exit velocity is crucial because at lower velocities, those flyballs are outs.

New York Yankees slugger Giancarlo Stanton holds the exit velocity record of 122.2 mph for a single he hit on Oct. 1, 2017. He holds most of the top velo figures, and routinely adds to them when he is not on the injured list with his salary that will average \$25 million per season through 2028.



anyway; and 3) If an automated call is ridiculous enough, the home plate umpire is going to get an earful regardless.

(Another obvious reason for pursuing ABS—though conveniently not mentioned by MLB—is the embarrassing performances of some of its umpires when calling balls and strikes. Angel Hernandez, long the face of umpiring incompetence and an unwilling star on YouTube because of it, exasperates teams and fans almost every time he is behind the plate.)

And of course, MLB's pledge to always get it right on balls and strikes can be seen as misguided. The simple fact is that some pitches cannot definitively be called balls or strikes with unfailing accuracy and without argument, even with a machine.

There will always be a subjective nature to super-close calls—especially given the myriad variables that include how much of the ball was in the strike zone at what time. Sometimes, what is seen in a computer-generated presentation after a pitch can be subject to interpretation. And even the most sophisticated tracking machines have a small margin of error.

Besides, in some instances—including in games where ABS is used—the umpire makes the final determination of a ball or strike being called based on factors other than the strike zone. ABS is specifically focused on the strike zone and the flight of the ball, so the umpire is responsible for judging other criteria that help determine pitch outcomes. These include checked swings or catcher's interference.

And what about when the technology goes on the fritz? You guessed it: Those hopelessly retro skin-and-bone types make the calls.

So, always get it right? Nope. Strive to get it righter? If you're really seeking accuracy, that's a better—if ineloquent—way to put it.

There is no distinct timetable for when MLB games will utilize automated balls and strikes, given the fine-tuning obviously required.

Regardless, every system ultimately deserves the chance to succeed or fail on its own merits.

Meanwhile, ABS has been roundly criticized as an unnecessary attempt to appeal to younger, tech-obsessed fans—from a pro sports league that long trailed in the innovation arena. ☺

INVENTIONS THAT NEVER CAUGHT ON

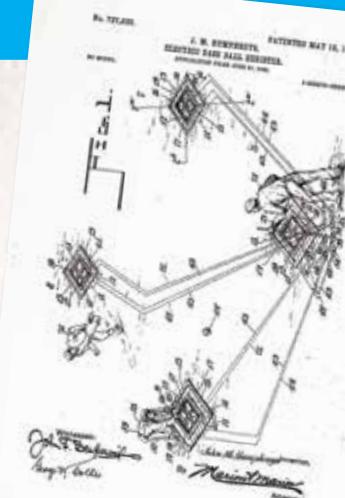
"ELECTRIC BASE-BALL REGISTER"

(John M. Humphreys, 1903)

Don't think for a minute that extreme inventions are limited to the present. Humphreys's dizzyingly complex engineering feat was designed to eliminate umpires altogether.

A Canadian, Humphreys bemoaned the notion of "undecided events and close decisions by the umpire as to base-hits, runs and putouts, so that by mere partiality the umpire is often enabled to practically decide the game." So he built an entire electric signal system for use on the field, involving a series of circuits set up across the infield to send electric currents whenever a fielder had caught a ball or retired a baserunner. Fielders would have to stand on a pair of metal plates near each base.

Yes—U.S. Patent No. 727,633 was just a little too complicated for widespread acceptance.



"BASE-BALL CATCHER"

(James Bennett, 1904)

There was nothing rough about being a catcher in baseball's earliest years. Pitchers threw underhanded. A catcher didn't even have to catch a third strike on the fly. His main job was preventing the ball from rolling too far away.

But as the game sped up and the catcher was required to move closer to home plate, his job became the most dangerous on the field.

So, in U.S. Patent No. 755,209, Bennett detailed a wire cage that was worn on the chest, which would catch each pitch and protect the catcher's hands until he threw the ball back to the pitcher.

The cage was reinforced on all sides with wood; springs at the back protected the catcher's chest from the force of each pitch. Ideally, once the ball passed through the open front end, it closed automatically and an opening at the bottom of the cage dropped the ball into the catcher's hands.



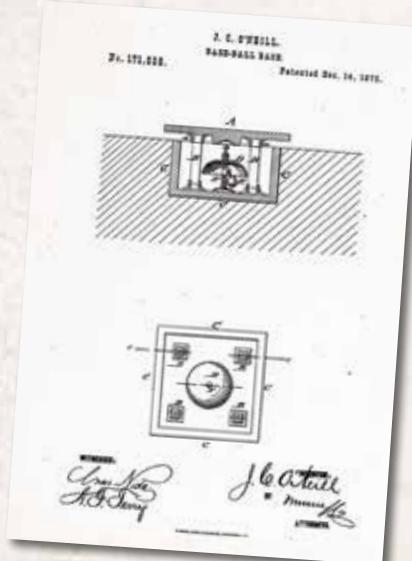
"BASE-BALL BASE"

(John C. O'Neill, 1875)

Maybe Jim Joyce could have benefited from this contraption when his missed call at first base with two out in the ninth inning cost Detroit Tigers pitcher Armando Galarraga a perfect game in 2010. Or when Don Denkinger botched a call at first base that helped change the course of the 1985 World Series.

On close calls at first base, umpires are taught to listen to determine whether the sound of a baserunner's foot hitting the bag beats the sound of the ball hitting the first baseman's glove. So, O'Neill thought to put a bell inside the base.

O'Neill explained in U.S. Patent No. 171,038: "In place of the bell mechanism, a sounding whistle, electrical connection, or any other suitable enunciating device may be employed, which indicates clearly and positively, without chance of error, the exact moment when the base is touched by the runner, so as to form a very useful and reliable device for base-ball players."



Moving at the Right Pace

TIPS TO HELP STOP YOU FROM GOING TO MARKET TOO QUICKLY—OR TOO SLOWLY **BY DON DEBELAK**

SOME INVENTORS move way too fast to market, overlooking key considerations. Some inventors move too slowly, paralyzed from too much analysis. How can inventors find the right balance between too fast and too slow?

Too fast?

5 cautionary steps to avoid major errors:

1. Determine what your projected price will be. Get price quotes on your idea and then multiply that price by four. That is your projected retail price. SCORE (score.org) is a society of retired executives who offer free consulting. Most offices have retired manufacturing people who can help you estimate a final manufacturing cost. Make sure you have a manufacturer to make your product.
2. Understand your competition. Which products address the same need as yours, and what are their retail prices? Most trade magazines, which cater to retailers such as Kitchenware News & Housewares Review, have product directories that list most, if all, products available to retailers. Use a search engine for trade magazines in your product category and then inquire about the magazine's product directory.
3. Try to calculate what percentages of users feel the issue you are addressing is important. If the issue is only important to a small group of potential users, your product probably won't succeed.
4. Understand your startup costs and your funding plan to meet them. SCORE consultants can help you understand startup costs such as molds, product literature and trade show expenses. You might also have shipping costs, upfront payments for raw material, or for finished product if you have outside manufacturing.
5. Decide on a distribution channel. Try to meet at least one or two people in that channel to ensure that the channel will be open to you.



Too slow?

5 ways to know when to move ahead:

1. Understand that you will never have all green lights for moving ahead. Most ideas succeed with only 15 percent to 25 percent of the "lights being green."
2. Don't worry if many potential customers don't express a strong preference for your product. All you need is about 20 percent of potential customers to really like your product.
3. Learn to trust others. You can't possibly know everything about making an invention, and some details like having your product made overseas call on expertise that few inventors have. Once you have a potential vendor, check out his or her references before moving ahead. Trying to do every detail will paralyze you into inaction.
4. Accept that for most contacts you will be a very small customer, one that may never produce any business. Don't expect potential vendors to go all out for you until you are ready to spend money. Be happy if the potential vendor treats you professionally.
5. Don't worry about having enough money for a big product launch. All you need is initial product success that shows the product can sell. Then you will be in a better position to raise money. ☀



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



Future Tech on Film

THESE MODERN CLASSICS WITH PRESCIENT INNOVATION HAVE HELPED PREDICT OUR FUTURE **BY JEREMY LOSAW**

SCIENCE AND ART are constantly inspiring one another. Movies, in particular, are famous and infamous for their ability to show us fantastic worlds and inventions that could not exist in our world that has to abide by the laws of physics—and the technology of the present.

Consider the time machine, a classic trope and movie invention that for practical reasons has never come to life.

However, some technologies that have jumped the shark and come off the big screen have found their way into our lives. Although they may not be actualized in the same form as envisioned in the movies, they are certainly, conceptually at least, former pieces of science fiction.

So let's use the "Bill & Ted's Excellent Adventure" phone booth time machine and take a look at how some old movies have predicted the future.

"Star Wars" (1977)

The "Star Wars" franchise has brought a number of fantastic innovations throughout the franchise. Who doesn't want to take a podracer for a spin, or fly a TIE fighter?

However, the hologram messages from the first "Star Wars" movie are most representative of innovation we have today. When R2D2 played the hologram of Princess Leia for

Luke Skywalker and she said she was in trouble and needed Obi-Wan's help, it was essentially a form of video streaming. Innovations such as videoconferencing and Facetime allow us to virtually put our loved ones in the room with us even if they are far away, just as Leia came to life for Luke.

With the COVID pandemic compelling the world to stay at home, it was this type of technology that allowed society to stay on its feet while people were being treated and vaccines were being developed. The holographic messages were also, in a way, precursors to apps like Cameo where you can hire a celebrity to record a message for you or a friend to bring famous people to life in your living room.

"Honey, I Shrunk the Kids" (1989)

This movie is famous for the electromagnetic shrinking machine that inventor Wayne Szalinski built, which shrunk his kids to a size smaller than a Cheerio.

Though this invention dominated the plot—and fortunately is a technology that has yet to find its way to reality—there was another innovation that was a bit more practical. Wayne also invented a radio-controlled lawn mower to make faster work of a common chore, and almost made short work of his shrunken kids while in the hands of neighbor boy Tommy Pervis.

The hologram messages from the first "Star Wars" movie are most representative of innovation we have today.





Although radio-controlled mowers never made it to the market, smarter and better AI-powered lawn mowers have.

Companies including Husqvarna and Greenworks have developed auto mowers that, unlike the old Snapper from "Honey I Shrunk the Kids," are powered by clean electric motors and can mow your lawn automatically without any sweat or spilled gas. Instead of the user having to guide the mower, it is programmed via apps to make the desired mowing pattern and use guide wires at the edges of the lawn area to keep them in bounds.

In this case, the realized product turned out much better than the movie fantasy.

"Terminator 2: Judgment Day" (1991)

Although I am still waiting for the liquid metal "mimetic polyalloy" that makes up the body of the villain T-1000 to come to life, what "T2" actually predicted was the rise of AI and smart machines.

As the plot goes, engineer Miles Bennett Dyson was working on a microprocessor for Skynet that allows machines to learn on their own. At 2:14 a.m. Eastern time on Aug. 29, 1997, Skynet becomes

"self aware" and can think for itself, and uses this newfound power to launch missiles.

The concept of machines learning, adapting and making decisions automatically has become real. But they have been largely deployed for the greater good and not a nuclear holocaust as they were in "T2."

Machine learning is a topic that has been at the forefront of technology for the last decade; it is a natural piggyback to all the data that IoT devices gather. Data are analyzed in the cloud (think Skynet) and can be used to come up with a result to control a system.

One of the most mature consumer devices that uses machine learning to control a system is the Nest thermostat. These devices analyze the conditions in the home, record data of the temperature settings you use, and over time can predictively set a heating and cooling schedule that is both comfortable to the user and efficient to use.

Although the Nest is a docile application of AI and machine learning, perhaps we should heed the warnings from "T2" and make sure that this tech is not used to the detriment of human life. ☀

"Terminator 2: Judgment Day" predicted the rise of AI and smart machines. One of the most mature consumer devices today that uses machine learning to control a system is the Nest thermostat.

The Husqvarna's Automower® 435X AWD, unlike the radio-controlled lawn mower from "Honey I Shrunk the Kids," is powered by a clean electric motor and can mow your lawn automatically without any sweat or spilled gas.

Chutzpah, the Schmooze, and Entrepreneurship

MANY YIDDISH TERMS GO HAND-IN-HAND WITH THE GOAL OF MARKETING YOUR INVENTION **BY ALYSON DUTCH**

YIDDISH IS A RICH, joyful language, filled with words that have double and triple meaning.

Much of the lexicon is difficult to describe in English without an entire explanation, lots of hand gestures, and always a heartfelt smile.

A few examples of those words are mensch, mazel tov and putz. Bupkis, kvell and kvetch are also some of my favorites. But chief among those expressions is chutzpah (pronounced huht-spa), which means extreme self-confidence and which I see as synonymous with being a successful entrepreneur. Now that I think about it, I'd say schmoozing and spiel are also two important terms for an entrepreneur to understand.

For the etymologists in the crowd, Yiddish was originally a German dialect spoken by Ashkenazi Jews in central and later eastern Europe. It was written in the Hebrew alphabet, containing a substantial substratum of Hebrew words as well as numerous loans from Slavic languages. For that reason, some of the words originated in Hebrew or Slavic languages but have entered English via Yiddish.

My goal: To be menschy

Being a mensch is important in business. It means you are a good person.

But if someone calls you a mensch, it is indeed so much more; it also means someone who gives back and is well known as a kind-hearted type.

This word is sometimes used as an adjective—as in “Alyson is a menschy person.” This means she’s (hopefully!) a sweetheart of a human, someone who can be counted upon, trusted without question and whose heart walks in the room before her head.

Mazel tov denotes celebration, and big celebration! It's often used as a congratulatory term, as in when a baby is born or a marriage is announced. But its meaning is deeply rooted in familial support. Mazel is a term used in Jewish mysticism to describe the root of the soul.

Getting a “mazel tov” is a big deal and may come with a hearty pat on the back. For skeptics, yes, sometimes the term is used as a backhanded slap and delivered with a twang of bitchy jealousy in the same way that “congratulations” can be.

Having a spiel (pronounced sch-peel) is like an elevator speech to pitch an invention but with good meaning that can be repeated with abandon. Schmoozing, my friends, is networking in a way that's warm and heartfelt. It could be a little smarmy if you're wearing a shark suit, but it's a virtual business necessity if you want to get anywhere.

Kvelling is speaking about something with passion, beauty and love, as if you were a songbird twilling away. A putz is the dum-dum in the corner of the room who is too afraid to talk to others, has his invention in his pocket—and oh, he just dripped the teriyaki sauce from atop the rumaki right down his tie. And he doesn't know it's there.

Bupkis means you “ain’t got nuttin,” as in you've come up empty-handed or your idea exploded into nothingness and it's start-over time. A kvetch or kvetching can be both a noun and adjective. It is an angry bird-type of cackling, best characterized as a gnawing, incessant complaining that has no purpose other than to annoy those around you.

Saving the best Yiddish for last

In my 30-year career of launching products, chutzpah is the one quality that is mandatory for becoming successful. One might describe it as moxie, but that does not quite encapsulate the breadth of tenacity that “chutzpah” conveys.

Being an entrepreneur requires the ability to take action—sometimes on impulse or inspiration, but more important to do the work required to know if it’s viable. Someone with chutzpah might be characterized as a person willing to take risk.

Chutzpah has a minimal connotation of wildness: The danger factor is not just out of the ordinary but slightly bizarre and maybe even plain stupid.

People with chutzpah, like the beloved honey badger of popular culture, don’t give a (blank) about what others think. They are entirely courageous and willing to be stung by lots of bees just to get the honey.

Imagine the chutzpah of the Wright Brothers. They really thought a flying machine was a good idea. Einstein attempted to re-create fire in a glass bulb that didn’t need gas.

And Bitcoin is a modern example of serious chutzpah. Who in the world would believe that a new monetary system would really become a thing without the backing of a government?

To have chutzpah, you need to be in another paradigm. One of my favorite business books is called “Blue Ocean Strategy,” in which W. Chan Kim and Renée Mauborgne explain why thrashing about in the “bloody red ocean of competition” is a bad idea and looking beyond to other oceans of possibility is the way to go.

I couldn’t agree more.

No chutzpah, no ka-ching

How many of us have had ideas run through our heads, never done anything about it, and then saw that idea in form later?

I remember one such idea of mine: As a younger publicist, I spent a good part of my career traveling the world for the Miss Universe pageants and doing international publicity for clients like Sun City, South Africa, during the fall of apartheid.



In my 30-year career of launching products, chutzpah is the one quality that is mandatory for becoming successful.

This was borne of my desire to make travel less arduous. My idea was to have massages in airports and on planes. I thought we needed on-the-go stress relief to dissolve those take-your-breath-away muscle spasms that inevitably and suddenly pang when lifting your suitcase into the overhead compartment.

Years later, the Massage Express Co. and XpresSpa showed up in airports. I felt both vindicated and a little sad that I never did anything about it.

Where was my chutzpah when I really needed it?

Nevertheless, I am now a happy customer and though it costs an arm and a leg, when those horrible layovers happen I’d spend any amount of money for some relief. ☺

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





These Numbers Talk, But What Do They Say?

RECENT PATENT TRANSACTIONS HOLDING STEADY,
BUT WITH POSITIVE INDICATORS

BY LOUIS CARBONNEAU

PEOPLE OFTEN ask me if there is such a thing as a “patent market.” The most honest answer I can provide is, “It really depends.” If you define a “market” as having a certain number of transactions (public or private) around an asset class, then yes, there definitely is one.

But if you define a market as being characterized by a liquid ecosystem in which buyer and sellers can easily value assets and in which transaction data is widely available for comparisons (like the MLS system), you are headed for disappointment. And recent years have made things worse by introducing a high level of uncertainty regarding the validity of the title upon which patent owners are trying to transact.

So, if no one really knows whether an asset is valid, and by extension how much it is worth, it remains very difficult for a market to grow organically. Add to this that the financial information for most transactions remain secret, and you never really benefit from previous deals to better inform the next ones.

Having said that, let's tackle the current market based on the most recent data released by our good friends at Allied Security Trust (AST) and Richardson Oliver Law Group (ROL), respectively.

Conflicting indicators

A member-driven cooperative, AST has been monitoring the secondary patent transactions market since 2007. It has worked with more than 6,000 patent sellers and 500 brokers, and has the most comprehensive database of over 13,000 patent purchase opportunities offered on the secondary market.

Based on patent packages data presented to AST year to year, 2021 is geared to be a record year. AST reports approximately 1,400 deals offered to it so far this year, breaking its top mark in 2017, and has received 75 percent more offered deals than in 2015.

This information means one of two things:

- The increase of offerings reflects a vibrant market, or
- The increase reflects an oversupply of patents for sale which is not matched by an equal increase in demand.

It cannot be both.

Based on data here at Tangible IP, experience and talking with buyers and sellers every day, we believe this increase is more a reflection of the general unbalance between supply and demand.

Many operating companies have taken to making subsets of their patent portfolios available for sale. However, buyers—albeit in greater number than in past years—seek to overcome a borderline impossible threshold to invalidity risks. This results in too many sellers chasing deals and too many buyers chasing the perfect patents ... like ships passing in the night.

Unfortunately, these two groups rarely find a middle ground. This in turn leads to transactions, when they occur, that are often largely back-ended as buyers prefer to share the risk (and the reward) with the patent owners/inventors given the current ecosystem. This, in turn, feeds the litigation trough, since the only way to share revenues is to assert the patents against infringers.

This is true regardless of the technology area, although software-related patents have taken the brunt of the damage done by the



A marked increase in patent purchase opportunities in 2021 is probably more a reflection of the general unbalance between supply and demand.

Supreme Court's 2014 patent-eligibility ruling in *Alice Corp. v. CLS Bank International* (aka the "abstract idea" invalidity argument). Not surprisingly, this has created some movement toward other areas of technology where the *Alice* rejection rate is significantly lower.

But how much of this movement actually translates into sales?

Broader context is positive

This is where the latest data from ROL helps. It reports that patent transactions in 2021 appear to be in line with prior years—although only 50 to 100 transactions per quarter. Not exactly the epitome of a vibrant market!

What is encouraging, though, is the increase in operating companies that are tiptoeing back into the game and using brokers to help them identify and acquire good assets.

ROL is also seeing a surge of buy side analysis that should normally translate into more

transactions in the near future. This is also consistent with our experience at Tangible IP; we have had several exclusive buy side engagements in 2021 for large corporations, whereas we used to almost exclusively represent sellers. Our clients are serious buyers with very clear buying criteria and budget on hand.

The challenge, once again, is to find among the thousands of patents offered for sale those that will please very selective shoppers.

But I sure hope ROL is right here and 2022 is geared to be a bumper crop year. I really want to buy that boat! ☺

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.





Waking the Giants

APPLE, GOOGLE PATENT CASE LOSSES COULD DRIVE PUSH FOR MORE DAMAGING REFORM **BY GENE QUINN**

All Eye on Washington stories initially appeared on IPWatchdog.com.

GOOGLE AND APPLE recently lost big patent cases on the same day. On August 13, Apple lost a \$300 million jury verdict to PanOptis; Google was found to infringe five Sonos patents at the International Trade Commission in an initial determination by Judge Charles E. Bullock—which, if upheld by the full commission, would block the importation of Google hardware that includes Chromecast and Pixels.

This likely means that Apple, Google and their big tech allies will use these instances and other recent high-profile patent losses as evidence of the need for yet more innovation-crippling patent reform.

“I’ll tell you who doesn’t think we have bad patents in the United States,” said Chris Israel, executive director of The Alliance of U.S. Startups for Inventors and Jobs, during a recent IPWatchdog webinar. “It is the Chinese. They in fact think we have very good patents and trade secrets and intellectual property, and they are in a 24/7 [race] to take that from us.”

Israel, no stranger to international intellectual property enforcement, previously served in the Bush White House as the first U.S. international intellectual property enforcement coordinator—a position commonly referred to as the “IP czar.”

A long-shifting tide

The entire premise for the creation of the Patent Trial and Appeal Board with passage of the America Invents Act in 2011 was that there were “bad patents” that needed to be invalidated in a quicker, cheaper, streamlined process. The PTAB has not lived up to the quicker, cheaper, more streamlined goal—instead adding a layer of review, expense and multiple years to virtually every dispute.

Once upon a time, it was quite difficult to defeat a patent. During the last 15 years, it has become increasingly easy to defeat patents for a multitude of reasons as the tide has turned away from innovators.

Factor in the Supreme Court’s decision to change more than three decades of what constitutes an obvious invention in *KSR v. Teleflex* (2007); the Supreme Court’s decision to change more than three decades of what constitutes a patent-eligible invention (*Bilski v. Kappos*, 2010; *Mayo Collaborative Services v. Prometheus Labs*, 2012; *Association for Molecular Pathology v. Myriad Genetics*, 2013; and *Alice Corp. v. CLS Bank*, 2014), and patents are harder to obtain and much easier to challenge.

The answer was clear: File better patent applications.

Bigger hurdles for Big Tech

That message was received loud and clear by patent practitioners. So it is hardly surprising

that 15 years into this misguided patent experiment, patents that the big tech companies are facing are stronger, becoming harder to invalidate and read directly on the most valuable products and services they provide.

So, what will be the response of Apple, Google and the other big tech companies?

"Optis makes no products," said Apple spokesperson Josh Rosenstock in an e-mail to Reuters. Instead, Apple innovates and then has manufacturing facilities in China and elsewhere around the world make products that are shipped back into the United States. These big companies outsource their supply chain without regard to American workers and have built their lasting empires on the technologies they have managed to take from others without compensation.

It would be tragic for the massive damages awards we are seeing in patent litigation in the past year to lead to a complete capitulation of American innovation by Congress as it doubles and triples down on patent reform aimed at excusing a handful of big infringers from taking without paying. ☀

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.



BIDEN NAMES I.P. NEGOTIATOR

The White House announced on August 10 that President Joe Biden planned to nominate Christopher Wilson as chief innovation and intellectual property negotiator at the Office of the U.S. Trade Representative. The position has not been filled since its creation in 2015.

Wilson has been with the USTR for two decades, serving as deputy assistant U.S. trade representative for innovation and intellectual property (2006-2008) and in several assistant U.S. trade representative positions. He currently serves as assistant U.S. trade representative for South and Central Asia.

The chief innovation and intellectual property negotiator position was created as part of the Trade Facilitation and Trade Enforcement Act of 2015. The functions of the position include "to conduct trade negotiations and to enforce trade agreements relating to United States intellectual property and to take appropriate actions to address acts, policies, and practices of foreign governments that have a significant adverse impact on the value of United States innovation."

Wilson will report to Biden nominee Katherine Tai, who was sworn in as USTR ambassador in March 2021.

In April of this year, Sens. Patrick Leahy (D-Vermont) and Thom Tillis (R-N.C.) sent a letter to Biden asking him to prioritize appointment of IP officials in the Executive Branch. Of course, the top IP position—Director of the U.S. Patent and Trademark Office—has yet to be filled.

Tai said: "Wilson's experience shaping trade policy for more than two decades in a variety of critical regional and policy leadership roles at USTR makes him uniquely qualified to fill this important new position as the chief innovation and intellectual property negotiator." —*I.P. Watchdog*

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Best wishes, Jack Lander

INVENTIVENESS

IoT Corner

Peloton, a leader in exercise bikes, had two big IoT security issues within a month this year.

The first was a leaky API (functions that allow access to data), where hackers could easily access a user's personal information—including age, weight, location, gender, workout stats and birthday. Hackers could even gain access for users who set their account to Private.

A second vulnerability was identified in June, in which hackers could control the camera and microphone and spy on users. Peloton has since released software updates to address the issues but reminds how vulnerable personal data are through IoT devices, even from established firms.

—Jeremy Losaw



Wunderkinds

Thirteen-year-old **Atta Gan** of Ghana (West Africa) stunned his community this year by building a functioning plane out of some mosquito spray cans, wires, a pen, and motors. (Some reports said he used an empty can of malt.)

Atta, who has no background in aerodynamics and engineering, devised the invention as part of his dream to pilot a plane. His airplane moves with the support of a capacitor and other electronic gadgets that supply power to facilitate its movement and trajectory in the air.

WHAT DO YOU KNOW?

1 The Twinkie snack cake, invented in 1930 by James Alexander Dewar, got its name from:

- A**) A "Twinkle Toe Shoes" billboard the inventor saw
- B**) "Twinkle Twinkle Little Star," which he sang to his baby girl
- C**) His sister's daughters, who were twins
- D**) It was his dog's name

2 **True or false:** You have an absolute right to use your name as a trademark.



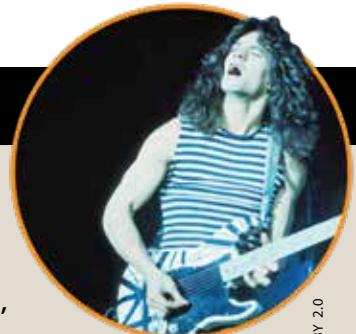
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What IS that?

We'll keep this brief. No, the underwear is not really instant; the shortest duration mentioned by reviewers was 5 minutes. No, they are not meant to be serious clothing; gag gift only. No, one size does not fit all. Yes, we know who Archie McPhee is, and we plan to tell you about him later.

20+

The number of PayPal patent applications related to blockchain technology between 2017 and 2020. The company announced on March 30, 2021, that it has begun allowing U.S. users to check out using cryptocurrency online.



3 **True or false:** Guitarist Eddie Van Halen had a patent.

4 What was invented first—Freon, or the electric cash register?

5 Which invention did not originate in Michigan?

- A**) Automobile assembly line
- B**) Four-way traffic signal
- C**) Automobile tire
- D**) Highway center line

ANSWERS: 1.A. 2. False. Even though Bruce Springsteen, Donald Trump and Kylie Jenner are among those who have done it, Small Business at Chron.com says, "A person's name can only be registered as a trademark if it is widely recognized in commerce"—among other factors. 3. True. U.S. Patent No. 4,656,917 was granted on April 14, 1987, for a musical instrument support. 4. Freon was invented in 1928, the electric cash register in 1906. Ohio businessman Charles Franklin Kettering was involved with both. 5.C.

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