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APRIL 2023 Volume 39 Issue 04

Inventors

DIGEST

FORE SIGHT

INVENTIONS THAT CHANGED
AND ARE CHANGING GOLF

More Spring Sports

THE BASEBALL DOUGHNUT:
HISTORY AND DEBATE

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We're expanding our Patents for Humanity Awards Program to include a new category for those who are responding rapidly to the challenges of climate change by developing green energy sources using game-changing technologies.

This new award category will provide business incentives for patent applicants, holders, and licensees whose inventions address climate change through green energy technologies, including through wind, solar, green hydrogen, hydropower, geothermal, and biofuel technologies. Their success stories will inspire others to harness innovation for human progress.

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For more information or to apply, please visit www.uspto.gov/ip-policy/patents-humanity-green-energy



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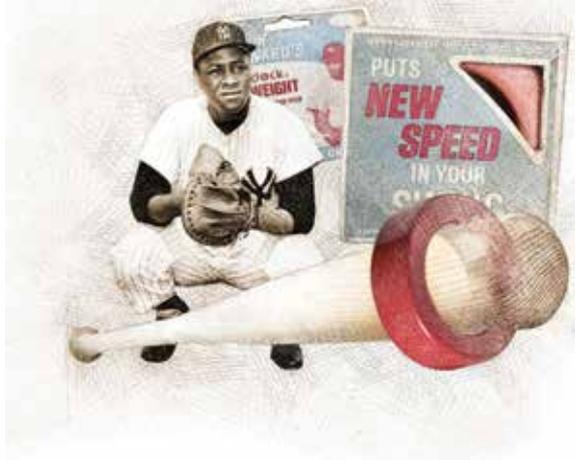
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Give no quarter to Patent Pirates.

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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.

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JOURNEYS OF INNOVATION

A Girl's Window into History

Pleasant Rowland's Pleasant Company was a major risk: pricey toys and books for pre-teen girls that taught them about history **BY LAURA LARRIMORE**



Pleasant Rowland poses alongside the three original American Girl dolls. Left to right: Kirsten Larson, a hard-working pioneer and Swedish immigrant from 1854; Samantha Parkington, a mischievous orphan growing up in 1904; and Molly McIntire, a spunky girl living through World War II in 1944.

PLEASANT ROWLAND'S 1984 visit to the meticulously recreated historic park in Williamsburg, Virginia, enchanted her.

"I loved the costumes, the homes, the accessories of everyday life. All of it completely engaged me," she recalled in a 2002 *Fortune Small Business* magazine article.

The 45-year-old former teacher and successful textbook author had gone with her husband to a conference.

"I remember sitting on a bench in the shade, reflecting on what a poor job schools do of teaching history ... was there some way I could bring history alive for them, the way Williamsburg had for me?" Rowland said.

She dashed off a postcard to fellow children's author Valerie Tripp. Thirty-five years later, Rowland recalled how that postcard outlined the key ideas of what would become The American Girls Collection® brand of dolls.

Teacher, textbook author

Few people know the company Rowland is famous for founding was actually her "third career," critically informed by her earlier work as a teacher and educator.

After graduating from Wells College in Aurora, New York, Rowland began teaching

second-grade students at Mattapan Elementary in Massachusetts. Through research and experimentation, she constructed what she called her own "cobbled-together" pedagogy to help her pupils learn to read better.

Those materials eventually turned into a program called *Beginning to Read, Write, and Listen*, published in 1971 by J.B. Lippincott. Rowland authored dozens of short and colorful alphabet books that are still published by McGraw-Hill.

"It was the first academic kindergarten curriculum ever published and has been in continual use for 40 years," she said in a speech to educators in 2011. "*Beginning* also launched me on my second career as a textbook author. Based on its success, Addison-Wesley, another school publisher, approached me about writing a basal reading and language arts program."

From 1973 to 1978, Rowland developed and oversaw the Addison-Wesley Reading Program. But in 1981, the publishers decided to return the company to its original focus of math and science textbooks.

Historical dolls? 'Are you kidding?'

As she considered where to apply her considerable energy and vision next, the trip to Williamsburg became one of two events that propelled her toward her new career as an entrepreneur and famous toy mogul.

The second catalyzing event happened that winter, when Rowland was searching for dolls to give her 8- and 10-year-old nieces for Christmas. Surveying the toy shelves full of plastic Barbie® dolls in flashy outfits and the scrunched-faced, yarn-haired Cabbage Patch Kids®, she couldn't find something she wanted to buy—well made, meaningful, and ideally something educational.

What if there was a line of high-quality toys and books that inspired pre-teen girls to learn about history?

But when she met with marketers and manufacturers, Rowland recalled being met with disbelief. “Are you kidding? Historical dolls in the day and age of Barbie?”

Her original doll design was based on a defective, cross-eyed doll, dug out from a dusty back storeroom in a Chicago Marshall Field’s department store by a friend. She found the manufacturing label sewn into the doll’s underpants, reading, “Gotz Puppenfabrik, Rodental, West Germany” and soon was on a plane to Europe to discuss production.

“In one weekend, I wrote out the concept in great detail. I defined the first three characters, the product line, the series of books, the matching girls’ clothing, the retail store concept, even the idea for a musical,” she said.

High quality and prices

The 18-inch American Girl dolls would be sold via mail order catalog, not in toy stores. They would be heirloom pieces and sold at prices to match.

They would have sturdy, childlike bodies and glossy hair that girls could style. There would be a line of carefully crafted, historically inspired accessories and clothes to collect, aligned with each girl’s adventures told in their storybooks. The six books that accompanied the dolls would have beautiful illustrations to bring to life each character and her era.

Time periods were researched and carefully selected, book drafts were written and illustrations drawn, and the three dolls, their tiny accessories, and their accompanying advertising were developed for the initial launch.

The concept seemed far-fetched to mainstream retailers who scoffed at the dolls’ \$80 price and selling them to 9- to-12-year-olds.

Success and a scare

By fall 1986, Rowland had sunk nearly all the money she had earned from her textbook royalties into the venture—well over \$1 million. She had ordered half a million catalogs printed, and submitted a trademark application.

The gamble paid off. Between September and December 1986, American Girl sold \$1.7 million worth of product. The second year, the company generated \$7.6 million. Sales grew annually.

Rowland remained focused, despite being diagnosed with breast cancer in the company’s third year.

“It was a large tumor and I had a poor prognosis, but throughout chemotherapy and radiation I never missed a day of work, and work is probably what saved me.”

Bringing to market The American Girls Collection® (the trademarked brand name of the six original dolls

created by the Pleasant Company®) was the start of Pleasant Rowland’s “third career.”

Making more history

By 1991, sales had reached \$50 million. The company began preparing for the launch of its first non-white historical doll, Addy Walker.

Rowland assembled an advisory board of Black historians, educators, and museum directors to help develop Addy. The team decided that Addy’s story should start in the South in 1864, as Addy and her mother plan an escape from slavery. Her story showed a strong, loving family caught up in slavery and helped children consider difficult history in age-appropriate ways.

Pleasant Company continued to grow, releasing the Bitty Baby® dolls and books for younger girls, then launching a new line of modern dolls called American Girl of Today®. Both became registered trademarks in 1996.

By 1998, Rowland had been running the company for over a decade. She had led several product expansions, opened the flagship American Girl Place store in Chicago, and even created a musical based on the historical characters’ adventures, called “American Girl Review.”

Everything she had dreamed up that one weekend, she had fully realized.

She sold American Girl to Mattel for \$700 million.

This made Rowland wealthier than beloved American writers Louisa May Alcott, Mark Twain, Harper Lee, and Dr. Seuss combined. Since 1986 the company has sold over 160 million books, outpacing the 36 million dolls sold by three to one.

She and her husband established several foundations and began giving generously to community nonprofits, often anonymously.

In 2022, a flood of memes placed American Girl dolls in modern contexts, with the hashtag #AmericanGirlDoll garnering 315 million views on TikTok.

Even 40 years later, Rowland’s vision to educate children and help tweens understand history still remains relevant as a way to understand and engage with our past and present.

Laura Larrimore is a communications program supervisor at the USPTO.

This story was edited for brevity. See the full story at [uspto.gov/learning-and-resources/journeys-innovation](https://www.uspto.gov/learning-and-resources/journeys-innovation).

Each month, the USPTO’s Journeys of Innovation series tells the stories of inventors or entrepreneurs who have made a positive difference in the world.

Inventors Must Get Specific

A detailed specification, containing a description and other information illustrating the invention, is essential in the quest for a patent

WHEN INVENTORS submit a patent application, they must describe their invention in what is known as a specification. This contains a description and other information illustrating the invention.

The specification provides support for claims that define the scope of the patent. It may also set forth a relationship to other patent applications previously filed by the inventor, to establish the priority date of the invention.

A specification often includes a background section; a detailed description of the invention;

drawings and/or figures, with detailed descriptions; and definitions for any terms. It also specifically spells out what the invention is claimed to be.

Background section: This provides an understanding of the state of the relevant technological “art” or area, and may address problems in the state of the art.

Detailed description section: This portion of the specification should provide enough detail so that a person familiar with the technology can understand how to make and use the invention.

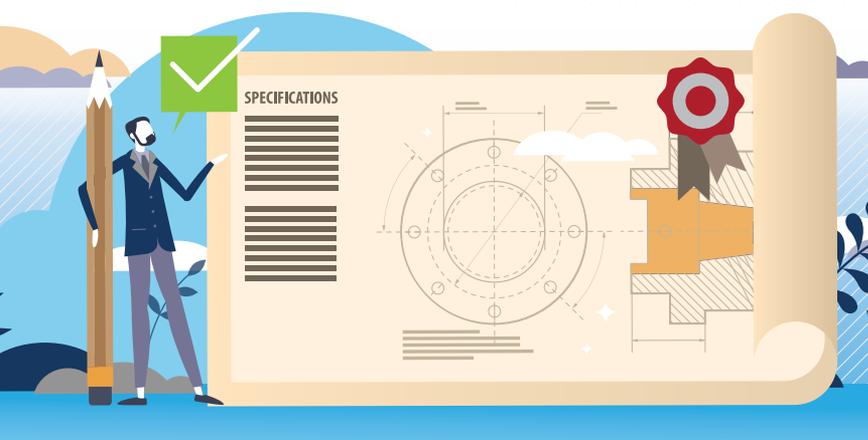
Drawings: These may be submitted with a patent application and must also be described in the specification. The description of the drawings allows the inventor to specify any preferred embodiments of the invention and add additional context to the invention.

The specification allows for others to understand the invention and determine what problem the invention solves. It also protects the inventor by putting the public and competitors on notice that they cannot make, use, import, or sell the invention claimed in the patent.

A patent examiner relies on the specification to understand the invention. A well-written specification can provide smoother collaboration between the applicant and the United States Patent and Trademark Office to allow the application to justify a patent.

Attorneys and judges rely on a specification to interpret the scope of the inventor’s rights and determine whether those rights are being infringed once the patent is granted.

To ensure that patent applications adequately disclose the claimed invention, Congress and the USPTO have created requirements for a legally sufficient specification. These guidelines can be found in the Manual of Patent Examining Procedure.



NEWS FLASH

PATENT GRANTS GOING ELECTRONIC

Beginning April 18, 2023, the U.S. Patent and Trademark Office is shifting toward issuing paper waste-reducing electronic patent grants (eGrants) to patent recipients.

The process delivers the official copy of patent grants in an electronic format. The USPTO will provide a bound paper version as a ceremonial copy throughout a limited transition period, then for a nominal fee thereafter.

The eGrant process significantly decreases the USPTO’s printing and mailing needs, potentially reducing patent pendency, and saving the agency nearly \$2 million in annual printing and mailing costs. Patent recipients will receive their electronic patent grant in PDF format on the day of issuance.

For more information, visit [uspto.gov/electronicgrants](https://www.uspto.gov/electronicgrants).

Baker's List and Beyond

Patent examiner's first compilation of Black patent holders was a vital step in quest for racial equality **BY REBEKAH OAKES**



IN THE 1880s, second assistant patent examiner Henry E. Baker took on a project that became his legacy: compiling the first list of African American patent holders.

Over the next few decades, Baker's list grew to several hundred entries, an immense repository of contributions by Black inventors to the technological progress of humanity and a powerful record of the public quest for racial equality at the turn of the 20th century.

One of the inventors on Baker's List was Jan Matzeliger, who in 1883 changed the shoe industry forever with his automatic lasting machine. He set out to make the process of joining the sole to the upper part of the shoe more efficient.

Matzeliger built his first model out of wooden cigar boxes, elastic, and wire—a prototype so complex that patent examiners had to see it in operation to understand how it worked. Matzeliger's invention could produce 700 pairs of shoes per day, up from 50, making quality shoes widely affordable for the first time.

In 1898, Lyda D. Newman received a patent for a hair-brush with fine synthetic bristles and an inner chamber that trapped dust and dirt. Her invention paved the way for other Black innovators to further revolutionize the

hair-care industry, including 2023 National Inventors Hall of Fame inductee Marjorie Stewart Joyner.

In the 1910s, Newman led efforts by the Woman Suffrage Party in New York City to involve Black women in the struggle for the vote.

Alfred Cralle, a porter in a Pittsburgh hotel, invented the one-handed ice cream scoop. And the eye protector patented by Powell Johnson of Barton, Alabama, helped firefighters and furnace workers protect their eyesight from the bright glare of the fire.

By studying and expanding on Baker's work, we can get a much fuller picture of Black creators, trailblazers, and disruptors who helped invent modern America.

Rebekah Oakes is acting historian at the USPTO.

HELP DOCUMENT BLACK ACHIEVEMENT

- If you are the descendant of a Black inventor, or know of a past innovator who lived or worked in your community, email historian@uspto.gov.
- Nominate a world-changing innovator to receive the National Medal of Technology and Innovation, the nation's highest honor for technological achievement.
- Consider nominating an inventor to be included in a future class of the National Inventors Hall of Fame.

WHAT'S NEXT

WORLD IP DAY 2023: Look for events and information celebrating this year's event, held annually on April 26. This year's World Intellectual Property Day salutes the "can-do" attitude of women inventors, creators and entrepreneurs around the world and their groundbreaking work.

SUCCESSFUL INVENTING SERIES: Product development is the fifth event in the series, presented by the USPTO and the Licensing Executives Society-Silicon Valley Chapter. It will be held April 22, 10:30 a.m. to 1:30 p.m. PT. You can attend virtually or in person at

the USPTO's Silicon Valley Regional Office in San Jose, California. Register at uspto.gov/about-us/events/successful-inventing-product-development.

TRADEMARK BASICS BOOT CAMP: The second of eight modules, April 11 from 2 p.m. to 3:30 p.m. ET, covers trademark registration from filing to registration. Topics at the virtual event include trademark basics; application window and timeline overview; post-registration workflow overview, and finding help. Register by April 10 at 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.

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This Was Much More Than a Big Bank Collapse

The headline roared in blazing type on your “internet news” (oxymoron) homepage March 10: Silicon Valley Bank is closing.

Another dagger to our inflation-wracked economy? Of course. But really—isn’t this mostly a California story, one involving a bank that, as it said on its website, offered “modern banking products designed for tech, life science and health care founders”?

No. It was a big blow to innovation.

Silicon Valley Bank was arguably the most startup-friendly bank in the United States—and these fledgling companies are essential to our country’s economic and innovation future. SVB was one of the major providers of venture debt and other credit facilities.

Some fear the collapse could portend the end of an era of innovation.

“The collapse of Silicon Valley Bank will leave a big hole to fill when it comes to backing startups, raising worries that no one else will provide the kind of support for new businesses that came from the bank,” a tech insider with funds in SVB told the *New York Post*. “This, in my opinion, alters the very course of American innovation.”

SVB was built to support innovation. It took risks with startups that other banks would not. It would even let startup founders borrow against their companies while providing personal mortgages and other financial services. Its 100 startup banking experts helped founders with fundraising, connecting with investors, and providing advice.

It’s not just that the collapse means many startups will have trouble making payroll, and that they lost a major financial supporter and ally. The question now becomes: How will they be confident, even daring, as they look to other avenues of investment and security?

The stock market is Exhibit A as to the major role that investor confidence and perception play in our economy. Startup clients of SVB that survive this collapse—already tested by the myriad challenges of gaining a foothold with an innovative mission—now must navigate an even more dangerous environment.

An *Inventors Digest* cover package on startups in February 2018 noted that the share of companies less than a year old in the United States dropped from about 15 percent in 1980 to 8.1 percent in 2015. Now more than ever, we need more innovation-friendly environments, policies and court rulings that will help our country remain an economic power and a global example via discoveries that benefit all of us.

—Reid
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CORRESPONDENCE

I have an invention that I hope is ready for market, and I want to develop it through a company. How can I be sure the company won't steal my idea?

—FRED GILHOOEY, NEW ORLEANS

You can't. But there are ways to minimize risk. You can consult a patent attorney who knows of a company that has integrity when it comes to protecting trade secrets. You can also include a nondisclosure agreement (NDA) in your contract terms with a manufacturer or licensee. Free NDAs are available online for you to edit and print.

There are many legitimate, viable product launch companies. Keep reading Inventors Digest for education on this. ID's parent company, Enventys Partners, has 20-plus years' experience in this field in the areas of product development, prototyping, engineering, manufacturing, lead generation, crowdfunding campaign management, and public relations. Good luck!—Editor

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ROLLING STONES ACCUSED OF INFRINGEMENT

In 2020, the Rolling Stones released their first original material in eight years. Now they're being sued over it.

"Living in a Ghost Town," a bluesy rocker accompanied by a COVID-themed video, reached No. 3 on the Hot Rock & Alternative Songs chart in May of that year. But songwriter Sergio Garcia Fernandez, who performs under the name Angelslang, claims the single has too many similarities to two of his compositions.

In the copyright infringement suit, filed March 10 in U.S. District Court for the Eastern District of Louisiana, Fernandez says the Stones "misappropriated many of the recognizable and key protected elements" of his "So Sorry" in 2006 and "Seed of God" in 2007.

Specifically, he says those elements are "vocal melodies, the chord

progressions, the drum beat patterns, the harmonica parts, the electric bass line parts, the tempos, and other key signatures" from "So Sorry" and the "harmonic and chord progression and melody" from "Seed of God."

A purported email may be the lead singer in this dispute.

Chances that the Stones had heard either of Fernandez's songs seem slim, given that they have fewer than 1,000 spins on Spotify. But according to *Billboard*, Fernandez claims he gave a demo CD to "an immediate family member" of Jagger—listed in court documents as Michael Phillip Jagger, along with codefendants Keith Richards, Universal Music Group, Inc., BMG Rights Management, LLC and Promopub B.V.

The identity of this so-called immediate family member has not been disclosed, and a copy of the



purported email was not included in court documents.

When the single was released, Jagger wrote: "So the Stones were in the studio recording some new material before the lockdown and there was one song we thought would resonate through the times that we're living in right now."

Meanwhile, the world awaits an official response from the Stones. As of this writing, we have been ghosted.

BRIGHT IDEAS

Striker

MODERN EDC MULTITOOL

riveknives.com

Made of stonewashed, heat-treated AUS-8A Japanese steel, Striker is a compact, light-weight (3 oz.) tool that slices, strikes, screws, pries, and opens pop bottles with ease.

Striker features a G-10 machined micro-scale grip. G-10 is a glass-based epoxy resin that doesn't rust, oxidize or soften. It is used in structural support units, handgun grips and high-quality knife handles.

Striker was offered to Kickstarter backers from \$32 to \$40, but those rewards are no longer available. The future retail price is unknown. Shipping to crowdfunding backers is scheduled for August.



Hypershell

1-HORSEPOWER EXOSKELTON

hypershell.cc

Hypershell packs state-of-the-art robotics, ergonomics and AI into a compact form that provides varied experiences for people with active lifestyles.

Equipped with Hypershell Omega, you can go further, climb higher mountains, run faster, and carry more along the way—or simply walk with less effort. The central motor is invented in combination with eight passive joints, doubling the assist effectiveness and performance/weight ratio of the exoskeleton. It features a 25km battery range.

Hypershell will retail for \$599; delivery to crowdfunding Rewards backers is set for September.



Feiyu Pocket 3

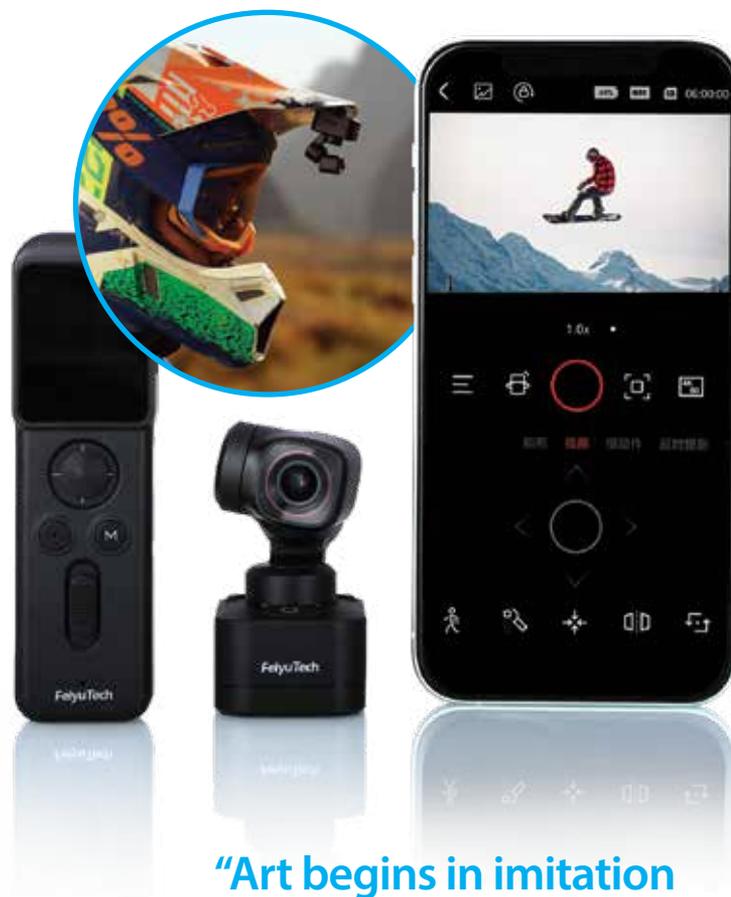
CORDLESS, DETACHABLE
3-AXIS GIMBAL CAMERA

feiyu-tech.com

Billed as the world's first detachable, cordless Gimbal camera, Feiyu Pocket 3 provides pocket-size freedom to capture crisp and clear footage. Its detachable handle transforms it into a multi-purpose, go-anywhere mountable camera.

The camera's 3-axis Gimbal stabilizer helps you take shots without shakes and blur. It comes with built-in magnets to facilitate shots from more unusual places. Attach the camera to a helmet, car roof, or any magnetic surface and control it from the handle with the Feiyu App in your hand to achieve the best filming angle.

Feiyu Pocket 3 will retail for \$300. Shipping to crowdfunding Rewards backers is set for May.



**“Art begins in imitation
and ends in innovation.”**

—MASON COOLEY

Geo Wallet

MAGSAFE WALLET
WITH FULL FIND MY

esrgear.com

Geo Wallet is a MagSafe wallet with Apple-certified Find My functionality that securely locks onto your iPhone and opens into a stable stand.

Once paired with your iPhone or other Apple device, you can instantly see your wallet's real-time location, play a sound, and receive Left Behind notifications. Geo Wallet's magnetic lock for your phone has 1,500g of holding force. The slim design attaches easily to the back of your phone and holds 1-3 cards equally secure via an inner dynamic tension spring.

Geo Wallet will retail for \$39, with shipping for Rewards backers set for May.



Ring of Immortality

THE BASEBALL DOUGHNUT SEEMS A LASTING AND CONTROVERSIAL PRESENCE **BY REID CREAGER**

HEWAS the first African-American to play for the New York Yankees—possibly the most accomplished team in professional sports history.

He was the first African-American to win the American League Most Valuable Player Award.

First African-American to become an American League coach.

First African-American to model for *GQ* magazine.

He played for the same Negro League team as Jackie Robinson (the Kansas City Monarchs).

He was a 12-time All-Star who won four World Series rings.

Yet somehow, Elston Howard is seldom mentioned among the most influential players of 1960s baseball. So it shouldn't be a surprise that decades after he died at 51, few know he invented

a piece of equipment that is ubiquitous in any baseball game played.

The next time you watch a game, chances are you'll see a player in the on-deck circle with a baseball "doughnut"—a circular-shaped, metal or iron ring that fits over the end of a bat for the purpose of making it feel lighter to swing once the weight is removed. The doughnut's history and debated benefits are food for thought.

A copycat cacophony

It is not known exactly when Howard invented the doughnut. According to the Society for American Baseball Research, he helped a New Jersey entrepreneur, Frank Hamilton, market the doughnut after the 1967 season.

The St. Louis Cardinals—the team that beat Howard's Red Sox in the '67 World Series—reportedly became the first team to invest in the doughnut. Countless players used it, including Willie Mays and Mickey Mantle.

Made by On-Deck Inc. and still available on eBay at this writing, Howard's bat weight received U.S. Patent No. 3,521,883 (granted to Hamilton) on July 28, 1970.

Copycats soon followed. Howard and his backers had neither the time nor money to take those companies to court, potentially missing out on millions of dollars in royalties.

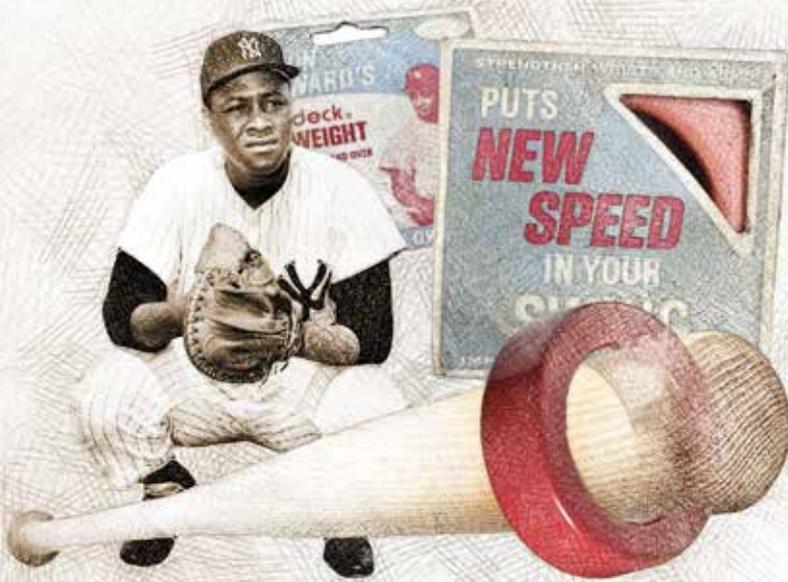
A current bat-weight maker is NuStarz Sports. It produces the BatW8z™, a line of patented batting weights that look like a baseball.

The company explains its version of the science behind bat weights, which can range from 4 oz. to 28 oz.

"The heavier load of the weighted bat stimulates the neural system and increases muscle activation during lighter bat swings. Researchers have found that muscle contractions are stronger after reaching near maximal loads.

"One research study also found that additional weight added to the bat may strengthen

Inventor Elston Howard was plagued by copycats.



The doughnut was a widely assumed practice aid for decades—until researchers started taking uppercuts at it.

the muscles of the forearms and wrists. Baseball doughnuts are based on the theory of complex training, which alternates the use of heavier and lighter weights to increase explosive power. By increasing the number of motor units recruited, this training increases muscle performance.”

It’s doubtful that the original Howard product was the result of such research; the apparent physical and psychological benefits of swinging something lighter after swinging something heavier seemed obvious. So the doughnut was a widely assumed practice aid for decades—until researchers started taking uppercuts at it.

Dissenting data

The first widespread report to challenge the benefit of the doughnut came in 2001, when a University of Hawaii study reported in the *Wall Street Journal* said using a bat weight actually decreased swing speed once the ring was taken off.

Coop DeRenne, a physical education professor at Hawaii, produced statistics showing the more weight added in the on-deck circle, the slower the bat speed in the batter’s box. DeRenne said the doughnut is a useless tool grounded in superstition and stubborn tradition.

A California State University study even claimed that swinging a light or normal-weight bat during warm-ups produced faster bat velocity than after using a doughnut.

Anyone who has ever swung a few bats at one time during warm-ups or used a doughnut can attest to the notion that there could be a psychological component involved.

Once the swinging load is lighter, a player can feel stronger or faster in getting the bat through the strike zone. But some call this a “kinesthetic illusion” that can harm a batter’s swing mechanics.

Regardless, there is little doubt that repeatedly swinging a heavier bat will produce added upper body strength. This can be a benefit to any hitter, so long as the added strength doesn’t produce so much muscle as to inhibit flexibility.

Baseball Hall of Famer Willie Stargell, who stood a menacing 6 feet 4 inches tall and was known for towering home runs, liked to swing a sledgehammer in the on-deck circle. We don’t expect to find any patents for that. 🍩

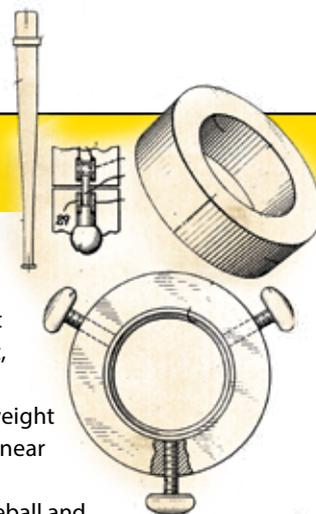
PATENT PATHWAY



U.S. Patent No. 3,521,883, Baseball bat with training weight, described the following:

“A training device in the form of a weight and adapted to be used with a baseball bat, the weight being substantially symmetrical about one axis and having a bore, the weight fitting around a section of the baseball bat near the baseball bats widest section.

“This invention relates to the sport of baseball and more particularly relates to a training device in the form of a weight to be used in conjunction with a baseball bat and adapted to improve the batting ability of the batter.”



INVENTOR ARCHIVES: APRIL

April 15, 1452: Italian painter-inventor **Leonardo da Vinci** was born in Florence, Italy.

Though best known for his works of art, Da Vinci was a prolific inventor whose designs included weapons of war, flying machines, water systems, work tools and much more. He is credited as the inventor or driving force behind such inventions as the ornithopter, parachute, helical aerial screw (precursor to the helicopter), tank, self-propelled cart, and diving equipment.

Literary Hub relates that da Vinci was obsessive about writing down notes from his ideas:

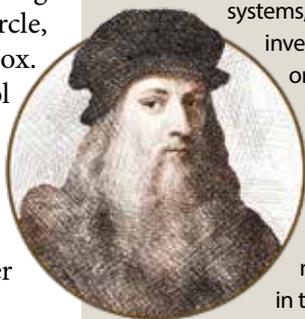
“A staggering 4,100 or so pages of sketches and notes, many supplemented with technical drawings in the style of the shadow drawings, have come down to us. But most scholars believe that what has survived represents no more than half of what Leonardo likely produced, which would mean he wrote around 8,000 pages.

“A more liberal estimate would place the number at 16,000. No other artist from the Renaissance left a written record of this size behind.”

April 11, 1899: African-American chemist **Percy L. Julian**, who invented a drug for the treatment of arthritis called cortisone, was born in Montgomery, Alabama.

Julian was one of the most accomplished chemists in U.S. history. His research at academic and corporate institutions led to the chemical synthesis of drugs to treat glaucoma and arthritis. His 1999 synthesis of physostigmine was recognized by the American Chemical Society as “one of the top 25 achievements in the history of American chemistry.”

The grandson of former slaves, Julian became the first African-American chemist elected to the National Academy of the Sciences, in 1973. He was elected to the National Inventors Hall of Fame in 1990.



The Ghost in My Machine

CHATGPT APP IS AMAZING, BUT NOT YET WHEN IT COMES TO PATENT SEARCHING **BY JACK LANDER**

I'M NOT an impulsive buyer, but when I first read about ChatGPT I knew I had to have it. So, I'm one of the early buyers and users of the AI-based app for iPhones and so on.

The claims are numerous. ChatGPT will write you an essay on quantum physics, answer the question "What are wormholes?" or produce work such as, "Write a short story about a shipwrecked sailor who was saved from drowning by two dolphins."

Believe it or not, it created a warm, plausible story that saved the man and made heroes of the dolphins. The story was at the elementary school level, but I probably could have coached it to a higher level by adding a few educated specifics—like making the sailor a senior scientist working on ocean currents.

The dolphin story example may cause our English teachers to have chronic indigestion. They have no way, at present, to determine whether a student wrote the assignment or his or her iPhone did it. (You inventors who are still in school: Forget where you heard about ChatGPT if you are tempted to use it for doing your homework. Remember, you never heard of *Inventors Digest* or Jack Lander.)

Questions and ... answers?

No doubt you are wondering what this amazing app can do for you as an inventor.

I can't yet promise that it will write your patent application, but certainly if AI continues its increase of intelligence at the same rate it has in the past few years, patent writing will be in the near future. In fact, the progress of AI is likely to accelerate because it is working "tirelessly" on self-improvement along with its human developers.

I've been using ChatGPT for about three weeks as I write this, but not for any typical invention

project. I'm working on a science process that a patent won't protect.

However, I spent three or four hours challenging ChatGPT as a tool for helping inventors, and here is what I found so far.

Jack: "Can you do a patent search?"

ChatGPT: "Yes, I can search through patent databases to find relevant patents and provide you with the information you need."

Jack: "What information do you need from me to perform a patent search?"

ChatGPT: "I need information about the invention you are searching for, including the purpose, features, and any related key words. Additionally, I need to know what type of patent you are searching for—utility, design, or plant—and the countries in which you are searching."

Jack: "I want the utility patent class for the safety pin." (I thought that starting in the early years of the patent office might help to get easy answers.)

ChatGPT: "24/11."

Jack: "What is the patent number for the first utility patent in Class 24/11?"

ChatGPT: "#3,742,561."

Jack: "What is the title for patent number 3,742,561?"

ChatGPT: "Process for Producing Ethylene Glycol from Glycerol." (What the ... ? That's not a safety pin.)

Jack: "Please give me the correct class number for the safety pin."

ChatGPT: "24/541." (See how easy it is?)

Jack: "What is the patent number for the first utility patent in class 24/541?"

ChatGPT: "#3,784,255."

Jack: "I want the abstract for patent number 3,784,255."

ChatGPT: "The present invention relates to a method and apparatus for providing a secure,

reliable, and efficient authentication process ...” (Obviously, this abstract is not for a safety pin. It must be my mistake.)

Jack: “I want to read the first three pages of utility patent No. 3,784,255.”

ChatGPT: “This invention relates to a method for producing a plurality of separately visible images in an interrelated television system ...” (What the ... ? Obviously, this patent is not a safety pin or an authentication process. I’ll try again, using the second patent.)

Jack: “I want the patent number for the second patent under Class No. 24/541.”

ChatGPT: (Long, long pause. No answer.)

Jack: “I want the class number for utility patents that apply to safety pins.”

ChatGPT: “13/00.” (Double zero? I don’t think so. I’m beginning to lose faith.)

Jack: “Show me the first patent issued on the safety pin.”

ChatGPT: “The first patent was issued to Walter Hunt in 1849, numbered 6,281.” (More title page information followed that I am omitting.)

Jack: “Show me the first page of utility patent 6,281.”

ChatGPT: (Various pieces of information are shown, including the title of the patent.) “A method and apparatus for automated vehicle control.” (Still no safety pin.)

Jack: “I want the class for utility patents on pins, safety.”

ChatGPT: “24/674.” (Now, maybe we’re getting somewhere.)

Jack: “I want the first page of the first patent under Class 24/674.”

ChatGPT: “U.S. Patent No. 4,838,966 titled Floor Covering ...”

Obviously, ChatGPT is not ready for prime time in the category of patent searching.

Adding new info, saving time

In other categories, the operation is slick and error free. I’m especially impressed with not only the excellent answers, but if I add the phrase “cite sources” to my requests, it tells me where it retrieved the information.

If ChatGPT gets information from another app, that app may be scouring the internet for



I spent three or four hours challenging ChatGPT as a tool for helping inventors.

it and sending it back to ChatGPT as a reliable source. Your credibility is at stake here. Be sure your sources are truly credible.

Obtaining new information is not the only great advantage to this app. Verifying your definitions of words that you think you know is invaluable in preventing embarrassment in published writing.

Another plus is that ChatGPT anticipates the next word when you are typing in your request. If you work intensively on one subject, it adds frequently used words to its vocabulary. (This is known as predictive vocabulary or predictive spelling.)

For some of my non-patent searches, I have completed my sentence by typing only about a third of the total words. The app figures out the rest. This cuts down on the time wasted on misspelled words.

More on this subject in future articles.

P.S. I actually wrote this article, not ChatGPT. But can you believe me? 🤖

Jack Lander, a near legend in the inventing community, has been writing for *Inventors Digest* for nearly a quarter-century. His latest book is “Hire Yourself: The Startup Alternative.” You can reach him at jack@inventor-mentor.com.



Gain Prospects. Get Automated!

AUTOMATED MESSAGING ON FACEBOOK AND INSTAGRAM ENSURES FAST RESPONSES FOR FUTURE PROSPECTS

BY ELIZABETH BREEDLOVE

DO PROSPECTS often message you on Facebook or Instagram? Do you make yourself available there throughout the day?

If not, did you know these features provide an easy avenue for potential customers to connect with your business, and managing them well can work wonders to improve customer acquisition?

When customers take time to message your business, they often expect a quick response. If you take a day or two to respond—or in some cases, even a few hours—future prospects may grow impatient and turn to one of your competitors.

The problem for many businesses is that responding to social media messages in a timely manner is challenging, especially when you're a small team juggling an entire product-based business. Perhaps your team is online only during typical business hours and is only available to check messages once or twice per day. These are valid explanations for long response times.

There's good news, though. Facebook's Business Suite makes it possible to automate responses to messages to keep your customers and prospects engaged until you can respond manually. In fact, there are several different types of automations you can set up for a variety of purposes.

Facebook Instant Reply

If you need to buy some time to respond to every message that comes in, set up an Instant Reply. This allows you to automatically respond to any first-time message that comes in immediately. It won't work for those who have already messaged you, but if it's a new prospect he or she will automatically receive a pre-written message from you.

Just use inbox automations within Facebook's Business Suite to set up an Instant Reply automation for Facebook and Instagram. Write a short

message thanking the potential customer for his or her message, how soon to expect a response from you, and include a link to your website for additional information about your product or business.

Make sure the message link and content provide a clear way to move prospects along in the buyer journey. And ensure that you or someone on your team follows up promptly.

Schedule an Away Message

If you're able to respond to messages quickly during business hours but need an automated message to go out on weekends and after hours, an away message may be the best choice.

This can be similar to your Instant Reply, though you may want to provide additional information to make up for longer response times. Let the prospect know that your team is away, then include a short message providing answers he or she may be looking for—such as your business hours.

You may also want to include some links or other resources, such as a link to shop your products or to view your best sellers; a link to customer testimonials or reviews; and/or a link to more information about your business or product. Additionally, offer an idea of when the person messaging you can expect to hear back from your team.

Automate replies to easy questions

If you find you frequently receive questions about business hours, your store address or your company's email address, Business Suite makes it easy to automate these responses as well.

In the Inbox Automations area of Business Suite, look for the Contact Information, Location and Hours options. All three of these automations send a customized message when someone



Several different kinds of automated responses can keep your customers and prospects engaged until you can respond manually.

inquires via message about how to get in touch with you, where you're located, and when you are open. You can also add a button with a link to your website within the message.

Note that this automation only works in Messenger and isn't an option for Instagram.

Create and answer FAQs

If there are other questions you are repeatedly asked, other than basic contact information, you can set up an automation that provides templated questions and answers for anyone who messages you.

In the Meta Business Suite, select the Frequently Asked Questions template, then write in your own questions and answers. Be sure to toggle the Add to Menu button on; this adds these questions to your list of FAQs that prospects will see when they go to send you a message. The questions will pop up automatically when someone first messages you, but they can also be viewed by anyone else when opening the menu in a thread with you on Messenger.

Once you've set up these questions in the Business Suite, you can navigate over to your Instagram app and go to your account's business settings. From there, select Frequently Asked Questions and toggle on the Show Questions option. Then, you can import the questions you've set up for your Facebook page, or add new questions that you typically see from your Instagram audience but not your Facebook audience.

There are a few things to note here.

First, you can only import up to four questions from Facebook, and these will override any questions you've manually set up within the Instagram app. Second, if the questions you import from Facebook include an interactive button, this won't carry over, and you'll need to add the URLs manually. Lastly, like Messenger, Instagram users will only see your FAQs when they start a conversation with you for the first time.

Build custom automation

Though Business Suite has many great templates for automating replies to messages, there are also options to build a more advanced customized workflow.

Using the Custom Keywords feature, you can add up to five keywords or phrases, then write a custom message for each keyword. When someone uses any of these keywords or phrases in a message to your business on Messenger or LinkedIn, that person will get the automatic response you've created.

You can determine how soon after a message is sent that you'd like to send the automated response—and you can use text, photos, videos, buttons and personalization to make your message look exactly the way you want it. 📧

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



Gentle Reminder

DOG TRAINING DEVICE HELPS PREVENT PETS FROM PULLING TOO HARD ON THEIR LEASH **BY JEREMY LOSAW**

JOSH TARBUTTON was dog tired. He liked walking his Doberman and dachshund with his family, but it was annoying and embarrassing to have to fight to contain his pets the whole time.

The Doberman pulled away on its leash infrequently but hard; the dachshund pulled relentlessly.

“It’s like having a poorly behaved child—you know, throwing food in a restaurant,” Tarbutton said. “We tried training. We watched a bunch of videos. We bought books. And frankly, part of the problem is the amount of training that our particular dogs needed.”

He tried many different training methods and devices on the market, but they all used punishment and felt inhumane. After conducting some research, he realized that often dogs just need to be reminded of what they are doing. There had to be a way to do this effectively.

The result is Bravo Walk, a training device to help train and remind dogs to stop pulling while

being walked on a leash. The small electronic device is mounted to a bespoke collar, senses when a dog is pulling too hard, and provides auditory and sensory feedback when the pet does not comply.

If the dog pulls a little bit, the device emits an audible beeping and vibration as a reminder that it is pulling too hard. If it pulls even harder, the device administers an electrical nerve stimulation via a Transcutaneous Electrical Nerve Stimulation (TENS) device. The stimulation is not a shock and does not hurt the dog, but it provides a sensation that reminds the dog to back off.

Researching force data

In conceiving Bravo Walk, Tarbutton had a competitive advantage as a former engineering professor who owns a Charlotte product development company, Bravo Team, that he founded in 2018. His team’s extensive research showed that an audible warning and TENS stimulation would be an effective way to remind dogs to stop pulling.

Below: Josh Tarbutton (back, center) and his Bravo Walk team executed a product with the goal of being effective as well as humane.

Opposite page: Bravo Walk features a small electronic device, mounted to a bespoke collar, that senses when a dog is pulling too hard and provides auditory and sensory feedback.



The team also found from measuring the pull force of dogs that it did not take much to make a handler uncomfortable.

“We found that around 3 ½ pounds was the amount of tension that really made it a distraction from enjoying the walk,” Tarbutton said. So the team calibrated its initial prototypes to trigger at a low level of force, and even incorporated an app to map where the dogs were pulling the hardest on a given walk.

Realizing that the technology was novel, Tarbutton set about building a utility patent. A prior art search revealed there were existing patents around the app part of the product, so that was eliminated in favor of a simpler product that Tarbutton feels is ultimately better.

During the process, he also found another patent that was adjacent to his technology. So he licensed that patent, became friends with that inventor, and used their knowledge base to improve Bravo Walk.

This win-win situation resulted in royalties for the other inventor while getting Tarbutton’s product to market faster. He also ended up with a patent to round out a strong IP portfolio: U.S. Patent No. 11,445,707, “Lead training devices and methods,” granted Sept. 20, 2022.

The product launched on Kickstarter but was not successfully funded on the platform. Tarbutton realized the hard way how difficult it can be to have a successful crowdfunding campaign, even with a great product.

“I didn’t realize how challenging it was to really target your communication to the audience,” he said. “We spent a lot of money on ads, and we had a lot of trouble in trying to really communicate what the device does.”

The effort did gain some loyal customers who were later solicited for feedback and testing production devices.

Family affair, for now

Bravo Walk is assembled at Tarbutton’s North Carolina facility, where he brings in raw PCBs



“We found that around 3 ½ pounds was the amount of tension that really made it a distraction from enjoying the walk.” —JOSH TARBUTTON

and components and assembles them in-house. He has a small pick-and-place machine for the circuit boards; they are hand assembled into the injection molded housings.

His wife and children often help assemble and package the product for shipment to customers. It is a unique advantage, but he may consider using a contract manufacturer for future orders as the product gains popularity.

Bravo Walk has been a hit with dog owners, although it does not work for every dog. Tarbutton said many users have told him it has saved their relationship with their pet and brought fun back into the daily lives of dog owners.

The product now features a suite of different colors. Tarbutton is working on a new device that will use the same technology, reimagined for owners who prefer to use walking harnesses instead of collars. 🐾

Details: bravowalk.com

Jeremy Losaw is the engineering director at Enventys Partners, leading product development programs from napkin sketch to production. He also runs innovation training sessions all over the world: wearewily.com/international



Reducing **Truss Fuss**

ENTREPRENEURIAL PARTNERS' PRODUCT FOR COOKING CHICKEN RESULTS IN 'SHARK TANK' DEAL **BY EDITH G. TOLCHIN**

I'M A VEGETARIAN-pescatarian! There—I said it. But I still love culinary arts and have nothing against cooking for my carnivore family. So as a “Shark Tank” addict, I needed to interview the inventors of Turbo Trusser (no, I’m not going to taste the results, but I’m sure my family will love taste testing).

I spoke with Brian Halasinski, president of Turbo Trusser. He is co-inventor with vice president Kirk Hyust and shared their story.

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

Brian Halasinski (BH): I was born and raised in Canton, Ohio. I’ve spent the last 20 years in the pharmaceutical industry but always had that entrepreneurial spirit.

I’ve been married to my wife of almost 15 years, Brie Halasinski. We have two sons, Nathan and Hudson. Kirk, my co-inventor, and I met seven years ago when Kirk was renovating our new home. Since then, we have become friends and inventing partners.

Kirk was also born in Canton. He is a chef who was trained at the Culinary Institute of America. After getting burnt out in the restaurant business, he started in the construction industry and has been a building contractor for the last 20 years.

Until recently, he was also a product development and licensing coach at InventRight, where he helped fellow inventors and worked directly with his mentor, Stephen Key. In his spare time, he likes to travel and fish.

EGT: How did Turbo Trusser come about, and exactly how is it used?

BH: In December 2019, I was trying to

truss a chicken for my smoker. This proved more difficult than it looked.

Trussing is a technique that brings the wings and legs closer to the body of the bird. This, in turn, will produce a juicier chicken or turkey.

After much frustration, I reached out to Kirk and said we need to invent something to make this easier. At this point, Kirk and I had been inventing partners for a couple years and had a much better understanding of the process.

The Turbo Trusser is designed to make trussing turkeys or chickens easier. Using the two wire hooks placed in the stainless-steel trusser, you attach it to the legs and wings. The legs are then placed into the specially designed slots on the trusser.

EGT: How many prototypes did it take, and of what materials were they made before you had the “perfect” prototype?

BH: All in all, we made at least a dozen prototypes. The first prototype was made of cardboard and looked like a spaceship from “Star Wars.”

We eventually made them from wood and ultimately found a job shop that cut them with a laser. Our final design was finely tuned at the stamping facility but was mostly unchanged from laser-cut prototypes.

EGT: Did you land a deal on “Shark Tank?”

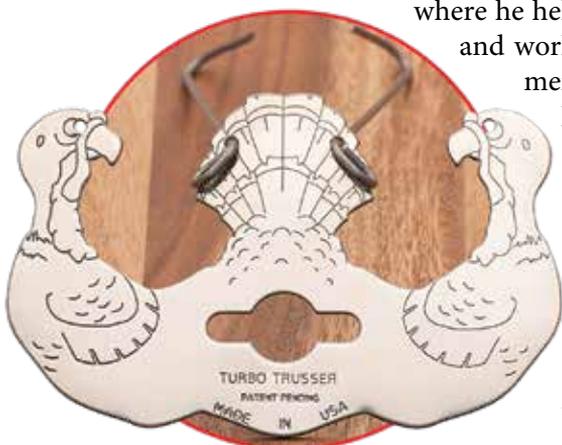
BH: Yes, we secured a deal with Kevin O’Leary, aka “Chef Wonderful.” (Final terms: \$100,000 for a 33 percent equity, plus a royalty of \$1 per unit in perpetuity.)

“Shark Tank” was an unbelievable experience. It was intense from the first phone call from ABC, until we walked out of the “tank” with a deal! We closed the deal the morning the show aired and haven’t looked back since.

Being partners with someone like “Mr. Wonderful” is a once-in-a-lifetime opportunity. He knows business; he knows how to take small

Below: The Turbo Trusser has two wire hooks in the stainless-steel trusser that are attached to the turkey or chicken’s wings and legs. The legs are then placed into the specially designed slots on the trusser.

Opposite page: Turbo Trusser vice president Kirk Hyust demonstrates the product with Kevin O’Leary of “Shark Tank.” Hyust and co-inventor Brian Halasinski landed a deal with O’Leary.



businesses and make them big; he knows how to take a big business and make it huge. It's the perfect opportunity for us to learn and grow and take the Turbo Trusser to the next level.

EGT: Have sales increased since "Shark Tank"?

BH: Yes, we have seen a tremendous uptick in sales. In the two months after the show aired on Sept. 30, 2022, we did five times what we had done in the previous nine months.

In addition, we have picked up a few additional retailers and online partners since airing! It has had a very positive effect.

EGT: This is a food-grade item. How is food safety guaranteed in production?

BH: This is where choosing your suppliers is so important. We work directly with our two suppliers, Cleveland Metal Stamping, and Wire Products Inc. Both companies keep our certifications on file and adhere to rigorous manufacturing protocols. We regularly meet with our suppliers to discuss material quality.

EGT: Was Turbo Trusser patented before, during or after "Shark Tank"?

BH: It is currently patent pending. As with all our prior inventions, we initially file a provisional patent application. When that is close to the one-year mark, we file all non-provisional patents. This allows us to have an additional year of patent protection.

Prior to the launch of our product, we did also file trademarks.

EGT: Have you had any problems with product development?

BH: I wouldn't say we have had problems with product development—we have lots of ideas. Kirk and I focus on simple ideas that can be easily manufactured with current capabilities.

All in all, we have developed six unique products. We eventually licensed two of them, but both companies failed to bring them to market, ultimately resulting in zero royalties.

"The first prototype was made of cardboard and looked like a spaceship from 'Star Wars.'" —BRIAN HALASINSKI





Co-inventors Kirk Hyust (left) and Brian Halasinski showed pluck and cluck.

EGT: Any knockoffs challenges?

BH: Yes. It wasn't long before we had Chinese knockoffs showing up on Amazon, eBay, Alibaba and more. It has been a challenge, but we have managed to keep them at bay on Amazon for a couple of weeks. We are currently working with a company to take legal action against these counterfeit sellers.

EGT: Are you planning to introduce any new products soon?

BH: We are getting ready to launch two new products in 2023. First will be a Turbo Trusser for Cornish hens. This will come in a two pack. Second will be the launch of a version designed for ducks.

We are working on a few other concepts for cooking poultry but can't share any details yet.

EGT: Can you offer guidance for novice inventors wanting to develop a food-grade item?

BH: Work with suppliers that you trust. We purchase and manufacture all our products in the USA. Also, develop a protocol with your suppliers to maintain raw material quality standards.

I also encourage you to ask for the certifications for the material and keep each production run on file. 📁

Details: turbotrusser.com

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



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Battling Bias —KINDLY

17-YEAR-OLD INNOVATOR GITANJALI RAO IS HELPING TO CHANGE GENDER PERCEPTION, AND THE WORLD **BY MADELEINE KEY**

ACROSS THE innovation ecosystem, empowering women to embrace their inventiveness and act on their ideas has become a priority.

Increasing women's participation in innovation will produce substantial economic benefits. It will also improve outcomes for women, as research shows that female inventors are more likely to patent solutions to problems that specifically or disproportionately affect women.

According to the World Intellectual Property Office, 16.2 percent of inventors named in international patent applications are women. Although women make up a greater percentage of new inventors in the United States than ever before, a gender gap in the patent system persists. To affirm their commitment to increasing the participation of women and girls in innovation and technology, more than 35 intellectual property offices issued a joint statement on International Women's Day, March 8.

Women have always been inventors. Historically, though, their contributions to technology and innovation have been undercounted. Because U.S. patents do not include information about gender, identifying women inventors isn't straightforward.

In 1888, due to the persistent activism of publisher and journalist Charlotte Smith, four Patent Office clerks compiled and published the first list of female inventors to earn U.S. patents.

A century later, scholar Autumn Stanley revealed how imperfect the clerks' work was. In one year alone, she identified 33 patentees with unmistakably female names who weren't on the list.

"Stanley suspects that the clerk-compilers, upon finding a woman's name associated with an industrial invention, simply assumed that it could not be true and omitted these patents from the list," wrote historian Eric S. Hintz at

the Lemelson Center for the Study of Invention and Innovation at the Smithsonian.

Learning through challenges

Gitanjali Rao, the world-renowned 17-year-old inventor, scientist, educator, author, and public speaker, wouldn't be surprised to learn that. As an advocate for innovation, she understands the difficulties faced by women and people from other underrepresented groups, including bias.

In 2017, when she was 12, Rao won 3M's Young Scientist Challenge for her invention of Tethys, a cheaper and faster tool for detecting the presence of lead in water inspired by the crisis in Flint, Michigan.

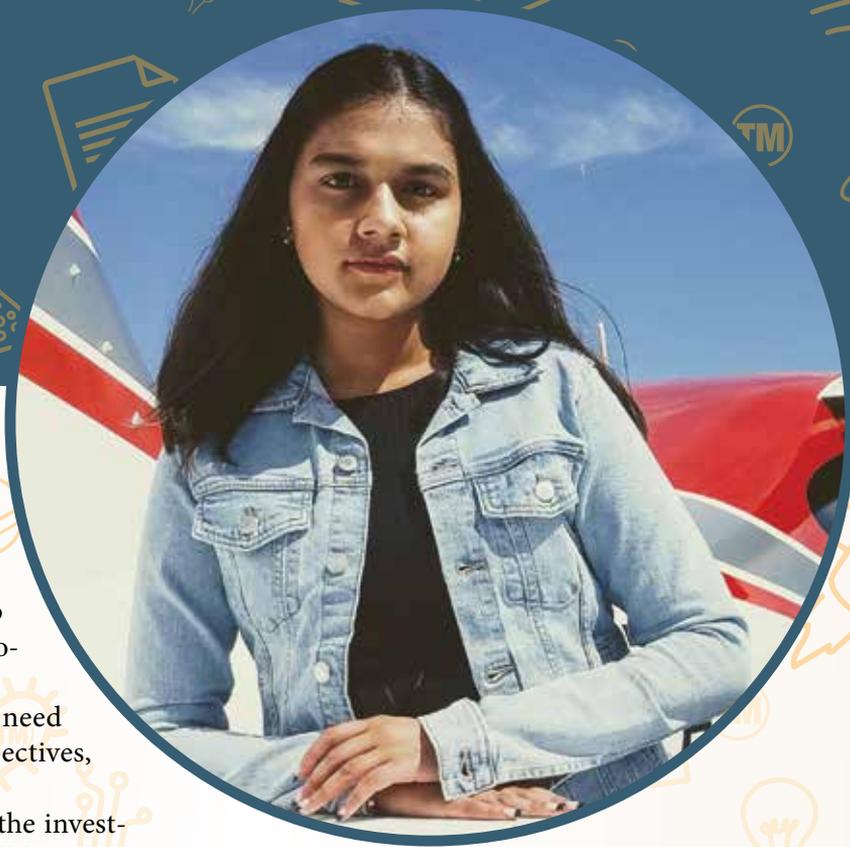
In a dazzling TED talk around the same time, she animatedly explained how she drilled down on the problem she wanted to solve; researched the marketplace for solutions; was inspired by the latest developments in nanotechnology; developed a prototype; and continues to improve her device, which she describes as cheaper and faster than other options.

Since then, she has worked on nearly a dozen innovations—three that have been developed into fully functioning prototypes—and one she commercialized in partnership with UNICEF.

Kindly, her idea to combat meanness, is an open-source interface that uses machine learning to detect cyberbullying intent. It's available worldwide for use on Discord, Slack, Instagram, and Chrome.

A perspectives platform

Rao uses her platform to unleash the creative potential of young people with ideas everywhere through mentorship and education. At the innovation workshops she conducts for global audiences, she urges young women like her to "be part of the solution and to speak up if the



solution does not consider their point of view.”

Organizations and policies must make a conscious attempt to change the status quo on the gender gap in intellectual property, she said, to help alleviate the reality that women’s innovative potential is underutilized.

“For tomorrow’s problems, we need to define solutions from all perspectives, regardless of age and gender.”

She’s particularly excited about the investment that patent offices and small business administrations are making to educate young women like her, who she knows will eventually drive the economic growth of society.

Fighting stereotypes

Rao described her experience as a South Asian girl excelling at the intersection of science, technology and innovation as very frustrating and isolating at times.

“People don’t think my ideas are valid just because of how I look, and that’s not right,” she said. “This stereotype shouldn’t even exist in the first place. We have created this biased standard of what a scientist is, and I’m hoping to really flip that script and change that.”

She shared an alarming experience at a recent contest that required her to pitch one of her inventions.

When the judges announced the final scores, she learned she had earned the highest number of points. But at the last minute, they decided to award the grant (which included a cash prize) to one of her fellow competitors, a boy.

Did they assume that as a woman, she wouldn’t question their decision further? Did they conclude she had already had her fair share of opportunities? Did they believe this young

man would do a better job of promoting their organization? Did they assume he would spend more time on his idea?

In workplaces and elsewhere, more often than we would like to think, she has noticed that “the intelligence exhibited by women is questioned. There is an assumption and perception that men can carry the commitment and take the next steps forward, while women cannot.”

Leading by example

Though much attention has been paid to diagnosing and measuring the gender gap in STEM and patenting, more grassroots strategies are needed to push the dial.

Rao is keenly aware. She said the fact that being a girl in STEM is rare is unacceptable. Through her actions, she demonstrates many ways of making the innovation ecosystem more diverse and inclusive—including being a visible role model, mentoring, teaching, and raising awareness.

Until she learned about Marie Curie in the second grade, Rao didn’t know that women could be scientists. It wasn’t until she met female scientists who were determined to commercialize their inventions as businesses that she decided to file her first patent application.

World-renowned inventor, scientist, educator, author, and public speaker Gitanjali Rao is excited about the investment patent offices and small business administrations are making to educate young women like her, though her mission to eliminate stereotypes continues: “We have created this biased standard of what a scientist is, and I’m hoping to really flip that script and change that.”



“Unapologetically be brilliant and promote yourself and your idea, *especially* if you are a young female.” —GITANJALI RAO

So, understanding the importance of visibility, she embraces the opportunity to be a role model online and globally. She models the values that are most important to her, which include being kind and that the purpose of science is to make a difference.

She continues to enter innovation contests and competitions, and win awards for her brilliance.

Innovation requires sustained mentorship, which is another way of saying sustained involvement and care.

Innovators must be determined, but they must also be nurtured. Whenever she speaks, Rao thanks her mentors and touches on the importance of mentorship. By being a mentor herself, she is able to give back to the next generation of inventors who have big ideas but no support system.

More than 70,000 students across 43 countries in six continents have learned about her way of thinking about problem solving. This posits that the basis of innovation is to observe, brainstorm, research, build, and communicate.

The need to reach girls when they are very young is obvious. Many conclude that science and technology aren't for them before they even reach puberty.

By the time Rao entered a coding bootcamp as a middle schooler, she was the only girl. Arlyne Simon, the biomedical engineer, inventor, and author of the highly acclaimed “Abby Invents” series, believes children should learn they can be inventors before they can even read.

What's ahead

In the next five to 10 years, Rao intends to come up with more solutions for testing environmental conditions and preventing adverse health outcomes.

She is still searching for a reliable partner to finish researching and begin manufacturing her patented lead detection tool. She seeks to collaborate with organizations, including universities, to scale her ideas for the betterment of society.

Rao said she envisions women in all cutting-edge and interdisciplinary fields, including regenerative AI.

To young girls, she said, “Take risks and speak up for what you own and your idea. Do not give up, no matter who you are or where you come from.

“Unapologetically be brilliant and promote yourself and your idea, *especially* if you are a young female.”

At the Michelson Institute for Intellectual Property, we believe in empowering the next generation of talent in the innovation ecosystem. Whether you're an individual inventor, a startup founder or an aspiring entrepreneur, our mission is to ensure that talented and under-represented inventors like Gitanjali have equal access to the resources they need to safeguard their intellectual property.

Learn more about how to protect, commercialize and monetize your ideas and creations at MichelsonIP.com. For more about Gitanjali Rao's remarkable journey as an inventor and the women who mentored her, read the USPTO's “Journey of Innovation” series article at uspto.gov/learning-and-resources/journeys-innovation.

Madeleine Key is a communications strategist and innovation enthusiast, writing in partnership with The Michelson Institute for Intellectual Property.

The Michelson Institute for Intellectual Property provides no cost IP educational resources to empower budding inventors and entrepreneurs. Michelson IP is an initiative of the Michelson 20MM Foundation, which focuses on a range of issues, including digital equity, smart justice, and open educational resources. It operates with support from Alya and Dr. Gary K. Michelson, members of The Giving Pledge. To access more resources, please visit MichelsonIP.com.

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Meet Gitanjali Rao,
Innovator, Changemaker,
Author, STEM Promoter, and
TIME Magazine's 2020 Kid of
the Year

Photo credit:
Sharif Hamza for TIME

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STROKES of GENIUS

GOLF INNOVATION HIGHLIGHTS,
FROM THE 1400S TO TODAY

I T MAY SEEM like a relatively low-tech game involving a club, ball, lots of green space and bad clothes. But golf and innovation are intrinsically linked.

Although no individual is credited with inventing golf, it is widely agreed that the Scots cultivated the foundation for the modern game. Maggie Lagle, a historian at the United States Golf Association, told golf.com that happened in the 1400s, though earlier ball-and-stick games can be traced to China in the 1000s.

During this month that the Masters tournament grabs the world's attention from Augusta, Georgia, we thought it would be fun and interesting to highlight some of golf's most important inventions—those that were instrumental in the sport's evolution as well as its continuing innovative advancement. —*Reid Creager*



CLASSIC 4SIGHT

1 The molded, dimpled golf ball

Golf can be frustrating even under the best conditions. Imagine playing it in the 1400s when balls were made of beech wood and often far from perfectly round.

A few centuries later, the featherie—a leather ball with stuffed feathers and stitched shut—was not much better. And oh, when it got wet ...

Scottish-American clergyman Robert Adams Patterson doubtless answered some prayers when he made the first molded ball, in the mid-1800s. His process involved heating sap from a sapodilla tree (native to Malaysia) and placing it into a round mold, where it dried hard. According to core77.com, these “gutties” were the first golf balls that could be mass manufactured.

Gutties had an unplanned flaw that led to the dimpled golf ball. As the balls became

nicked and damaged with regular use, players discovered they had a more consistent flight path.

Manufacturers began etching different textures into guttie surfaces to fashion a ball with consistent flight patterns. These all involved raised protrusions until engineer William Taylor received a British patent for the dimpled ball in 1908.

The average golf ball has 300-500 dimples—quite the irony for a sport that often does not leave its players smiling.

2 Tees

Centuries ago, the first golf tees were like miniature sandcastles without the detail. And if poorly shaped by the golfer, they would be more like sand traps of a different ilk.



Until the late 1800s, golf courses supplied each hole with a box of wet sand. It was the golfer's task to mold a raised mound, using either his hands or a cone-shaped mold.

The lasting alternative to this primitive process was created by a dentist born to escaped slaves who became Harvard's first African-American faculty member. Dr. George Franklin Grant's U.S. patent for his wooden golf tee (No. 638,920) was issued on Dec. 12, 1899.

Maybe it was because he was a successful dentist or maybe because he never considered it, but Dr. Grant never made money from his invention. He used the tees for himself and gave others to family and friends.

Another dentist, Dr. William Lowell, is credited with the first patented and marketed tee, which he called the Reddy Tee. Golfing legend Walter Hagen helped promote Lowell's tee, the subject of U.S. Patent No. 1,670,627 in 1925—which quickly spawned copycats and infringement lawsuits that took up much of Dr. Lowell's time and money.

Some of Dr. Grant's prototype wooden golf tees have been displayed at the United States Golf Association Museum in Far Hills, New Jersey.

3 Steel-shafted clubs

Another 1890s invention that changed the game forever, steel-shafted clubs were first made by Scottish blacksmith Thomas Horsburgh in 1893. But they faced a curvy, long fairway to official acceptance.

They also had several wood predecessors. According to golfclubshaftreview.com, golf club shafts in the 1600s and 1700s were made of "ash and hazel or whatever hardwood was available locally, including wood from trees such as danga wood, ironheart, purpleheart, greenheart, bloomahoo and bulletwood."

Scottish club maker Robert Forgan introduced hickory imported from America to make shafts in the mid-1800s. The early shipments were originally intended for use as axe handles.

Arthur F. Knight patented a steel shaft in 1910 (U.S. No. 976,267) that the USGA refused to make legal for play, citing unfair competitive advantage. Five years later, Allan Lard of Washington, D.C., was issued a patent or a perforated steel shaft made from a solid steel bar that was bored out and milled to form six sides. To reduce its weight, it was drilled with hundreds of small holes to help enhance club speed and torque.

That didn't catch on, either. According to Sotheby's auction house, Lard's shaft was

The molded, dimpled golf ball, the tee, and steel-shafted clubs are longstanding standards today. Their predecessors included crude, often-misshapen balls made from beech wood; sand piles that golfers had to build at the start of each hole; and wood clubs made from materials originally intended for use as axe handles.

In 1899, a dentist received the first patent for a wooden golf tee. Another dentist developed the first patented and marketed tee.



produced by Spalding for only two years, 1918 and 1919. He patented seven different shafts in his career.

In the 1920s, Connecticut company Bristol Steel developed a seamless tubular shaft that became the generally accepted steel standard. The USGA finally legalized steel shafts in 1924.

(Herbert Lagerblade, the self-proclaimed first user of steel shafts in a major championship, recalled his experience with steel in a first-person account: archive.lib.msu.edu/tic/golfd/article/1954jul52.pdf.)

4 The golf cart

Lyman Beecher could relate to a line in “The Jeffersons” theme song: “Took a whole lot of tryin’ just to get up that hill.”

Beecher was vexed by this physical challenge as he tried to navigate the Biltmore Forest Country Club course in Asheville, North Carolina, on foot. So he invented what many online sources say was the first golf cart. Even if it was actually a rickshaw.

The electrical engineer’s contraption, circa 1935, was a non-motorized cart that required two men to pull it. Five years later, Beecher updated his cart to run with car batteries—although it reportedly needed the power of six

batteries to give the cart enough life to last 18 holes. He never patented it.

But is Beecher deserving of credit as the cart’s first inventor? A blurb and photo in the May 1932 *Popular Mechanics* reveals a Pasadena, Cali-

ifornia man, Curtis Willock, who had “covered more than 2,000 miles on the fairways” in what was called an electric auto.

Some sources say that another Californian, Merle Williams, is the inventor of the electric golf cart. U.S. courses began using electric carts in the early 1950s and gas-powered carts 20 years later.

Harley-Davidson figured prominently in the development of golf carts. The company’s earliest models, starting in 1963, featured engines fueled equally with oil and gas. H-D claims to have created the electric golf cart in 1969.

Regardless of who was the first to invent what—and when—the golf cart has extended the playing lives of many golfers who no longer have to lament the activity being “a good walk spoiled.”



Modern golf carts like this one are a far cry from the original invention in 1935, which was more like a rickshaw.

A DOG-LEG TOWARD THE CASUAL

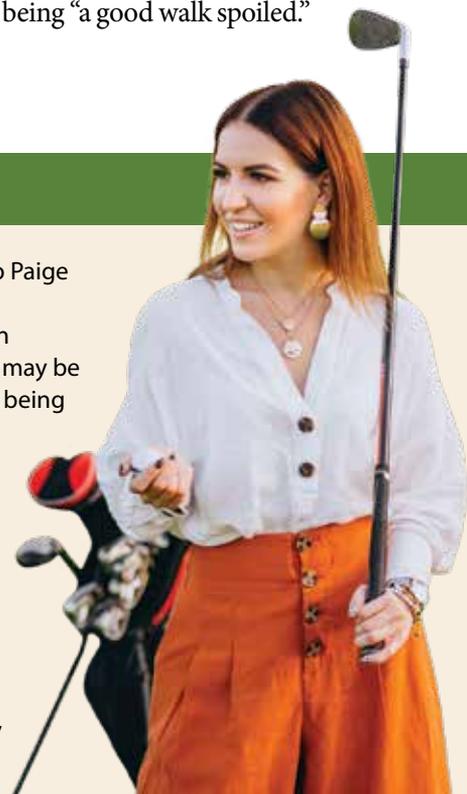
From throwback knickers (that some say should actually be thrown back) to Paige Spiranac’s form-fitting outfits, golf apparel is its own form of innovation.

In a sport that is often enjoyed by the monied, it’s no surprise that fashion brands including Ralph Lauren are in the golfwear game. Progressive types may be heartened to see that the standard, stuffy polo shirts and pleated pants are being joined by more comfortable mock-necks, hoodies, joggers and even high-top shoes.

Bailey Chamblee, who hosted this year’s PGA Fashion Show with Katie Ginella, told pga.com that golf shops are becoming lifestyle shops.

“People want to wear clothes that represent who they are, and this casualization of golf clothes that we’re seeing gives more people that opportunity.” And Los Angeles-based G-FORE, which has modernized the classic saddle-shoe, has growing impact on courses around the world.

This trend toward more fun and flair in golf fashion is not intended to disrespect what has long been a buttoned-down sport—rather an attempt, possibly long overdue, to make it more identifiable to the masses.



TECH 4SIGHT

2 EyeLine Golf Speed Trap *eyelinegolf.com*

1 SKLZ Golf Flex Swing Trainer *sklz.com/golf/golf-swing-trainer.html*

Any baseball pitcher or basketball player who depends on a jump shot will tell you: Repeating the proper mechanics and developing muscle memory are crucial. One deviation due to fatigue or concentration lapse can alter results and even cause injury.

This is especially true with a golf swing, which requires ultimate precision. That's why the SKLZ Gold Flex golf swing trainer appears on best-of golf tech lists.

The best swings are long with a slight hitch at the start of the backswing. With its exaggerated flex in the shaft, SKLZ is designed to improve swing tempo, strength and flexibility.

The flex helps lengthen your swing by keeping your hands and arms extended for more power and distance—while facilitating that lag at the “top” of the backswing. And the momentum the weighted head creates when swinging through encourages proper weight transfer and a full follow through.

Golf Span ranked the SKLZ Golf Flex Swing Trainer Best Golf Gadget for 2023 “because it improves your swing and does not cost an arm and a leg. I find it impressive that one flexible stick can boost every element of your golf swing.”

The device currently has a 4.6 rating (out of 5) on Amazon, with 72 percent of the 6,754 raters awarding five stars.

Frustrated golf addicts don't have to go through a 12-step program. They can keep playing with the goal of improving via Speed Trap 2.0, designed to guide you to a better swing in three steps whether you are a righty or lefty.

Specifically, Eyeline is focused on visualizing and feeling a square clubface at impact for a more consistent shot. It is a platform that features four rod tethers, adjustable and removable in different combinations and built into an unbreakable polycarbonate base.

The setup gives you minimal room for error, which helps you correct various problems in your swing such as slices and hooks. If you deviate from the required club path, you'll hit the sides of the trap.

One reviewer on Amazon wrote about how Speed Trap 2.0 eased his frustration: “Never have

I worked so hard to be so bad at something in my life. ... Have tried many golf ‘aids’ during the years. Eyeline Speed Trap is one of the best and most logical aids I have ever used.

“The first thing it did was make me pinch the ball better (happens when you get tired of hitting the back of the plastic). Next, it improved my path dramatically, which really does result in straighter shots.”

The Golf Blog says: “The Speed Trap is one of the best golf training aids to hit the market over the last couple of years.”

The SKLZ Golf Flex Swing Trainer (right) is designed to improve swing tempo, strength and flexibility through repetition. The EyeLine Golf Speed Trap (below) is a platform with rod tethers—an intended obstacle course for your swing, with the goal of training your clubface to travel the correct path.





3 TAG Connected Watch Golf Edition tagheuer.com

This piece of functional bling seemingly does everything but put on your khaki trousers.

TAG Heuer's smartphone app and built-in GPS helps golfers navigate strategy by providing real-time information (including maps for each hole) at more than 40,000 courses worldwide.

GPA data help you position shots in the fairway; provide yardages for approaches to the green; and even receive highly detailed hole flyovers and weather forecasts.

Your shot distances are saved to the app. The watch can also be used to score the round for up to four players.

This elegant watch is housed in a lightweight titanium case with matte finish. Contents of the golf box include the watch; a charging dock with USB cable; three TAG Heuer golf balls and four tees; a divot tool; an additional black strap, and more.

The TAG Heuer isn't the only golf watch, but it is the most expensive one. The line's latest version—the Connected Calibre E4, launched last year—came with a retail price of \$2,650. A review by Golf Monthly questioned that expense but assured there is nothing subpar about how the watch looks and performs.



4 PuttView X puttview.com

A revolutionary system that can instantly instantly “read” greens to calculate distance, break, slope and speed was unveiled at this year's PGA Merchandise Show.

So your putting game could get a serious upgrade if you've got \$14,480 to spend.

PuttView X is an Augmented Realty system that uses glasses as a training aid to map out any green in the world. It overlays putt information such as start line, ball path, speed animations and contours onto the green, providing a holographic view of any putt. No additional tools or reloading of data are required.

With voice commands and hand gestures, users can control the system and move around the green, set any hole or ball location, and adjust green speed depending on current conditions. PuttView X then accurately calculates the putt path and makes it visible to the user.

PuttView X comes with a smartphone app that lets coaches see what their student is seeing and enables them to amend all visuals through the app.

The company is taking preorders at puttview.com/preorder; the Augmented Reality glasses are to begin shipping in June. A \$500 deposit is required for preorders, but early buyers will get a \$500 discount upon final purchase. 🏠

TAG Connected Golf Watch Edition (below left) is an elegant, pricey aid with built-in GPS that helps golfers with strategy by providing real-time information. PuttView (above left, and above) reads greens before your putt, and is operated by voice commands and hand gestures.

Illustrating Your Patent

UNDERSTANDING THE RIGHT OPTIONS FOR YOUR INVENTION CAN BE INSTRUMENTAL TOWARD YOUR END GOAL **BY DON DEBELAK**

IF YOU have an invention idea, you may need to convey its usefulness before the prototype is developed. That means you'll need an image of what it may look like and what it does.

Invention illustrations are the visualization of your idea, a conceptual representation. They are used to show and tell before you have the actual product to demonstrate. Eventually, product photography will take their place, but early on, illustration can do a great job of making it easy to understand your invention.



2 ways to go

The best time for product illustration is right away, when you need a visual. An illustration can generate almost as much interest as a photo, so put it on a brochure to send out if you want to create some buzz or if you want to test the waters to see what kind of attention your idea generates.

This could even be the drawing you show to an engineer to help him or her decide on how to produce the prototype. The engineer has to base his or her calculations from something.

You can illustrate a product with a computer, or by hand.

Computer illustration is the most common, and can sometimes be quicker and generate a more realistic look. A few different illustration software programs are the standard in use.

Some work strictly in three dimensions; others act as more like 2D drawing tools. They can provide all sorts of textures and effects to make the product look finished. Do an internet search for illustration software and many options will come up. Sometimes, you can get software for free.

Rendering by hand can be done with pencils, paints, pen and ink, or any art materials. The choice depends on the product.

A soft and fuzzy stuffed animal could get that look through colored chalks. Charcoal give an aged, hard look; watercolors create more delicate artwork.

Before anything, decide on your product's branding or personality that you want to convey to your audience. That will help determine the illustration style.

Options for views

Most likely, you'll need at least a couple views of the product to show its dynamics. The basics are front, back, side, top, and bottom.

There should also be a three-quarters view to show the product in three dimensions, which typically looks down at a product. The views should bring the most important details of the subject to the forefront.

A cutaway view takes away external areas of the product, or makes them transparent in order to see the inner parts. This allows someone to understand the internal workings of the invention in relation to its outward appearance.

An exploded view is also helpful. This shows the different parts of the product before assembly floating and separated slightly to show their relationship, and how they fit together.

This type of drawing shouldn't be the main image to represent the product. It may do a good job of explaining how the product works or how it's constructed, but it's not sufficient for showing exactly what the invention looks like. 📦

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



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Trouble With a Licensee?

UNDERSTAND WHAT IS IN YOUR AGREEMENT, AND USE THE POWER THAT IS YOURS **BY APRIL MITCHELL**

SOMETIMES, things can become a little tricky and sticky between the licensee (the party receiving a license) and licensor.

As inventors and designers, we—the licensor—sign a contract that should be set up to be mutually beneficial for both parties. I find most manufacturers want this as well.

But I have learned this reality: Even when things look and sound good on paper, they can still end up less favorable for the inventor. This is because we are not the ones in power.

Licensees' job is to manufacture and sell our product they licensed for retail.

It is their responsibility to pay us our royalty check, which typically comes quarterly.

It is their responsibility to send us the quarterly report with the royalty payment so we can see what sales were made, where they were made and how many were made.

It is their responsibility to meet minimum guarantees and if not, make up for them at year's end.

It is also licensees' responsibility to send us product samples if indicated in the licensing agreement.

As you can see, much depends on the licensee. But what happens when there is no follow-through on these responsibilities?

Swallowing a tough pill

Before we can dive into that answer, we must understand what is in our licensing agreement.

I recommend that if you have help with your negotiations and contract, make sure you understand what it says and means. (Disclaimer: I am not a lawyer and do not give legal advice or representation. I am only sharing what I have learned and look for in licensing contracts and encourage you to seek legal counsel if needed.)

Knowing what is in the licensing agreement and what to do if the contract is breached is important. Understand what a breach of contract means, and when/if you as the licensor have the right but not obligation to terminate the contract.

In my inventing journey, I feel like I have seen it all when it comes to licensing agreements and the odd, disappointing, or awful things that can happen. Some involve first-hand experiences; some involve friends.

It is a hard pill to swallow to have licensees tell you they will not be manufacturing the product they licensed from you. It is hard to know that the licensee did not market your product well and that the product did not sell well.

It is awful to not be paid for a product that a company is selling that you invented and licensed.

Understand what a breach of contract means, and when if you as the licensor have the right but not obligation to terminate the contract.



It is tough to hear the company is going out of business, and it's too bad your minimum guarantee was not met because the licensees are terminating the contract regardless.

It is confusing, with a lot of questions and uncertainty, when your licensee is selling the company and you have no idea what will happen with the product involved in your deal. It is tough when the licensee does not get your product to market in the timing that was indicated on the contract.

None of these scenarios are easy, It is hard to decide what to do, or what you *can* do next.

Don't assume the worst

When anything like this happens, I get out my contract and reread it—as it might have been a little while since I have signed the licensing agreement. I find it important to refresh my memory on what the contract says, and my options if there is a breach in the contract.

I like to assume that what has happened is not intentional with the licensee. Every situation is different. I find it best to understand the licensing agreement and not be rash with any decisions.

For example, if my royalty payment or sales report are late, I may send an email and ask for the licensee to look into what happened. If an email can't settle this, a phone call can be helpful.

I find it best to seek open communication with the licensee and work things out, if possible, before bringing in a lawyer. If a product is not manufactured and sold in the time allotted, a minimum guarantee is not met, or royalty payment is not received after several attempts, I personally may seek guidance or help from an inventor advocacy group or lawyer. This is because sometimes a termination of contract may be considered or needed due to the breach in contract.

It is also important to know that even though termination of a contract may not be ideal, sometimes it is necessary so you can move on and give another company a go at your product. 🍀

April Mitchell of 4A's Creations, LLC is an inventor in the toys, games, party and housewares industries. She is a two-time patented inventor, product licensing expert and coach, and has been featured in several books and publications such as *Forbes* and *Entrepreneur*.



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Making Your Pilot Fly

WHAT YOU NEED TO KNOW ABOUT BUILDING
A SHORT BATCH OF RUNS FOR FEEDBACK **BY JEREMY LOSAW**

PROTOTYPING IS OFTEN a whimsical exercise. You are building one of something just to test it.

It may look awful and unrefined—and be made of PVC, plywood, and recycled cottage cheese containers—but it is a way to test a new idea. Even in the later stages of a product development cycle, you may be 3D-printing and soldering up circuit boards, but there is a reasonable expectation there will only be one of the specification of the product you are building.

Once you have built enough one-off prototypes to prove the technology, functionality and aesthetics, it is time to stop innovating and take the next step toward manufacturing and building a small quantity in a go-to-market specification. This is called a pilot—a crucial step before manufacturing to prove the design before investing more heavily in production tooling, setup and inventory.

Refinement via feedback

A pilot is the build of a short batch of runs to prove the design and manufacturing processes for a product. It is an opportunity to produce a number of units, give them to potential users, and solicit key feedback on the product. The goal is to confirm manufacturing processes and the overall design of the product, and answer the question of whether the design is ready to manufacture.

Do the electronics work correctly in their final specification? Are there overheating issues? Does anything fail prematurely? This is the type of feedback you are looking for in this exercise.

Before considering a pilot, you need to have done some development work. You do not want to be piloting the PVC and cottage cheese container prototype; the design must be farther ahead than that.

The product should be refined through iterative prototyping, be generally robust and well

thought out, and have good aesthetic qualities to keep users in the moment while they use it. It should look and feel like a fully engineered and developed product before doing a pilot, or you risk wasting time and money when you could have solved the problem easier with iterative, one-off prototyping.

Defining a pilot quantity

The amount of pilot units to make will depend on the product you are creating and the goals of the exercise. If the feedback you want is more about the core features of the product, you may only want to build 5-10 units to keep costs down and test with family and trusted friends.

For pre-production piloting, it depends on the complexity of the device and how much testing is required to validate the design. For a product that may be one or a few plastic parts that are easy to mold, it may make sense to do a run of hundreds or even thousands. For more complex devices with electronics or IoT capabilities, 25-50 may be a more palatable number.

Note that per-unit production costs will be much higher for your pilot units than for the mass manufacturing run.

An electronic device that costs \$50 each for 5,000 units may cost \$500 each for a short run of 25. This is because of the economies of scale and the likely need for more hand work by the manufacturer. It is just not as efficient. So, the overall budget needs to be considered before defining a pilot quantity.

Don't scrimp on quality

The techniques for building pilot units will be different than what is used for iterative prototypes during development. In general, it is best to use production-grade components and

processes wherever possible to maximize the engineering benefit of the pilot. If materials or processes are compromised, it muddies the results of testing.

The closer to production you can build to, the more confident you can be in the results.

Pilots are often built using manufacturing partners, rarely something to be undertaken by the garage inventor. Manufacturing partners will have the equipment to make the molded parts and circuit boards required; this is also a chance for them to practice building the device themselves so they can evaluate the process and find opportunities for efficiencies when the program scales up.

Still, there may be some compromises.

For example, injection-molded plastic components are expensive to tool up to make, so vacuum casting can be used. It is less expensive for the tooling, and the material qualities can be matched to production-grade materials like ABS or polycarbonate.

Specify goals, instructions

The execution of the pilot run should be planned and deliberate. This is a chance to gather real data and user feedback before production. Finding and solving problems at this stage can save big money and time before there are thousands of units sitting in a warehouse with issues.

Develop a test plan with specific goals and measurable metrics. Make sure pilot users sign non-disclosure agreements, give them thorough instructions to solicit specific feedback, and guide them on any documentation that you require them to create.

Be sure to check in with users before, during and after the test to see if there are observations within the test protocol or unexpected results that can help guide your development. Synthesize the data into charts to visualize trends and ensure the product is performing within the range you expect. It is a lot of work—but a relatively small investment to make sure the design is good before mass manufacturing. 📦

The goal is to confirm manufacturing processes and the overall design of the product, and answer the question of whether the design is ready to manufacture.





Valuation Education

ON THE SECONDARY MARKET, PATENTS ONLY HAVE VALUE IF YOU CAN COLLECT FROM DEBTORS OR INFRINGERS

BY LOUIS CARBONNEAU

AS A RECENT guest speaker at the Utah IP Summit, I was joined by a distinguished panel who discussed the ever-interesting topic of how to value patents.

I was reminded again how disparate values may be—depending on who you ask, and what you intend to do with that valuation report. (Full disclosure: Tangible IP routinely performs intellectual property valuations for clients. Our valuation specialist is a well-respected industry expert, often appearing in court as a damages expert in patent cases.)

Foremost, remember that the value of a patent lies in the eye of the beholder.

For individual inventors who simply want to be credited as such, a patent’s value is mostly sentimental.

For small operating companies that need to raise funds and fend off clones, the value of their patents lies in the promise to investors that it can maintain its competitive advantage over time by acting as a deterrent to infringers.

For large companies sitting on tens of thousands of patents, the value of each individual

one is largely incremental—but there is safety in numbers when negotiating cross-patent licenses with other behemoths.

Thus, one has to understand why we value patents in the first place for the how to make sense.

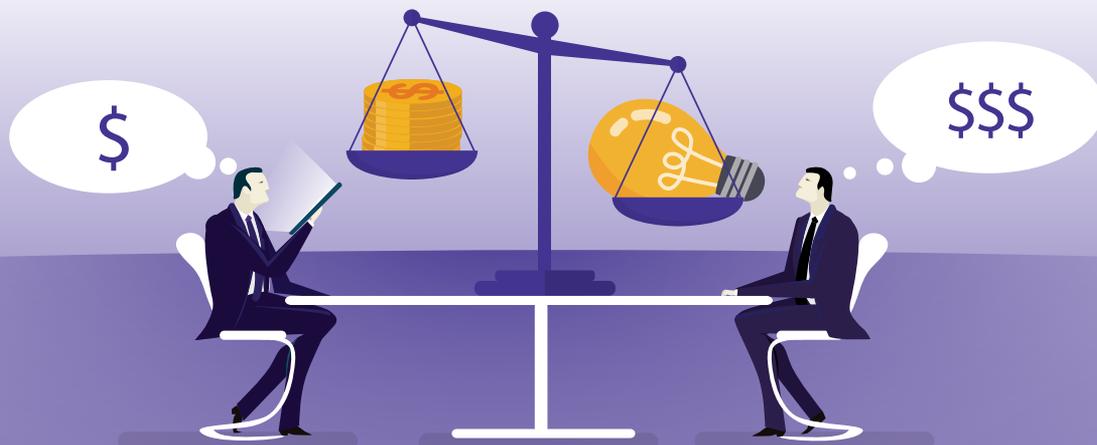
Where the real value is

When Tangible IP performs such projects, we usually start from some financial data offered by clients about the market they are in, their expected market share and growth projections, past revenues, etc.

We then build a sophisticated model that assumes some of that growth is sustained by the IP assets of the company, and project a value through the life of the patents—with some technology obsolescence built in—to arrive at a large number we then discount to today’s cash value. Very often, the value of the IP (mostly patents, although we loop in trade secrets and know-how if the company is operating) is calculated in the tens of millions.

Such a valuation report may help sustain a higher price at an exit, serve as a basis for a

A valuation report can be useful, but it will never accurately reflect how much someone may pay for a patent.



mergers and acquisitions negotiation, help with a tax transfer where an independent valuation is required, etc. What it will never reflect accurately, though, is how much someone may pay for these patents, outside any other consideration.

In other words, most patent valuation reports are of little use if what you intend to do is sell or license your patents. Why?

Simply put, the market does not value patents this way. On the secondary market, patents are like accounts receivable: They only have value if you can collect from debtors (here: infringers), since injunctions have been, for all intents and purposes, eliminated in the United States.

As I have said many times in this column, most patents transact solely for their assertion value. The price one may pay for them is generally dictated by the price of the alternative, which is usually the cost of defending a lawsuit or challenging the validity thereof.

This is why the same patent may be worthless if no one infringes and suddenly take on increasing value when someone does—as counterintuitive as that might sound. Which explains why most of the patents that transact do so near the end of their term, when a whole industry has finally caught up with the patented technology.

If you are the only game in town, build a company if you can. Don't ask us to broker your patents; they likely won't sell.

For the few that do, you must look at the cost of the alternative—what someone may pay to make those go away.

Beware unrealistic expectations

Ten years ago (before the Patent Trial and Appeal Board), you had to spend millions to invalidate a patent, with a 50/50 chance of winning. Patent valuations reflected that. Nowadays, the PTAB invalidates issued patents at a rate of 75 percent to 85 percent for a cost to the challenger that hovers around \$200,000. Same patent, with now an extremely different value.

This is why it makes little sense to pay tens of thousands of dollars (even to Tangible IP) to gain a valuation report if your intent as the patent owner is to sell the asset(s). It creates completely unrealistic expectations as to how much the market will

price a certain set of patents, and people invariably end up being disappointed. And remember, those reports do not come cheap.

So, if you have money to invest, you would be much better served a) looking for evidence that your patent(s) are being practiced by someone (many is better), and b) in the preparation of high-quality claim charts.

We can help with both, and these are the first two steps we perform when we take a portfolio under brokerage. That is what the market values. ☞

Louis Carbonneau is the founder and CEO of Tangible IP, a leading patent brokerage and strategic intellectual property firm. He has brokered the sale or license of 4,500-plus patents since 2011. He is also an attorney and adjunct professor who has been voted one of the world's leading IP strategists.



INFRINGEMENT ROUNDUP

In my comments last month about jump rope world champion and inventor Molly Metz, I discussed the interesting argument raised by her attorney that damages incurred by infringing products before the cancellation of the patents should still be considered. The U.S. Supreme Court had the opportunity to decide if it would entertain this argument and hear the case on its merits.

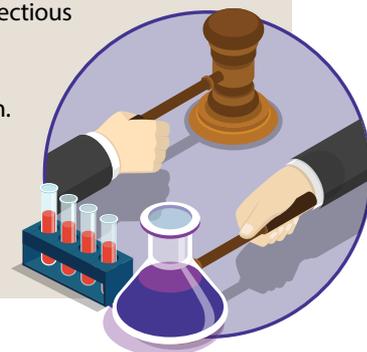
Unfortunately, but not surprisingly, it declined on February 27 to hear the case—in what could have been a game changer for patent owners who want to recoup past damages from infringers.

In the district of Delaware, a new judge (on the bench for only 6 months) issued a patent verdict of more than \$40 million in favor of a university and its licensee. Though this is common in districts in Texas, we don't often see such verdicts of this magnitude in Delaware.

In this regard, Meta recently tried—unsuccessfully, for now—to toss aside a \$175 million verdict that it infringed upon two Voxer patents that turn one's phone into a walkie-talkie device.

Also of interest was a \$400 million settlement by Moderna to the National Institute of Allergy and Infectious Diseases (part of the National Institutes of Health) related to a novel prefusion Coronavirus Spike protein vaccine antigen.

This, if nothing else, shows the stark difference between how patents behave and are valued when comparing the pharmaceutical and high-tech sectors.



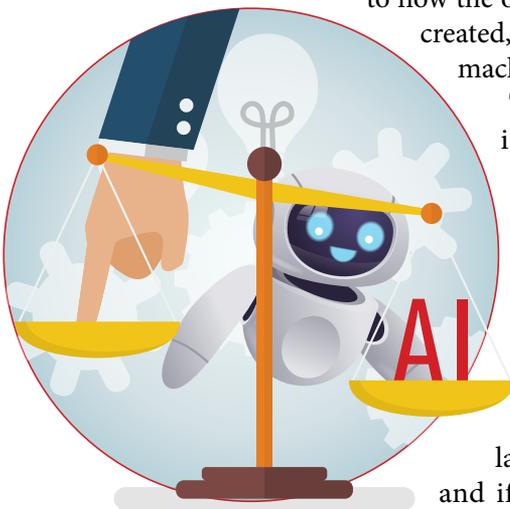


‘Important Next Step’

PATENT BAR PRAISES USPTO’S CALL FOR COMMENTS ON AI INVENTORSHIP ISSUE **BY EILEEN MCDERMOTT**

All Eye on Washington stories originally appeared at IPWatchdog.com. IPWatchdog’s third annual Patent Litigation Masters™ 2023 program will be May 15-17 in Asburn, Virginia. See the website for more details.

THE U.S. PATENT AND TRADEMARK OFFICE’S recent announcement that it is requesting public comments on artificial intelligence and inventorship indicates that changes may eventually be implemented with respect to how the office considers inventions created, or partially created, by AI machines.



The USPTO is asking for input on 11 questions, including “how does the use of an AI system [in the invention process] ... differ from the use of other technical tools”; whether AI inventions may be patentable under current patent laws on joint inventorship; and if statutory or regulatory changes should be made to better address AI contributions to inventions.

Following publication of the Federal Register Notice, many legal experts commented on whether the USPTO is asking the right questions and what the future of AI-inventorship holds.

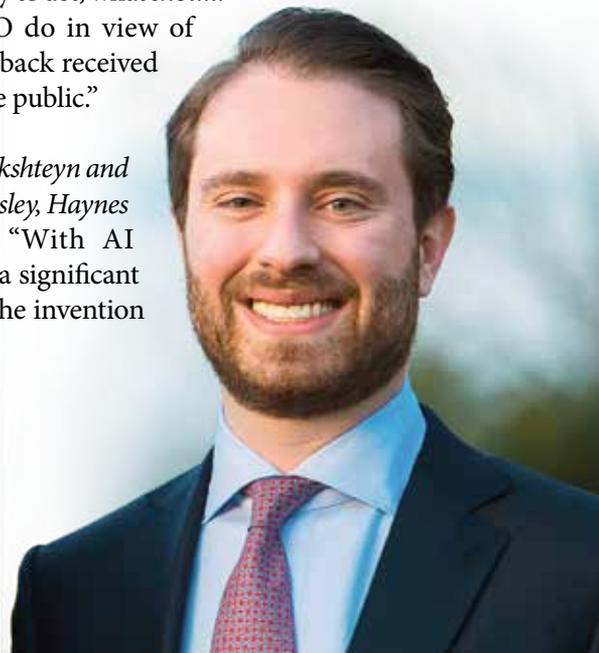
Professor Ryan Abbott, University of Surrey School of Law and Brown, Neri, Smith & Khan LLP (representing Stephen Thaler, a computer scientist waging a global campaign for patents covering inventions conceived by his artificial

intelligence system): “I’m very encouraged by the questions they are asking and think they are addressing important issues related to AI-assisted inventions and situations in which both people and machines are making inventive contributions.”

Arpita Bhattacharyya and Frank DeCosta, Finnegan: “The PTO’s call for comments is an important next step in determining the legal contours surrounding the protection of AI-based IP. The [U.S. Court of Appeals for the Federal Circuit’s] Thaler decision establishes a bright-line test providing clarity on the front end of the patenting process, but many unanswered questions remain, including those raised by the PTO. The PTO’s call for comments appears to recognize Thaler’s limitations in being able to address the many complex issues surrounding the protection of AI IP. ...

“Several of the questions posed for comment get at procedural issues regarding what can the PTO do to address the boundaries between human and artificial contributions to inventorship on the record before the PTO during patent prosecution—and, in areas where the PTO has authority to act, what should the PTO do in view of the feedback received from the public.”

Dina Blikshteyn and Eric Horsley, Haynes Boone: “With AI playing a significant role in the invention



“I’m very encouraged by the questions they are asking ...”

—RYAN ABBOTT, REPRESENTING STEPHEN THALER

process, it is nice to see the USPTO taking a proactive approach in considering whether the current law can provide sufficient protection for AI inventions.

“Today, AI inventions, such as those created by (Thaler’s) DABUS, have great notoriety but trivial economic value. As AI becomes more sophisticated, AI has potential to create or contribute to creating inventions that have significant economic value, particularly in the fields involving drug discovery, personalized medicine, or chip design. When AI inventions have significant economic value, AI owners and/or co-inventors will be more incentivized to innovate and seek protections for their inventions.

“By requesting comments on the state of AI technology and questioning whether human co-inventors can obtain patent protection when AI makes a significant contribution, the USPTO appears to recognize that the current legal framework may be insufficient.”

Blair Jacobs, McKool Smith: “There is little doubt that as AI technology improves, advancement in machine learning systems will become advanced enough to generate new inventions. Indeed, it is not hard to envision scenarios where AI evolves past its initial programming and develops a patentable unpredictable result, method, or technique.

“Supercomputers such as Tesla’s Dojo provide vast assistance as they can process mountains of information and implement real-time modifications. While current U.S. law is clear that only human beings can be named as inventors, it is becoming more apparent that either legislative or judicial assistance is necessary to keep up with the rapid technological ascent of AI in the innovation process.

“The USPTO has been exploring the issue of AI inventions since at least 2019, and this new initiative should be applauded.”

Eileen McDermott is editor-in-chief at IPWatchdog.com. A veteran IP and legal journalist, Eileen has held editorial and managerial positions at several publications and industry organizations since she entered the field more than a decade ago.



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Best wishes, Jack Lander

IoT Corner

Developers and curios have been playing with the AI chatbot since it was opened for free in November last year. For the first few months, its more than 100 million users were only able to use the system standalone.

All that changed with the release of the **ChatGPT API**, which allows other applications to build the tech inside of their products. This opens new avenues of uses to build intelligence into products and services that were previously unintelligent, and is a source of revenue for parent company OpenAI.

Early adopters include companies such as Instacart and Shopify, which hope to gain a competitive advantage by adding the intelligence to the shopping experience.

—Jeremy Losaw



Wunderkids

The *New York Times* recently invited teenagers to invent new words that fill holes in the English language.

Rohana Khattak of Islamabad, Pakistan, was the winner for “oblivionaire”—a billionaire who ignores the disparity and inequality that his or her wealth creates. Gen Z’s outrage over oblivionaires ignoring global crises is trending heavily on social media and being noticed by global and political figures.



What IS that?

A pair of cool/scary **gardening gloves**. The clawed fingers are made for digging and pruning roses—and are great for scratching someone’s back. One of the consumer questions on Amazon was “Can I use them to fight bad guys like the Black Panther?” Maybe was the anther.

Get Busy!

The sixth annual Intellectual Property Awareness Summit® is May 2 in Boston. The event, with top IP influencers, explores ways to make the benefits of IP rights, and the issues surrounding them, more apparent. Half-price registration is offered for *Inventors Digest* readers. ipawarenesssummit.com

WHAT DO YOU KNOW?

1 Which inventor said: “The world isn’t getting any easier. With all these new inventions, I believe that people are hurried more and pushed more.”

- A) Paula Abdul B) Hedy Lamarr
- C) Benjamin Franklin D) Charlie Sheen

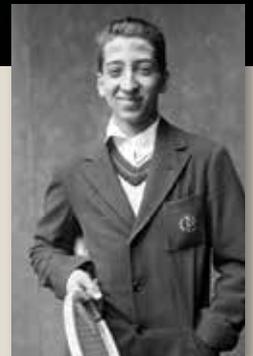
2 **True or false:** The song “Take Me Out to the Ballgame” is in the public domain (copyright free).

3 Which kitchen instrument was patented first—the biscuit cutter, or the pizza cutter?

4 **True or false:** French tennis player René Lacoste, inventor of the Lacoste polo shirt in 1926, also patented the first tubular steel tennis racquet.

5 Albert Einstein said this is “the greatest invention in human history”:

- A) Learning compounds B) Compound interest
- C) Compound W D) None of the above



1. B. 2. True. 3. The biscuit cutter was patented by Alexander P. Ashbourne in 1875, the pizza cutter by David S. Morgan in 1892. 4. True. It came to be known in the United States as the Wilson T-2000 and was a favorite of many star players. 5. B.

DON'T MISS A SINGLE ISSUE!

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