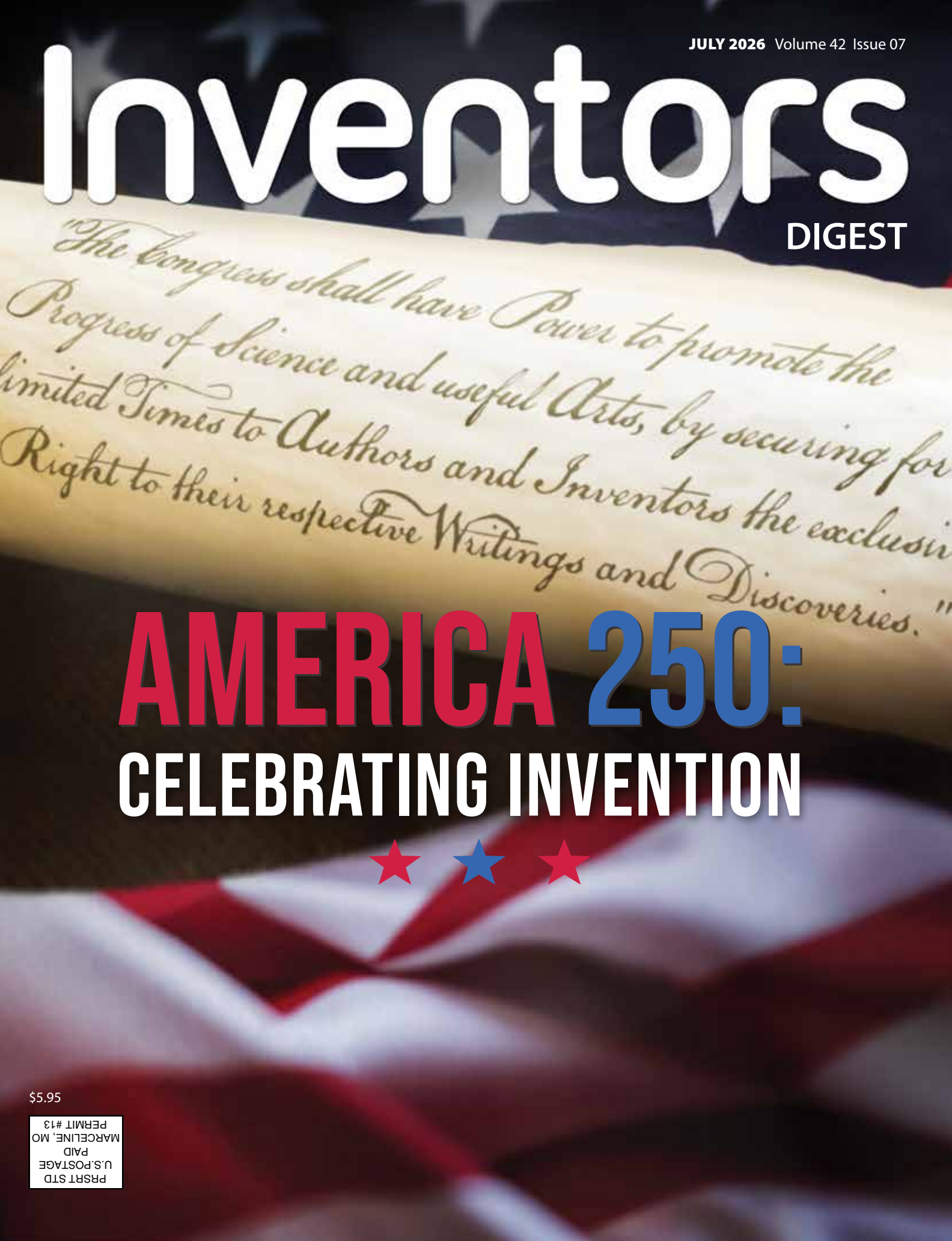
JULY 2026 Volume 42 Issue 07

Inventors DIGEST



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Leading the Next Invention Generation

A Lemelson-MIT InvenTeams project inspired a class, a teacher, and led Katia Avila Pinedo to her own education career

"Do you want to invent?" a flyer on Snapchat asked high school student Katia Avila Pinedo in 2017.

Katia had never asked herself that question, but she realized her answer was a resounding "Yes!"

That's how she made the life-altering decision to join the Garey High School InvenTeam that the flyer was advertising. It was part of a Lemelson-MIT (LMIT) program in which students invent real-world solutions to problems of their choosing.

That was nearly 10 years, one patent, and a college graduation ago. Today, every time the 23-year-old teaches a class or gives a talk, she thinks about the invention question and asks herself: "How can I convince someone to just give it a shot?"

The success of the diabetes-related monitoring device led to Pomona, California's Garey High School becoming a proponent of invention education.

Planting the seeds of invention

Sitting in science teacher Antonio Gamboa's classroom was where Katia first felt like she could be an inventor. But her creativity was also influenced by the cultural richness of her hometown.

She describes Pomona, California, in Los Angeles County as rich in art, Spanish colonial history and citrus fields. The populations of both Pomona and her school are made up predominantly of Hispanic and Asian immigrant families. Her classmates on the InvenTeam represented the cultures of five countries, including Guatemala, Mexico, Vietnam, Nepal and the Philippines.

Katia and her InvenTeam became trailblazers at Garey High School. At the time, the school didn't offer engineering classes or clubs. The science teacher, Mr. Gamboa, had sponsored science fairs, but he worried that inventing might be out of reach for his students.

The enthusiasm of Katia and her classmates convinced him otherwise.

"Their immediate response and level of engagement when they started thinking, 'I can invent something' … that got my attention," he recalls.

From the start, their team was motivated to invent a device to help a teammate's grandfather who struggled with diabetes and diabetic neuropathy—the latter a type of nerve damage that most often affects the legs and feet of people with diabetes. They eventually settled on inventing a monitoring device to help alert patients, health care providers and caregivers before symptoms such as pain, lesions or numbness progress.

The invention process challenged Katia and her teammates, stretching their abilities in different ways. They had to learn how to integrate sensors into their device and how to pivot and redesign when faced with roadblocks.

Their community also supported the team in several ways. Teachers let InvenTeam students stay at lunch longer or leave class early to

work on their invention. Others offered extra credit to those who volunteered for the team's community showcase—an event that helped them fund their trip to MIT for the EurekaFest event, where InvenTeams from across the country demonstrate their inventions.

And it wasn't just the school that showed up. La Nueva Voz, the local bilingual newspaper run by just two people, covered the team's story and helped get the word out about the showcase.

Through Lemelson-MIT, the students were paired with a STEM enrichment center for guidance during their invention journey.

After persevering and lots of hard work, the students had a prototype, which they named "Heart & Sole"—a reference to their focus on foot health and the commitment the entire team made to the project. They made it to MIT with funding from their community and presented their invention at Lemelson-MIT's 2018 EurekaFest.

But that wasn't the end of the story.

From prototype to patent

After EurekaFest, their LMIT mentors connected them to the Microsoft #MakeWhatsNext Patent Program. They received pro bono legal support and funding to apply for a patent on their invention.

They knew the process of applying for a non-provisional utility patent—more complex than a provisional patent application—would take time, and Mr. Gamboa promised to continue the effort as team members graduated and went on to college. Katia decided to study Networks and Digital Technologies at the University of California, Santa Cruz, and planned for a career in the tech sector.

On July 22, 2022, she and her teammates were awarded U.S. Patent No. 11,382,564—five years after they made the decision to invent and form their InvenTeam. It was particularly powerful news for her parents.

Katia Avila Pinedo shows a Lemelson-MIT poster commemorating her and her InvenTeam's patented accomplishment.

"I realized at that moment, never in my parents' mind would they have thought their daughter would be an inventor and get a U.S. patent. They made a lot of sacrifices, being an immigrant family, and worked really hard."

Her school and community came together to celebrate their accomplishment with a "patent party" that included local tacos and current high school students showcasing their invention projects. The event reunited Katia with her teammates and Mr. Gamboa and was attended by their families, city council members, Microsoft patent

PHOTOS COURTESY OF KATIA AVILA PINEDO

Right: Katia Avila Pinedo (back row, right) and teacher Antonio Gamboa (front right) were among the catalysts for the Garey High School InvenTeam in Pomona, California.

Below: The "Heart & Sole" prototype.

attorney Dan Choi and even the director of the U.S. Patent and Trademark Office at the time, Kathi Vidal.

"It was rewarding to come back to where it all started," Katia said.

They were also able to see the ripple effects of what they had started—another type of reward: Garey High School had embraced invention education, fueled by their experiences and Mr. Gamboa's classroom.

"Most of his classes had some sort of invention curriculum, at least once weekly," she said. "And at that point, he was the head of the science department, and he encouraged other teachers to bring invention education curriculum into their classrooms."

From student to teacher

For Katia, the long-term impact of her invention experience was realizing she liked the learning process. In college, she followed that passion by working as a tutor, peer mentor and instructor for various invention education activities for younger students, such as the UCSC MESA Engineering Program and Lemelson-MIT's "Rail Innovation in Action" online program. She's also spoken about her invention journey at the USPTO's National Summer Teacher Institute.

She stayed in touch with Mr. Gamboa, whom she had run into at conferences. At one invention education conference, she spoke to him about how she was having challenges at college and was considering leaving school. But with his extra push, she persevered and graduated with honors in her major. Then, like most graduating college students, she had to figure out what was next.

"I was thinking, I have this STEM degree, this computer networks degree, but I really love education and art," Katia said.

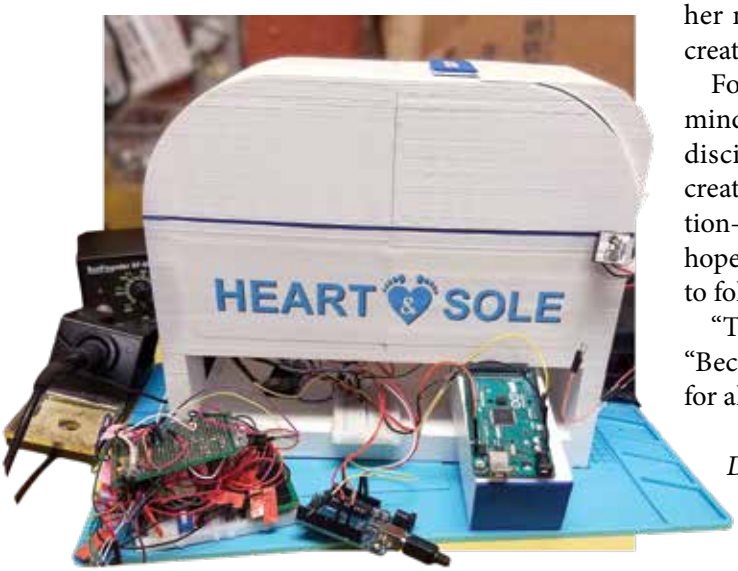
Like her mentor, she decided to become a teacher. At The dA Center for the Arts in her hometown, she teaches mariachi violin and puppeteers for a Head Start program geared toward 3-year-olds.

She's still thinking about inventing in her teaching. She recently created a prototype of an octopus puppet for her class, drawing on her mechanical engineering knowledge and creativity.

For Katia, once you unlock that inventor's mindset, it's possible to be an inventor in any discipline. This way of thinking freely and creatively—the hallmarks of invention education—is one Miss Kat (as her students call her) hopes to share with her class and inspire them to follow their interests.

"That's why I like being a teacher," she said. "Because I feel like it's my way of giving back for all that I've gotten."

Details: lemelson.org/invention-notebook



Igniting Tomorrow's Changemakers and Innovators

In a world of rapid change, ensuring a young person has the skills and mindset to create new solutions to problems they face is more critical than ever.

InventEd is a network of practitioners, researchers, and others who are committed to cultivating the inventive mindset that exists in every student, preparing them for a future yet to be invented.

Why Invention Education?

- **Fosters Critical Thinking:** Invention education seamlessly integrates engineering design processes, design thinking, and entrepreneurial skills into creative problem-solving.
- **Develops Essential Skill Sets and Mindsets:** Students learn valuable skills like collaboration, communication, and resilience, which are essential for success in any field.
- **Integrates with Existing Curricula:** This comprehensive approach not only aligns with multiple subject standards, but also offers flexible, engaging, and fun lessons suitable for various time frames and subjects.
- **Inspires a Passion for Learning:** The thrill of students problem-solving for issues they care about ignites curiosity and engagement, empowering them to become lifelong learners.
- **Creates a Brighter Future:** By nurturing the next generation of changemakers, we can create a world where challenges are met with creative solutions, and opportunities abound.

How Can You Get Involved?

- **Connect with the InventEd Community:** Sign up for the InventEd Newsletter to learn what's happening within this network of educators passionate about invention education.
- **Explore Invention Education Resources and Programs:** Use our free resources and tools to learn how to integrate invention education into your curricula.
- **Try Invention Education Activities:** Test out activities in your classrooms and programs, and share your experiences and information with colleagues and leaders.

Together, we can embolden students to shape a better future — one inventive idea at a time.

Visit our website to learn more:
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Contents

July 2026 Volume 42 Issue 7

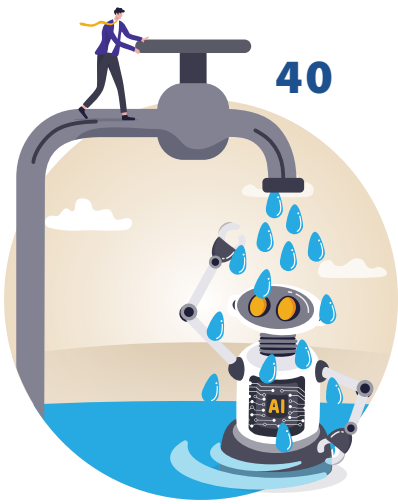
They Said What?

9 "Comments are turned off—maybe with the assumption that the general public could be as well."

13 "I may have been thinking about bowling them over. But if they don't have the flag, they cannot burn it."

40 "This is not software eating the world. This is concrete, steel, copper and silicon eating the world."

On the Cover
Article 1, Section 8, Clause 8, United States Constitution



40

20

QUICK READS

Feature

Inventor Spotlight

Departments

Flagging Some Myths About the Stars and Stripes

One of the most important—and fun—freedoms about writing for and editing a magazine is researching for the sake of accuracy, thoroughness and just because.

When researching for *Inventors Digest*'s America250 issue about the likely designer of the first U.S. flag, I stumbled upon some myths about the Stars and Stripes that may or may not leave you flaggergasted:

It's against the law to burn the American flag. No, not since the landmark case of *Texas v. Johnson* in 1989, when the Supreme Court ruled that desecrating the American flag is a form of speech protected by the First Amendment. Defendant Gregory Lee Johnson burned a flag in an act of protest at the 1984 Republican National Convention in Dallas.

The U.S. military is fine with you leaving your flag to hang outside all day and night. Technically, no. Although it's a beautiful thing when Americans display the U.S. flag outside their home or office, you violate military etiquette if you never bring it in.

U.S. Flag Code says the flag is to be displayed outdoors from sunrise to sunset only, on stationary flagstaffs in the open. So if you don't bring it inside when the sun goes down, you're in violation.

There is one exception for displaying your flag at night: It must always be illuminated. The American flag should never be "displayed" in the dark.

Leaving your flag hanging in rain or inclement weather is also a violation of U.S. Flag Code, which says you should always bring it in before it gets wet—or remove it from inclement weather as soon as you can.

Of course, the flag code is advisory, not mandatory for civilians. There are no penalties for non-compliance and expressing yourself the way you want.

The U.S. flag must always be folded into a triangle for storage. This folding—with only the blue Union and stars visible—is part of tradition but not a requirement of the flag code.

We'll have seen a lot more of the American flag than usual before this month of July ends. Its unique and proud history make it a fascinating source of research driven by enduring love and respect, as well as an icon for U.S. ingenuity and innovation.

—Reid
(reid.creager@inventorsdigest.com)

Inventors DIGEST

EDITOR-IN-CHIEF
REID CREAGER

ART DIRECTOR
CARRIE BOYD

ASSOCIATE ART DIRECTOR
JORGE ZEGARRA

CONTRIBUTORS
ANDREA L. ARNDT
ELIZABETH BREEDLOVE
LOUIS CARBONNEAU
DON DEBELAK
BEN GREENBERG
JACK LANDER
GENE QUINN
WILLIAM SEIDEL
EDIE TOLCHIN

INVENTORS DIGEST LLC

PUBLISHER
LOUIS FOREMAN

Ad rates, subscriptions & editorial content:
520 Elliot Street
Charlotte, NC 28202
info@InventorsDigest.com
www.InventorsDigest.com
reid.creager@inventorsdigest.com

Federal Circuit Music Video Verdict is in: What in the …

Who says the United States Court of Appeals for the Federal Circuit can't be cool?

OK, it might be better to keep this factual. Who says the United States Court of Appeals for the Federal Circuit can't try to be cool?

The federal circuit released its first theme song during the 2026 Judicial Conference, set to a cartoon video in the spirit of "Schoolhouse Rock." "What is the Federal Circuit? An Animated Civics Lesson" on YouTube opens with a monkey riding a rocket and takes off for 3 minutes, 1 second of cringeworthy, campy What Were They Thinking.

The video includes an animated, dancing Ronald Reagan and Uncle Sam, cartoon judges waving glow sticks under a disco ball, and other weirdness.

Seventies-sounding, AI-generated vocals and lyrics begin:

Well, it started with a law back in '82

Federal courts, some prudent [? unclear] act came through

Congress said we need a brand-new way

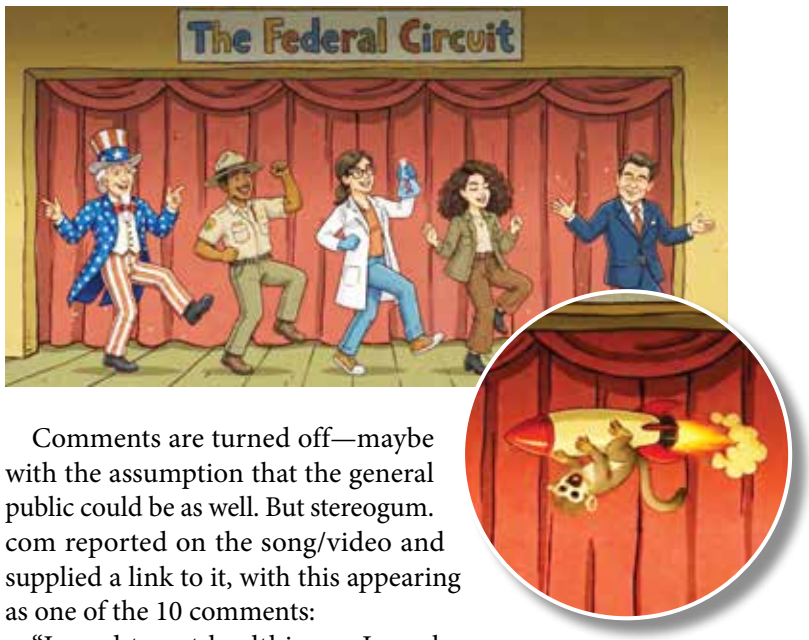
To bring some consistency to cases every day

They merged some courts, made a brand-new seat

A national court with a special beat

Not by region, not by state, but by subject matter, keeping rulings straight …

There is, purportedly, a reason for all this: explaining the court's unique jurisdiction and judicial procedures; its authority over patents, international trade, veterans' benefits and more. The more specific target is the Federal Circuit Center for Innovation and Law's civic education initiative, for teaching middle and high school students about the court's work through STEM and social studies and programming.



Comments are turned off—maybe with the assumption that the general public could be as well. But stereogum.com reported on the song/video and supplied a link to it, with this appearing as one of the 10 comments:

"I need to get healthier so I can be more confident that all of these people will die before I do."

CONTACT US

Letters:
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Look for bonus *Inventors Digest* content online—courtesy of our new **ID Extra** feature that celebrates our popular new, streamlined website.

Check **inventorsdigest.com** for regular posts that supplement the uniquely educational and entertaining magazine for independent inventors, celebrating its 41st anniversary in 2026.

INVENTING 101

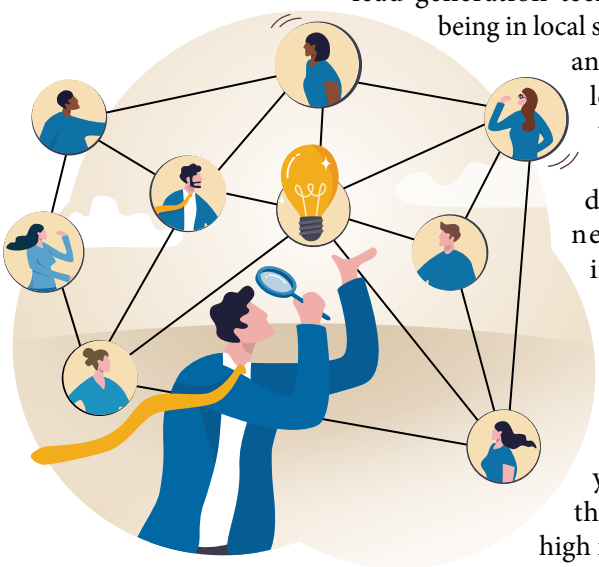
Types of Distribution Networks

BY DON DEBELAK

Many inventors have great products that never make it to market because the inventor isn't able to set up a distribution network—a process whereby a product moves from the producer to the final consumer.

Here are some of the many types of distribution networks, with pros and cons:

Direct to consumer. This is often through the internet, but it can also be accomplished by advertising in local media and following up with a sales call. Companies might use other lead-generation techniques, such as being in local special event shows and following up on leads generated at the show.



This low-cost distribution channel can help an inventor fine-tune the product with a small group of initial users. But internet sales are difficult unless you have an item that will come out high in searches.

Sell to catalogues. Catalogues are often willing to do business with small, one-product-line companies—even without strong sales histories—and this route is a great way for inventors to launch their products.

These products are often unique items that can be economically produced in small volumes that fit into the overall type of products the catalog sells. But sales can often be modest.

Sell direct to retailers or dealers. This is not a national breakout strategy for most inventors—just a way to generate sales locally to prove the product will sell.

Local retailers are often open to helping local inventors; early sales help line up investors; local sales help inventors immediately respond to product problems. But the cost to produce a small quantity can be high, and small quantities might prohibit the inventor from paying for the tooling to make the product with commercially viable quality.

Sell to retailers and distributors through manufacturers' sales agents. Inventors often don't have industry contacts and can't afford to exhibit at major trade shows or travel around the country to sell their product. They also can't afford to hire their own salesperson. This is when they turn to independent sales reps, companies that carry four to 15 products from small companies.

Reps work on commission, so they don't have an upfront cost to the inventor; they know the buyers and provide the quickest route to market; and they can offer sophisticated market intelligence to inventors regarding pricing, packaging and promotional programs. But they can quickly lose interest if they can't make $15,000 or more per year from your product, and they are more attached to customers than suppliers.

VITAL VOCABULARY

Scale Possibly the most overused business buzzword of the past decade, it means to succeed in any number of objectives—but often refers to the ability of a company to grow revenue, customers or operations without a proportional increase in costs.

Trademark Searching With Punch

When it comes to ensuring your trademark idea is not registered by someone else, you should be aggressive. In fact, go for the knockout.

A knockout search is a preliminary search of trademark databases to identify identical or highly similar marks to yours (even phonetic equivalents) that could cause confusion or block your application to the United States Patent and Trademark Office. It also covers recently abandoned applications that could be revived. You won't be told what names or marks are available, but you will be able to identify which ones are not.

An effective search can spare you the expense of unnecessary legal filings or legal disputes.

These searches often involve using the USPTO's cloud-based Trademark Search, accessible at *tmsearch.uspto.gov*. Another professional trademark service, Bonamark, checks for marks spanning more than 180 countries so that businesses hoping to expand internationally can avoid conflicts with existing marks.

The USPTO database allows searches for trademarks by name, registration number or owner. It also provides information on the status of trademarks—including whether they are active, abandoned or registered.

Knockout searches do not cover common-law trademarks (rights based on use in the marketplace); state-level registrations; or foreign filings, unless part of a wider search. It's advised you perform a separate search for those.

Conducting a general search online for your trademark name is always a good idea. And remember that a trademark attorney or IP firm can potentially perform a faster, more accurate knockout search and interpret results.

Sell direct to retailers or dealers. Inventors can set up their own sales organization to sell directly to retailers or dealers. They typically need to hire an experienced industry person and offer him or her a share of the business in return for accepting a lower starting salary.

This route offers the inventor the best control of company sales, can build a solid base for a strong company, and provides the best opportunity for introducing subsequent products. But it can be difficult to execute without offering significant shares of the company both to investors and the sales individual.

Sell through another marketer. Inventors can sometimes locate (typically at trade shows) another manufacturer who runs into resistance from being a small-line company. Often, those companies benefit greatly from having another line to sell along with their products; it cuts their sales costs and makes their line more attractive to representatives.

But your product(s) may be considered second priority by the marketer; you won't have control of sales efforts; and the marketer's share of sales revenue is typically around 25 percent.

Don Debelak is the founder of One Stop Invention Shop, offering marketing and patenting assistance to inventors. He is also the author of several marketing books.

(612) 414-4118 | dondebelak@gmail.com
facebook.com/don.debelak.5

It's a Grand Old Flag. But Who Designed it?

Long-held notion that Betsy Ross originated the Stars and Stripes is lacking evidence **BY REID CREAGER**

In Paul Simon's 1973 hit "Kodachrome," he laments:

"When I think back on all the crap I learned in high school

"It's a wonder I can think at all."

We're not here to call Mr. Quackenbush a liar or rewrite old textbooks. It can be hard, sometimes impossible, to conclusively prove or disprove events from three centuries ago. Still, the millions who grew up being taught that Betsy Ross designed/invented the American flag known as the Stars and Stripes should leave a lot of room for doubt—and the America250 celebrations are a good time to dive into the subject.

Family fairy tale?

A Biography.com story says there are receipts showing that Ross, who owned an upholstery business in Philadelphia, sewed ships' flags for the Pennsylvania navy. But it says historian Marc Leepson told the Associated Press in July 2017 "there is no evidence" she sewed the first American flag in front of George Washington in 1776, although she may have sewed some early versions.

Some say the Ross claim is a family fable.

According to Britannica.com, her grandson, William Canby, presented his paper "The History of the Flag of the United States" to the

Many historians cite strong indications that the primary designer was U.S. Founding Father Francis Hopkinson.

Historical Society of Pennsylvania in 1870. In that account, his grandmother made the first Stars and Stripes flag at Washington's behest and helped design it. The paper was based on stories from family members and claims from Ross.

But there is no conclusive proof it ever happened. Many historians cite strong indications that the primary designer was U.S. Founding Father Francis Hopkinson.

Evidence favors Hopkinson

One of the signers of the Declaration of Independence in 1776, Hopkinson designed seals for the U.S. Treasury and the state of New Jersey, as well as U.S. currency predating the dollar bill.

Biography.com says that according to the National Postal Museum, Hopkinson wrote a letter to the Board of Admiralty in 1780 requesting compensation for designing "the flag of the United States of America," the Great Seal of the United States and other items. His bill required payment in the form of a "Quarter Cask of the public wine."

Journals from the Continental Congress also indicate Hopkinson designed the flag, but his requests for reimbursement were denied because the U.S. Board of Treasury claimed he wasn't the flag's sole designer and should have done it simply as a civic contribution.

The first official U.S. flag was adopted by the Second Continental Congress on June 14, 1777, with 13 red and white stripes and 13 white stars on a blue field to represent the original 13 colonies. Several U.S. patents involve the flag, covering both its ornamental design and its use in various products and displays, but the first U.S. patent was not issued until 1790.

INVENTOR ARCHIVES: JULY

July 14, 1857: Frederick Maytag, who invented the Maytag washing machine, was born.

He manufactured farm implements in Newton, Iowa. When business was slow in winter, he introduced a wooden tub washing machine in 1907 and later went full time into that business.Maytag was a member of the Iowa Senate from 1902 to 1912, was mayor of Newton from 1923 to 1925, and was the first budget director for the state of Iowa.

'GREATEST PLAY IN BASEBALL HISTORY' TURNS 50

As a longtime former Major League Baseball writer, I have been asked what is the greatest play I have ever seen.

High on the list is Gary Matthews Jr.'s leaping, twisting catch after a long, running retreat—extending his glove far above the centerfield wall at the last instant—to rob Houston's Mike Lamb of a home run in 2006. And maybe even better: White Sox pitcher Mark Buehrle is hit on the foot by a line drive in a 2010 game, chases the ball into foul territory, and while on the run makes a desperate swipe at it with his glove, between his legs and facing in the opposite direction—and the ball magically travels past the sprinting runner and into the outstretched bare hand of first baseman Paul Konerko.

But I will yield to sentiment, as others do on this subject, and go with the day Cubs outfielder Rick Monday stopped a man and his 11-year-old son from lighting the American flag on fire on the field during a game at Dodger Stadium on April 25, 1976, America's bicentennial year.

The two ran onto the field in the fourth inning, and the man knelt and doused the flag with an industrial-sized can of lighter fluid. The first struck match blew out; the second had been struck when centerfielder Monday—who spent six years in the U.S. Marine Reserves during his baseball career—swooped in and snatched the flag on the run. The man threw the lighter fluid can at him. *youtube.com/watch?v=hbr1hNp-nI4*

The man and boy were escorted off the field. The crowd sang "God Bless America."

Jim Roark's iconic photograph of Monday, flag firmly in hand as the startled man and boy look up, was nominated for a Pulitzer Prize.

"I may have been thinking about bowling them over," Monday recalled in a newspaper interview this year. "But if they don't have the flag, they cannot burn it. So I scooped [sic] down and got the flag."

The flag will be on display at the National Baseball Hall of Fame and Museum through Labor Day weekend as part of the America250 celebration.

—Reid Creager

War Inventions, II: Snack on These

M&Ms, Cheetos and Pringles solved military logistics issues before becoming mass-market staples **BY WILLIAM SEIDEL**

We use military innovations every day like the internet, microwaves and GPS. What the military needed for logistics, companies later repurposed for convenience and mass market appeal.

M&Ms, Cheetos and Pringles do not come to mind when you think of military technology. The military demand for chocolate, cheese and potatoes made these and many other products possible.

In war, food is logistics. Mobile armies need compact, lightweight and long-lasting nutritious supplies. Those on the front lines need support as well as nutrition. Snacks and desserts can go far to lift spirits and morale.

Military budgets fast-track development, provide sizable contracts and kick-start a new concept with fast revenue for startups and existing businesses.

Meet Murrie and Mars

Bruce Murrie and Forrest Mars changed chocolate supply for World War II troops. M&Ms stand for Mars and Murrie.

©AI GENERATOR • SHUTTERSTOCK

Mars was traveling in Spain during the Spanish Civil War when he noticed soldiers were eating small chocolate candies coated in a hard sugar shell. The shell kept the chocolate intact in hot climates.

Mars owned a confection company in England and ran with the idea. He moved to Chicago and partnered with Bruce Murrie, the son of Hershey's president. The U.S. sugar supply was cut off and the partnership secured chocolate during wartime shortages.

M&Ms were not available to the public; their first and only customer for five years was under exclusive contract to the U.S. military. They provided chocolate that wouldn't liquefy in a soldier's pocket.

In 1947, after WWII, the sugar rations ended. M&Ms were made available to the general public and found quick success. As with most successes, they were quickly knocked off. To distinguish the real M&Ms, Mars stamped each candy with a small "m."

Solving the chocolate melting problem for soldiers resulted in one of the world's most recognized candies. And the large, exclusive military contract deferred startup costs and proved product acceptance.

Cheese dehydration win

Cheetos were made possible by solving the problem of getting real cheese to soldiers in the field without it spoiling or weighing tons.

There is big money in military contracts. Fresh cheese was in high demand, perishable, heavy and temperamental.

For World War I, the military placed an order with Kraft for 6.25 million pounds of white cheese. By WWII, it purchased over 100 million

pounds of cheese and 500,000 pounds of cheese spread in a single year.

It was no easy task to increase shelf life, decrease weight and provide safe, nonperishable food.

Kraft experimented with cheese dehydration techniques through partnerships with the U.S. Department of Agriculture and University of California, Davis.

The solution was freeze dehydration. The U.S. Department of Agriculture created the first cheese powder by grating, drying, grinding and dehydrating cheese into cakes. It was lightweight, stable, easy to transport and solved the preservation problem while delivering a cheesy flavor.

When the war ended, there were tons of leftover dehydrated cheese with no use for it. Enter Charles Elmer Doolin, the creator of Fritos. He knew how to create a successful snack food.

In 1948, he developed a cornmeal batter, extruded it, puffed it, fried it and dusted it with flavored cheese powder. This made Cheetos possible: an intensely flavored and intensely orange shelf-stable snack.

Fritos had limited Southeast distribution and Doolin merged with Herman W. Lay to form Frito-Lay Inc. This provided national distribution, creating a snack food giant of Fritos, Cheetos and Lay's potato chips. In 1965 they merged with PepsiCo, combining the top snack food manufacturer with the beverage giant for international distribution.

Potatoes go light

The U.S. military heavily relies on potatoes in the mess hall. But for the troops in the field, they are bulky, heavy and perishable.

It was a challenge to turn potatoes into something that could be stored for months, survive transportation and still taste fresh.

The Rogers Brothers Seed Co. created potato flour in 1926 with dehydrated potatoes. This was accelerated to a potato-based dough as a source of carbohydrates and calories. The dough was remarkably malleable to form chips, flakes and instant mashed potatoes.

At the time, potato chips were commercially produced locally, but breakage, shipping and shelf life were a problem. Greasy, broken and stale potato chips didn't sell well.

For most businesses and startups, R&D and market testing are giant costs. Military testing proves the product, and rapid rollout scales it.

Using the dehydration process patented by Mark Pringle in 1937, Procter & Gamble set out to solve the age-old problems of greasy, broken and stale chips.

P&G used the same wartime logic to strip out the water and rebuild it into something light, durable and compact. The company blended it with other starches and brilliantly engineered a uniform, saddle-shaped chip that could be nested and stacked, reducing size, bulk and breakage. This also solved the problem of wasted space in the bags.

The military accelerated a potato processing technology, and P&G figured out what to do with it. The battlefield solved the potato logistics problems for the troops, and P&G turned it into a business model.

Military R&D and government contracts also paved the way for energy bars, granola, TV dinner packaging, the McRib (from meat-restructuring research) and even SPAM.

For most businesses and startups, R&D and market testing are giant costs. Military testing proves the product, and rapid rollout scales it.

It is much easier and less expensive to build on what has been proven. When there is no longer a military need, the opportunity arises to utilize that which is done and commercialize what the military will not.

The innovation was the process; the invention was snack foods.

William Seidel is an entrepreneur, author, educator, innovator and court-approved expert witness on marketing innovation. In his career and as owner of America Invents, he has developed, licensed and marketed billions of dollars of products.

(707) 827-3580 | Info@AmericaInvents.com

TMI!

How to avoid sharing too much information about your invention on social media, by posting with purposes **BY ELIZABETH BREEDLOVE**

For many inventors, social media creates a frustrating contradiction.

On one hand, every marketing expert seems to agree that visibility matters. Customers want to know who they are buying from, potential licensing partners want evidence that an inventor is active and engaged, and investors often look beyond the product itself to evaluate the person behind it.

On the other hand, inventors are often working with ideas, designs and business strategies that require discretion. The pressure to "show more" can feel uncomfortable when revealing too much could jeopardize intellectual property or competitive advantages.

Some of the most effective content comes from sharing thoughtfully rather than sharing everything.

When inventors establish clear boundaries around what they will and will not discuss publicly, social media becomes far easier to manage—and often far more effective.

Understand the distinctions

People follow inventors because they are interested in creativity, problem solving, innovation and entrepreneurship. They want to learn something, gain inspiration or watch progress unfold, but they do not necessarily need access to confidential product specifications, private family details, manufacturing agreements or licensing negotiations.

When inventors understand this distinction, content creation becomes much simpler. Instead of asking, "What can I reveal?," a better question becomes, "What can I contribute?"

That mental shift changes the focus from disclosure to value. Rather than feeling pressure to expose sensitive information, inventors can concentrate on educating, encouraging, entertaining or documenting appropriate aspects of their journey.

Boundaries' major role

For inventors, maintaining boundaries serves several important purposes.

The most obvious is protecting intellectual property. Though patents, trademarks and other legal protections provide safeguards, publicly revealing details before the appropriate protections are in place can create unnecessary risks.

Beyond intellectual property concerns, inventors must consider business relationships.

Suppliers, manufacturers, licensing partners and retailers may share information that is not intended for public consumption. Discussing negotiations, costs, timelines or internal challenges can strain relationships and create complications with vendors and partners later.

Personal privacy matters as well. Many entrepreneurs begin posting with business goals in mind, only to discover that audiences often become curious about their personal lives. Although there is nothing wrong with sharing family milestones, hobbies or everyday life, the decisions about what to share should be intentional, rather than driven by perceived expectations.

Progress matters most

A common concern among inventors is that they have nothing to post because they can't reveal their invention. In reality, audiences are often more interested in the process than the product itself.

Most people understand the experience of working toward something important, even if they know nothing about the specific product being developed. People enjoy watching someone pursue a goal, overcome challenges, learn new skills and move closer to success.

The invention may be the destination, but the journey frequently provides the most engaging content.

For example, an inventor might discuss attending a trade show, researching a market, learning about packaging requirements, preparing for a patent filing, or meeting with industry professionals. None of these topics require you to reveal proprietary information, but they still provide insight into the entrepreneurial experience.

By sharing lessons instead of secrets, progress instead of proprietary details and expertise instead of sensitive information, inventors can remain active and relevant while protecting what matters most.

The value of educating

One of the safest and most effective content categories for inventors is education.

Inventors spend countless hours learning about manufacturing, product development, marketing, intellectual property, licensing, crowdfunding, retail distribution and entrepreneurship. Along the way, they accumulate valuable knowledge that can help others avoid common mistakes.

Sharing lessons learned allows inventors to demonstrate expertise without discussing confidential details. A post explaining how to prepare for a trade show, organize prototype feedback or evaluate manufacturing quotes can be useful to followers while positioning the inventor as knowledgeable and credible.

Perhaps most important, educational content builds trust. Audiences begin to see the inventor as a resource rather than simply someone trying to sell a product.

Leave a little mystery

Effective behind-the-scenes content can (and should) be carefully curated. In many cases, a thoughtfully framed update can generate more engagement than a detailed product disclosure, because it invites curiosity while preserving mystery.

Inventors can provide glimpses into their work without exposing sensitive information. For example, a photo from a workshop, a snapshot of a notebook with confidential details obscured, a discussion about a productive meeting or a reflection on a recent milestone can all provide context without creating risk.

Followers enjoy seeing evidence that progress is occurring. They like knowing that an inventor is actively working, learning, testing and improving. These updates help maintain interest during long development cycles, which are often much longer than the average person may realize.

Visibility sans vulnerability

Many successful inventors discover that social media becomes far less intimidating once they stop viewing it as a place to reveal everything and instead begin treating it as a communication tool designed to build relationships, establish credibility and maintain visibility.

When content boundaries are clearly defined, planning becomes easier. Inventors can curate a feed consisting of educational insights, entrepreneurial lessons, progress updates, industry observations, event participation and professional reflections. This creates variety without requiring constant disclosure or endless brainstorming.

Inventors who post with purpose understand that boundaries around what content is shared allow meaningful communication to happen safely.

By sharing lessons instead of secrets, progress instead of proprietary details and expertise instead of sensitive information, they can remain active and relevant while protecting what matters most.

The result is a social media presence that feels authentic, professional and manageable.

In an online environment that often rewards excess, thoughtful restraint can be surprisingly powerful. The inventors who maintain that balance are often the ones who build lasting trust, preserve valuable assets and create an audience that remains interested long before the final product ever reaches the market.

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.

IDiyas®

INVENTOR OF THE MONTH

Bengt Lindoff, chief systems architect, BeammWave AB-Lund, Sweden

Bengt Lindoff is widely recognized as one of Sweden's most prolific inventors and ranks among the most prolific inventors in the world.

In a career spanning more than three decades, he has been named inventor on approximately 2,000 granted patents worldwide and in early 2026 passed a milestone he had long coveted: 500 granted U.S. patents.

That portfolio, rooted largely in wireless communications, reflects a sustained, almost daily practice of invention that he describes as a discipline rather than a gift.

Lindoff earned his MSc in Electrical Engineering in 1992 and his PhD in Mathematical Statistics in 1997—both from Lund University, Sweden, where he also holds the title of docent. That dual foundation of rigorous mathematics paired with hands-on engineering has shaped his approach. He treats invention as a form of applied probability: pattern recognition trained over years until it becomes second nature.

For more than 25 years, he has worked at the frontier of wireless communication research, including extended tenures at Ericsson (where he was Inventor of the Year in 2003) and Huawei. Today he serves as chief systems architect at BeammWave AB, a Lund-based, deep-tech company listed on Nasdaq First North Growth Market (BEAMMW B), Sweden.

BeammWave is developing a distinctive digital beamforming architecture for millimeter-wave (mmWave) 5G and 6G, combining antenna and radio on a compact chip and together with a digital advanced beamforming IP to deliver higher performance at lower cost—while giving device makers new freedom in antenna placement.

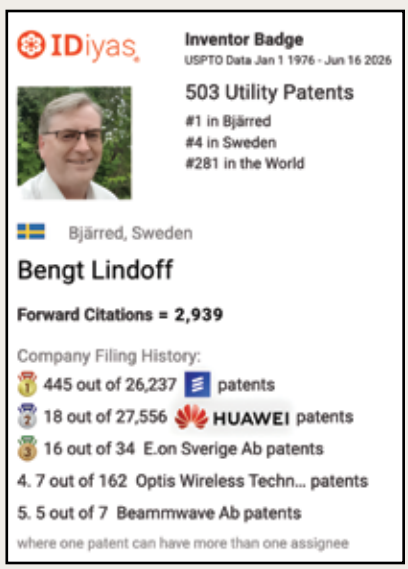
Many of the company's foundational patents bear Lindoff's name. He also runs his own consultancy, Bengt Lindoff Innovation AB, advising on innovation and intellectual property strategy.

As an IEEE senior member, Lindoff has authored or co-authored more than 30 journal and conference papers, bridging the worlds of industrial invention and academic research. He is a sought-after speaker on how innovation actually happens, returning often to a simple message: Creativity can be trained.

"Invent everywhere," he tells audiences—not only at the desk but in everyday life, the way one trains the body to stay in shape. Out-of-the-box thinking is a muscle, and the fun is in the exercise.

What distinguishes Bengt is not only the volume of his output but his instinct for which ideas are worth pursuing and which are not. He pairs an almost autonomous sense for patentable concepts with hard-won judgment about where genuine novelty lies.

From the mathematics of next-generation mobile networks to the strategy of building and defending a portfolio, he remains, after thousands of inventions, as curious as ever about what comes next.

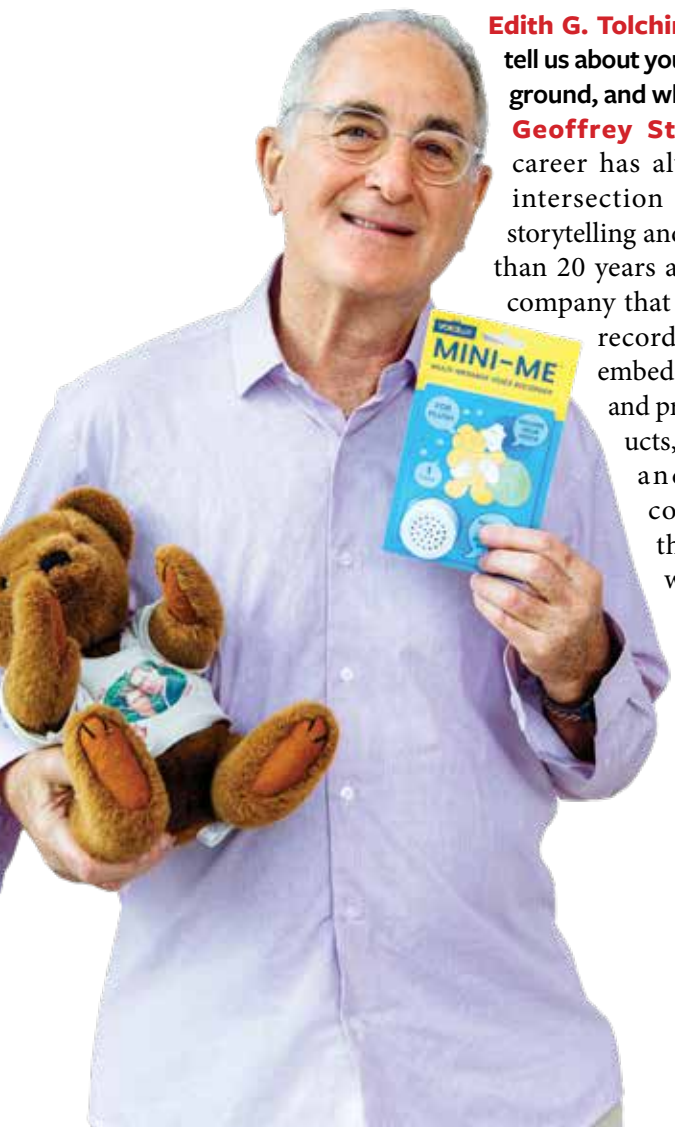


Hearing the Gift of Forever

Audio attachments containing the giver's voice add emotional impact to keepsakes **BY EDITH G. TOLCHIN**

VoiceGift® is, literally, a gift of voice created by Geoffrey Stern of Westport, Connecticut.

Want to send audio birthday greetings to an old friend on the other side of the country, or record a special message for your grandchild? VoiceGift fits the bill.



Edith G. Tolchin (EGT): Please tell us about yourself, your background, and where you reside.

Geoffrey Stern (GS): My career has always sat at the intersection of technology, storytelling and memory. More than 20 years ago, I founded a company that develops voice-recording technology embedded in consumer and promotional products, enabling people and brands to communicate in the most natural way possible: self-playing voice.

Sound—and voice in particular—is one of the strongest triggers for memory and emotion. I've always believed products could help people express what they feel "in the moment."

Although I do not have a formal technical background, I learned early how to work closely with engineers and translate ideas into products, resulting in multiple patents combining voice with gifting.

Long before voice texting became common, I was fascinated by the emotional impact of recorded voices. Hearing the voice of a parent, grandparent or child—even decades later—can instantly bring back a moment.

As I often say, voice is the most emotional medium we have. A photograph captures a moment, but a voice brings it to life.

Recently we've seen a renaissance in audio, alongside fatigue with constant screens. I host a weekly Bible podcast and have worked on digitizing family photographs and recordings, including an oral history of my 102-year-old grandmother. These personal experiences remind me that voices are among the most meaningful things we leave behind.

"Voice is the most emotional medium we have. A photograph captures a moment, but a voice brings it to life."—GEOFFREY STERN

EGT: When did you invent VoiceGift?

GS: The roots of VoiceGift go back to the late 1990s and my connection with the Build-A-Bear Workshop®,which began with a bit of serendipity. Beanie Babies were wildly popular, and I experimented with embedding a small voice recorder inside a teddy bear. My goal was to engage multiple senses: the sound of a familiar voice, the feel of a plush toy and even a small, printed T-shirt.

After sharing a sample, I received a call from Maxine Clark, founder of Build-A-Bear in 1997, then operating a single pilot store. She asked if she could purchase just the recorder. I said yes—and the rest is history.

Since then, I've produced more than 60 million sound modules for Build-A-Bear. Those devices have delivered songs, birthday wishes, proposals and deeply personal messages—including, at times, the last voice of a loved one.

What struck me was not just how often people used the technology but how deeply they valued it. These weren't novelty features; they became emotional anchors for important moments in people's lives.

That experience taught me the extraordinary power of voice to connect people—even when they are far apart.

Over time, I saw how people used these recordings—birthday greetings, long-distance messages, proposals and sometimes preserved voices from old answering machines. That led me to a broader question: What if voice could be attached to anything meaningful: a photograph, a book, or a gift?

There's a saying that "It's not the value of the gift but the thought behind it that matters." I began asking: What if that thought could be expressed in your own voice? That idea stayed with me.

The thought behind a gift is often invisible—but voice makes it tangible, personal and lasting. It transforms something fleeting into something you can revisit—again and again—long after the moment has passed.

The turning point came during COVID, when families were separated and many people simply wanted to hear a familiar voice. That's when I partnered with my daughter to launch VoiceGift as a consumer brand.

Above: Voice-Over® adds a recorded message to a framed photo or gift.

EGT: Tell us about the line of VoiceGift products.

GS: VoiceGift grew from a simple idea: If hearing a familiar voice can transform a teddy bear into a keepsake, why not allow people to attach a voice message to almost anything?

The simplest product is the VoiceGift Tag, which records up to 60 seconds of audio. Instead of reading a card, the recipient hears the giver's voice.

Your voice becomes the gift—and long after everything else is gone, it remains.

Below: Each time the gold button on the Memory Box is pressed, it plays a special message, voice of support, a first word or a parting message.

PHOTOS COURTESY OF VOICEGIFT

Above: The VoiceGift Tag allows you to add a personal message, song or sound to anything.

Below: VoiceGift PLAY is a 10-hour capacity, screen-free voice recorder, playback tool and portable electronic story player.

In many ways, the tag represents the purest form of what we do. It captures not just words but tone, humor, and everything that makes communication human.

My daughter even has my 4-year-old granddaughter record a tag on the way to birthday parties. Inevitably, she receives a call from another parent asking, "Where can I get one?"

We see this again and again. People don't talk about the object itself; they talk about the experience of hearing a voice they recognize. It shifts the focus from the gift to the relationship behind it.

Another product is VoiceGift PLAY®, inspired by museum audio guides. Users assign numbers to objects—photo albums, recipes, heirlooms—and record voice notes that can be played back on demand. It becomes a kind of personal audio guide to your own life, where every object has a story told in your own voice.

We also created PLAY for Kids, designed for storytelling. Parents and grandparents can record stories or songs children can replay anytime—even when you're not there.

Voice-Over® adds a recorded message to a framed photo or gift, and when in light sensitive mode can play automatically when the box or tin is opened, creating a delightful surprise.

We also offer recordable ring boxes, memory boxes and Mini-Me®—our version of the iconic recorder we sell through Build-A-Bear, for plush toys.

The most common feedback we hear is: "I wish I had this 10 years ago." And when someone receives a VoiceGift, they often say, "It was just like you were here."

EGT: How do they work? Are batteries required?
GS: VoiceGift products use compact digital recording modules designed for simplicity. Users press a button, record a message and play it back instantly. Some products hold a single message, while others store hundreds of recordings.

Power comes from long-lasting batteries, either replaceable or rechargeable—and recordings remain preserved even if power is lost. The goal is simple: no apps, no screens, no subscriptions—just voice.

EGT: Where are you manufacturing, and have you had any logistical problems?
GS: Our products are manufactured in Asia with partners we've worked with for decades. Like most electronics companies, we faced challenges during COVID with supply chains and shipping, and now tariffs, reinforcing the importance of flexibility and strong relationships.

EGT: Have you had any issues in patenting VoiceGift?
GS: We have registered trademarks for VoiceGift, Mini-Me and Voice-Over, as well as "A new way to gift" and "The way life sounds."

We also have U.S. patents on a system where online and in-store shoppers can seamlessly add a VoiceGift Tag to any gift. Patenting helps define what's unique about your idea but should not define the range of products and services you offer.

EGT: Any tips for novice inventors?
GS: Start simple, test your idea quickly, listen to how people actually use your product and be open to opportunity. Persistence is key.

Details: voice.gift

Edith G. Tolchin has written for *Inventors Digest* since 2000 (edietolchin.com/portfolio). She is the author of several books, including "Secrets of Successful Women Inventors" (https://a.co/d/fAGlvZJ) and "Secrets of Successful Inventing" (https://a.co/d/8dafJd6).

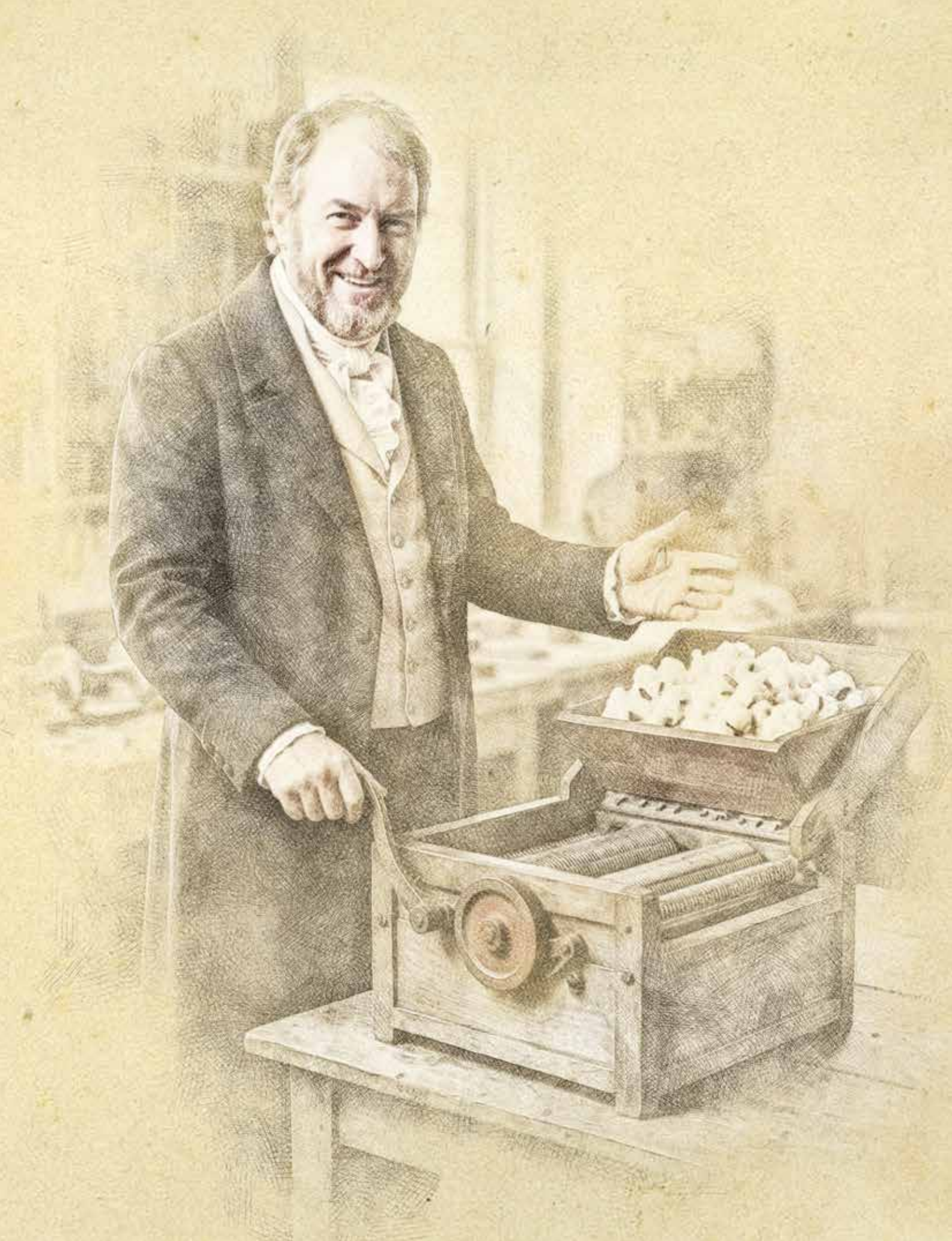
1-2-3 Common Invention Questions Answered

BY BEN GREENBERG, FOUNDER OF INVENTIONS UNLIMITED
InventionUnlimited.com • Ben@InventionUnlimited.com

1 What's the most significant mistake inventors make when choosing a manufacturer?
They choose the cheapest quote instead of the best partner. Low prices mean nothing if quality is inconsistent, communication is poor or timelines slip. Manufacturing is a relationship, not a transaction. A slightly higher cost from a reliable factory is often far cheaper than missed launches, defective units or damaged customer trust.

2 How do inventors know when they're ready for mass production?
When their design stops changing, if you're still tweaking features or fixing usability issues, you're not ready. Mass production multiplies every flaw. Before scaling, your prototype should be stable, tested and manufacturable. If it only works because you babysit it, it will fail on a production line.

3 Should inventors manufacture in the United States, or overseas?
It depends on volume, complexity and risk tolerance. U.S. manufacturing offers speed and communication, but higher costs. Overseas manufacturing offers scale and price advantages but requires tighter oversight. Early runs often benefit from domestic production. Once demand is proven, overseas manufacturing becomes more viable for higher margins.



The Spirit of '76

As America celebrates a milestone birthday, its hunger to invent withstands all changes and challenges

BY REID CREAGER

They say no democracy in world history has lasted more than 250 years. They say possible flaws in the United States Constitution could endanger the country's democracy.

Whether those theys warrant a yea or a nay is a subject for another magazine. But Article 1, Section 8, Clause 8 of the Constitution is not one of those perceived flaws.

The historic declaration featured on this *Inventors Digest* cover is as American as apple pie for 5 bucks if you download the app. It was prescient; its footprint remains omnipresent. And it should be an important component of America250 celebrations as we honor the country's unparalleled penchant for ideation, while developing and refining products and processes that improve our way of life.

This august July occasion is a time to reflect on inventing's impact, from the era of our Founding Fathers to today's rapidly escalating technological achievements that add to our convenience (and confusion).

All of it reflects an innovative spirit that remains timeless now and likely forever.

Underrated Whitney

Though much has changed in inventing during the past 250 years, the basic concept of solving a problem or meeting a need before anyone else remains the same.

America's first golden era of inventing featured innovation pioneers tasked with building the infrastructure and foundation of a new country. Remember, America was born 100 years before the first automobile or telephone, and 150 years before the U.S. highway system or television.

For all the deserved recognition historically lavished on Founding Fathers and inventors Thomas Jefferson and Benjamin Franklin, it can be argued that Eli Whitney had the most innovation impact.

His cotton gin in the early 1790s revolutionized the cotton industry—still powerful today—by efficiently removing seeds from cotton bolls. (Many historians say Catharine Littlefield Greene—who invited Whitney to visit her plantation to show the difficulty of cleaning short-staple cotton by hand—contributed important ideas to the cotton gin's design.)

Eli Whitney's cotton gin, patented in 1794, is one of the most impactful inventions of all time. It transformed cotton into a highly profitable crop, making it America's leading export by the mid-1800s; sparked the growth of the textile industry in the United States and Europe; was a key component in establishing mechanical production; and helped cotton become a cornerstone of the American economy.

The cotton gin's reverberations were numerous and long-lasting.

The resultant increased supply of raw cotton spawned the expansion of textile mills in the North and the United Kingdom, which connected U.S. agriculture to global manufacturing; it also was one of the earliest American successes of the First Industrial Revolution, as the United States was transforming from manual labor, farm work and handicrafts to mechanized production. One unintended consequence was that the invention's role in boosting cotton production intensified the demand for slave labor, a primary issue leading to the Civil War more than a half-century later.

Later in the 1790s, Whitney's contract to make 10,000 muskets introduced the concept of standardized, interchangeable parts—creating mass production that remains the bedrock of U.S. manufacturing.

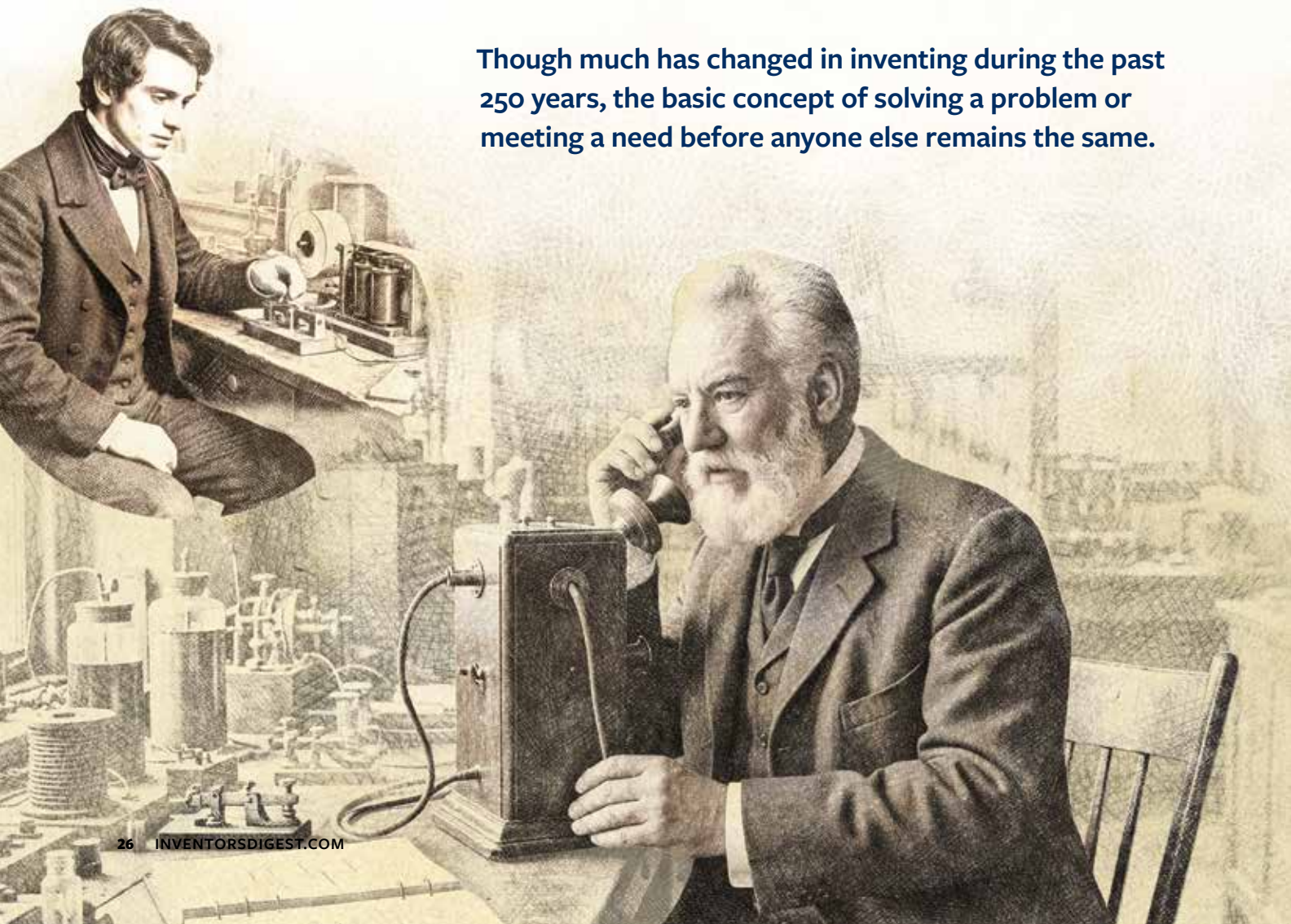
No time to wait

By then, America's patent system was in full gear. President George Washington signed the Patent Act of 1790 and didn't waste any time: This happened 49 days *before* Rhode Island became the last of the original 13 states to ratify the U.S. Constitution on May 29, making it the official governing document of the United States.

Maybe Rhode Island leaders weren't even aware that a Patent Act had been signed. The snail's pace of communication in America got two jump-starts in the 1800s with the invention of the telegraph by Samuel Morse in 1835 and naturalized U.S. citizen Alexander Graham Bell patenting the telephone in 1876.

Bell's U.S. Patent No. 174,465, for an "apparatus for transmitting vocal or other sounds telegraphically," is the reason you may be reading this story on your cellphone (invented in

Though much has changed in inventing during the past 250 years, the basic concept of solving a problem or meeting a need before anyone else remains the same.



Below: Samuel Morse's 1835 invention of the telegraph was a transformative U.S. communications upgrade. Below right: Alexander Graham Bell's telephone (patented in 1876) was the genesis of the ever-expanding cellphone revolution.

1973). The latest available tally for the number of active cellphone patents in America, in 2012—14 years ago? Isn't this supposed to be the information age?—was 250,000.

The kaleidoscopic range of U.S. innovation in the first half of the 1800s is on display via Christian Schussele's 1862 painting, "Men of Progress," at the the Smithsonian's National Portrait Gallery in Washington, D.C. (or online at The Smithsonian's National Portrait Gallery: npg.si.edu/learn/classroom-resource/men-progress).

Schussele, a France-born American, depicted 19 famed U.S. inventors and creative thinkers. Among them: the aforementioned Morse, who also contributed the encoding telecommunications system named after him; Peter Cooper, builder of the first American steam locomotive; Cyrus McCormick, inventor and manufacturer of the reaping machine and other agricultural equipment; and Charles Goodyear, who created the vulcanization process that made rubber useful.

The Second Industrial Revolution (1870–1914) brought the iconic Edison incandescent light bulb in 1879 and automaker Henry Ford's assembly line (about 1913)—the latter changing how Americans work and facilitating mass production of goods. The transportation of people and goods soared to unforeseen heights following the Wright brothers' first-ever controlled, sustained, powered flight of a heavier-than-air aircraft on December 17, 1903.

The invention of the electric motor enabled the use of electricity to power machinery, furthering America's industrial efficacy and might. New refrigeration technology revolutionized food preservation and storage. (The subject of who invented radio remains hotly debated, although naturalized American Nikola Tesla was granted patents for a complete radio communications system in 1900 and vindicated by a 1943 U.S. Supreme Court ruling several months after his death.)

A shift in control

As the early 1900s moved toward midcentury, America's status as a world inventing powerhouse was big business that increasingly became the domain of—big business.

While generally positive for corporate bottom lines and the country's economic health, this shift often left independent inventors on the outside looking in when it came to selling their inventions or defending them in court. Such ramifications and associated challenges, which linger to this day, are the subject of much reporting and comment in this magazine.

Jerome Lemelson, iconic 20th-century inventor and the subject of an informative and poignant *Inventors Digest* cover feature in October 2025, struggled much of his career because of this. Rob Lemelson wrote that his father was born a little too late.

THE FIRST

The first U.S. patent was issued on July 31, 1790 to Samuel Hopkins for an improvement in the making of potash and pearl ash. It was signed by President George Washington, Attorney General Edmund Randolph and Secretary of State Thomas Jefferson. Potash is a mineral that contains potassium in water-soluble form and is used as a fertilizer for crops; pearl ash is a refined form of potassium carbonate.

THE WORST

The Pet Rock began as a joke idea at a California bar during the era of disco, leisure suits and streaking. Why not? In a half-year span beginning in August 1975, Gary Dahl sold 1.5 million of these at $3.95 each and made about $6 million. His gag gift was proof that sometimes, marketing is even more important than the product.

"My father grew up during the rise of corporate consolidation of the innovation process—when large corporations began to play a dominant role in inventing and patenting products and technology.

"Corporations had what Jerry called the 'Not-Invented-Here Syndrome.' He observed that they were rarely open to inventions and product ideas from outside their own organizations, even if they were directly relevant to their existing or planned product lines and could transform the bottom line.

"Corporate titans like Henry Ford were infamous for ordering their attorneys to squash independent inventors and their intellectual property claims like bugs."

Not just capitalism

Big business's voracious appetite for much (and too much) of the inventing pie is often explained as a natural, though unseemly, byproduct of America's capitalist system. Inventing and capitalism are often viewed as synonymous.

Inventing in America is a driver of many things and the result of many things. It fuels our capitalist system by rewarding creativity and entrepreneurship in tangible ways.

But if you think invention = capitalism, go back to the whiteboard with an eraser. This misses the overall equation in terms of innovation's expansive reach. And capitalism is not the only source of innovation.

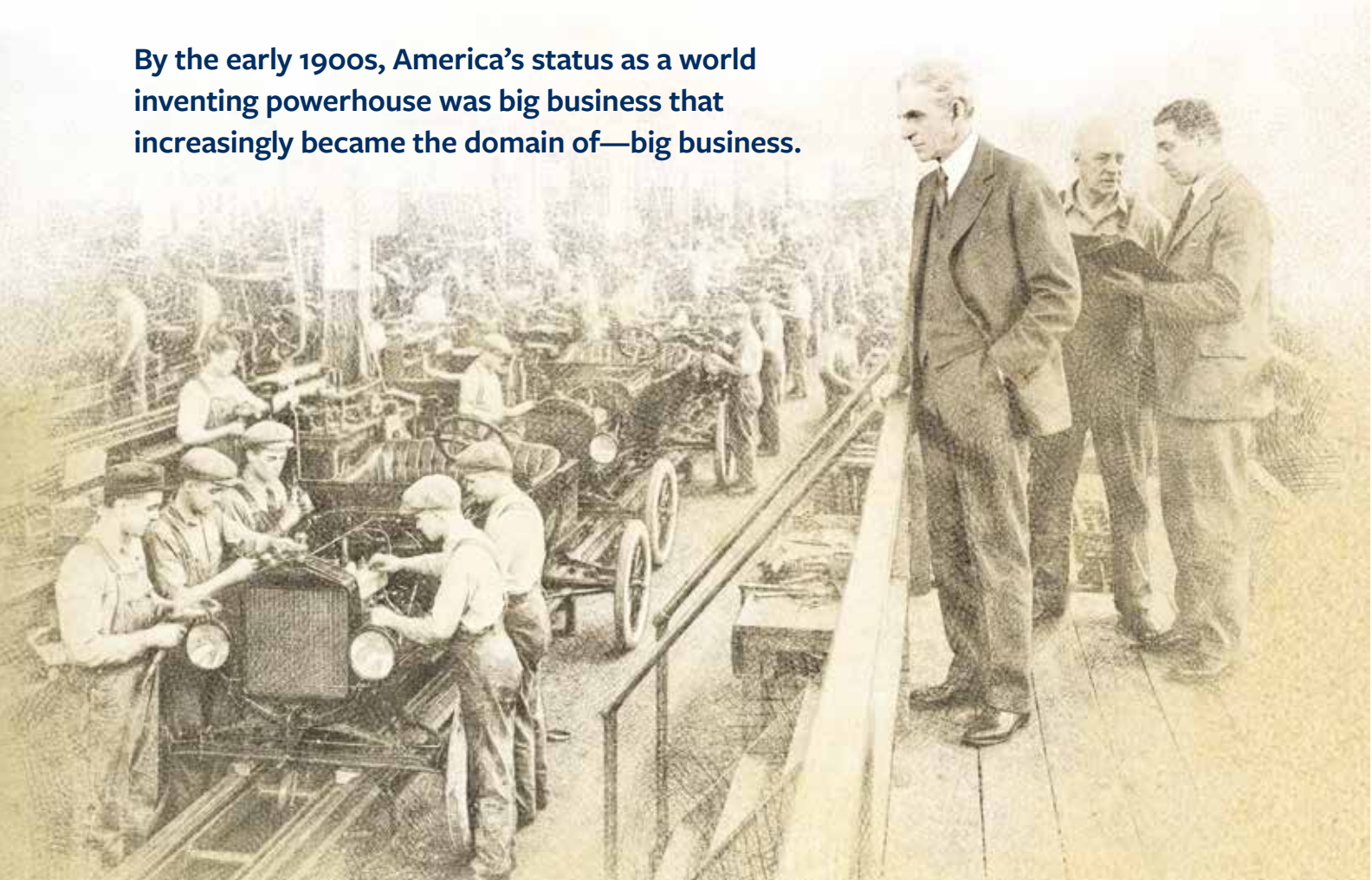
Invention stems from our human need—absent any economic system—to make the world better. This long predates even the faintest notion of capitalism.

Inventing has existed and thrived under communism, socialism, even feudalism.

During the Golden Age (8th–14th centuries), Baghdad and scholars conceived breakthroughs in mathematics (including algebra), medicine and engineering. They founded the first modern hospitals and universities. They invented early forms of coffee and the camera.

Even today's most iconic products are not solely attributable to staggeringly wealthy big businesses. The smartphone, for example,

By the early 1900s, America's status as a world inventing powerhouse was big business that increasingly became the domain of—big business.



Automaker Henry Ford revolutionized manufacturing in 1913 with the moving assembly line.

relies on research paid for by governments or universities.

Capitalism can also distort what our inventive priorities should be. Too often, time, money and precious resources are disproportionately devoted to what makes money at the expense of what has greater health and social benefits—the latter an early tentpole of ideas and inventing.

IP holds the keys

American inventing ingenuity remains indigenous to our way of life, responsible for everyday staples of the past 100 years from television to the personal computer to the aforementioned cellphone. (The true inventor of the internet may be impossible to determine, having evolved over time, but is said to have originated in the late 1960s as a U.S. military defense system.)

Why we invent hasn't changed, but how we protect our inventions and our ability to do so are at the mercy of newer laws regarding intellectual property protection and changes in how they are implemented.

The America Invents Act of 2011, which changed America from a first-to-invent country to first-to-file, was intended to align the United States with international standards. But its introduction of post-grant review and *inter partes* review to challenge patents more efficiently has been widely criticized as detrimental to independent inventors in favor of deep-pocketed corporations.

No patent-challenge process or entity has received as much public ire as the AIA's Patent Trial and Appeal Board, established to "improve patent quality, reduce litigation costs, and provide a faster, more accessible alternative to federal court for challenging patent validity." Its nickname as the patent "death squad" hovers despite recent successes by United States Patent and Trademark Office leadership to help balance the ledger.

These evolving guidelines and standards for protecting patents of independent inventors will be instrumental in determining the future of inventing and its role in our economy and our lives—whether America remains a democracy or becomes something else.

CELEBRATE!

We asked inventors and friends of *Inventors Digest*: What aspect of inventing is most worth celebrating?

"The best thing about inventing is that it empowers ordinary people to create extraordinary change. America's history has been shaped by inventors who dared to imagine something better, and strong intellectual property rights have given them the confidence and incentive to invest in bringing those ideas to life. Inventing is more than just creating things; it is about solving problems, expanding opportunity and leaving the world better than we found it. That spirit of innovation and ingenuity is one of America's greatest strengths and something worth celebrating as we mark America250." *—Louis Foreman, publisher, Inventors Digest*

"For me, the aspect of inventing most worth celebrating is that moment of validation when you finally receive your official patent. To have the patent office legally confirm that your design is entirely unique and worthy of protection is an incredibly powerful feeling. It's the exact moment your vision goes from a passion project to a proven reality, making every single hurdle and late night completely worth it."
—Dr. Joya Lyons, founder/CEO, Enchanted Traditions

"The most celebrated aspect of inventing, to me, is from seeing the idea in my head to having an actual product I can hold. It feels so incredible to think of something and make it come to life."
—Cara Brzezicki, owner, Jazzie Beans LLC

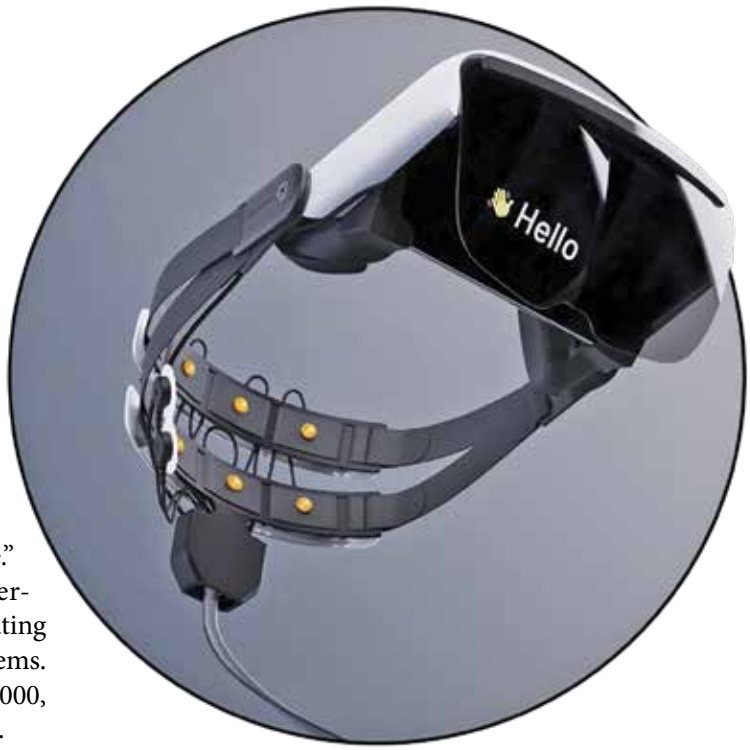
"What I celebrate most about inventing is the freedom to create. The ability to turn an idea into something real reflects the power of human imagination and liberty. Because I am free to dream, experiment and innovate, I can create solutions that benefit not just me but society as a whole. Through invention, we can solve challenges, improve lives, and inspire others to imagine what is possible."
—Shawn Moye, founder, SmartSports Trainer

"The best thing to celebrate about inventing is the belief that tomorrow can be better than today. Throughout American history, inventors have looked at everyday challenges and refused to accept them as permanent. As America celebrates its 250th anniversary, we should celebrate not only the inventions that have shaped our nation but also the inventors who continue to push boundaries, solve meaningful problems, and inspire the next generation of innovators."
—Ben Greenberg, founder, Inventions Unlimited

BRIGHT IDEAS

Cognixion Axon-R

HEADSET THAT RETURNS VOICE
TO THE NEUROLOGIALLY IMPAIRED
axon-r.cognixion.com



"This noninvasive headset gives voice to people who have lost theirs to traumatic brain injury, stroke, ALS, or other neurological conditions," said Time magazine, honoring the device as one of the best inventions of 2025.

"Axon-R measures eye, head, and brain activity to let individuals select letters, words, or commands, and also builds a personalized assistive AI model that suggests response words and phrases to users. The headset's speaker generates speech in their voice."

Axon-R, which leading brain-computer interface company Blackrock Neurotech began distributing recently, is used by over a dozen major health systems. A standard model is commercially available for $25,000, with a $1,000 deposit through the company website.

L'Oréal Professionnel AirLight Pro

PREMIUM-STYLE HAIR DRYER
USING INFRARED LIGHT
us.lorealprofessionnel.com

L'Oréal's first-ever professional hair dryer was designed in partnership with the startup Zuvi, which released a first-of-its-kind infrared hair dryer a few years ago.

The L'Oréal model, with more than 150 patents, uses both infrared light and conventional convection. It features a 17-blade motor surrounded by tungsten-halogen bulbs that produce infrared light to dry hair faster than standard hair dryers and, purportedly, smoother hair than convection-only dryers because infrared light efficiently dries hair surfaces while leaving internal moisture intact.

Amazon customers give the product mixed reviews for value for the money—a retail price of $475.

KK08

MINIATURE, MULTI-USE CARABINER

keyunity.net

Weighing just 16 grams and 2.56 inches long when closed, the KK08 carabiner from KeyUnity is a convenient tool for hikers or in general.

The tool uses a single-piece titanium handle, which houses a 7Cr17Mov steel blade if you need a pocket knife. The carabiner arm springs and bends without using a spring. It can lift keys, secure your water bottle to your backpack, fasten your backpack to a railing/fence. Other uses include opening envelopes and packages, sharpening pencils, and cutting branches, fruits or vegetables.

A frame lock is built into the titanium handle, allowing the blade to click into place while open and holding its position even while working with tough materials. The KK08 retails for $22.99.

"Moses was an amazing technological innovator. He was the first to download data from the cloud to tablets."—UNKNOWN

Vitesy Fruit Bowl

FRESHNESS SYSTEM
FOR EXTENDING FRUIT LIFE

vitesy.com

Vitesy Fruit Bowl claims to be the world's first freshness system for your countertop, a new product category designed to extend fruit life without refrigeration.

The product's catalytic technology is said to reduce ripening agents, without electricity or effort, by working against ethylene gas. Optimized airflow in the bowl helps maintain better conditions for fruit storage by reducing excess humidity and the risk of condensation: slowing mold, eliminating odors, keeping fruit at peak ripeness for longer.

The filter can provide optimal performance for up to 5 years, with replacements on the company website. Vitesy Fruit Bowl will retail for about $79; delivery for crowdfunding backers is planned for December.

Digital Resurrection: No Simple Legal Script

AI-enabled re-creations of deceased actors in movies are one of intellectual property's unsettled boundaries **BY ANDREA L. ARNDT**

In recent years, advances in artificial intelligence and visual effects have made it possible to convincingly re-create the likeness, voice and even mannerisms of actors who are no longer living. From brief appearances to fully realized performances, "digital resurrection" has moved from novelty to viable production tool.

For studios, the appeal is clear: Beloved performers can return to the screen, extending franchises and drawing on audience nostalgia. However, when an actor's estate has not expressly authorized such use, are studios operating within the law—or exploiting gaps that the law has yet to close?

As of now, the answer is neither straightforward nor uniform.

A patchwork of rights

Unlike copyright, which protects original works of authorship, the use of a person's likeness is governed by the right of publicity. This is a state-based doctrine that protects against unauthorized commercial exploitation of an individual's name, image or persona. In jurisdictions such as California, this right can extend beyond death, allowing estates to control and license a deceased actor's likeness.

However, not all states recognize postmortem publicity rights, and those that do vary in scope and duration. Some states provide decades of protection; others offer limited or no postmortem rights.

This inconsistency creates a patchwork in which legality of a digital performance may depend on where a claim is brought.

For studios, this fragmentation creates both opportunity and uncertainty.

Contractual silence's gap

Compounding the issue is the fact that many actors' contracts predate the emergence of AI-driven performance replication. Historically, agreements addressed the use of recorded performances, residuals and limited forms of reuse but rarely contemplated the creation of entirely new performances synthesized from existing material.

As a result, estates may find themselves without explicit contractual authority to approve or prohibit such uses. Studios, in turn, may argue

that existing rights, such as ownership of underlying footage or broad licensing provisions, permit certain forms of digital manipulation. Whether those arguments succeed depends on contract interpretation, which can vary widely based on the language at issue and the governing law.

This contractual silence has become a focal point of industry debate.

From one perspective, it reflects a gap that studios may exploit; from another, it underscores the need for clearer drafting in future agreements rather than retroactive restrictions on existing rights.

Expressive or exploitative?

The notion that studios are "getting away with" intellectual property violations assumes that such uses clearly fall within established prohibitions. In reality, the legal framework is still evolving, and many uses occupy a gray area rather than a zone of clear infringement.

Where an estate holds enforceable publicity rights and has not consented, unauthorized use of a deceased actor's likeness could give rise to liability. Courts have, in various contexts, recognized that digital replicas can implicate the same interests as traditional likeness rights. However, studios may rely on alternative legal theories, including First Amendment defenses, where no such rights exist or where they are ambiguous.

Expressive works such as films often receive heightened protection under free speech principles. Courts have sometimes applied balancing tests to determine whether a use is sufficiently transformative to warrant protection, even when it incorporates elements of a person's identity.

A digitally recreated performance in a narrative film may, under certain circumstances, be characterized as part of an expressive work rather than a purely commercial exploitation.

This tension between publicity rights and free expression further complicates the analysis. What one party views as unauthorized appropriation, another may frame as protected artistic expression.

Not all states recognize postmortem publicity rights, and many actors' contracts predate AI-driven performance replication.

Ethical considerations

Even when legal risk is limited, the use of deceased actors raises ethical concerns. Audiences may question whether performances align with the actor's wishes, while industry professionals are concerned about the broader implications for living performers.

Labor organizations in the film and television industry have addressed the use of digital replicas, including provisions aimed at ensuring consent and compensation for actors whose likenesses are reproduced using AI. Although these agreements primarily protect living performers, they signal a growing recognition that existing frameworks may be inadequate to address emerging technologies.

Legal clarity needed

Given the current landscape, calls for legislative action are gaining traction.

One proposal is the creation of a federal right of publicity to establish uniform standards, including clear postmortem protections. Such a statute could reduce jurisdictional inconsistencies and provide greater predictability for both estates and studios.

Another potential avenue is the development of statutory provisions specifically addressing digital replicas. These could define the circumstances under which AI-generated performances are permissible, establish consent requirements and clarify the relationship between contractual rights and postmortem interests.

Critics of new legislation caution that overly rigid rules could stifle creative expression.

Film has long relied on techniques such as archival footage, impersonation and visual

effects to depict real individuals. Drawing line between permissible representation and impermissible replication may prove challenging, particularly as technology continues to evolve.

A more incremental approach might focus on enhancing disclosure and consent mechanisms, rather than imposing categorical prohibitions. This model would prioritize consumer awareness while preserving creative flexibility.

An evolving balance

The use of AI to re-create deceased actors sits at the intersection of intellectual property, contract law and emerging technology. It highlights gaps in current frameworks while reflecting competing interests: estates' economic rights, filmmakers' creative freedom and audience expectations.

At present, studios are not uniformly "getting away with" violations, nor are they operating within a fully settled legal regime. Instead, they are navigating a landscape characterized by ambiguity, where risk is managed as much through negotiation and litigation.

As digital resurrection becomes more commonplace, the law will likely continue to evolve in response. Whether that evolution takes the form of new legislation, judicial interpretation or industry standards remains to be seen.

What is clear is that the question is no longer hypothetical. The technology exists, the incentives are strong—and the law is still catching up.

Andrea L. Arndt is a member of the Intellectual Property Practice Group at Dickinson Wright in Austin, Texas. She is a nationally recognized intellectual property attorney with extensive experience advising startups, Fortune 100 companies and market leaders on their intellectual property portfolios globally. Contact 737-484-5536 or AArndt@dickinsonwright.com.

HE WROTE THE BOOK ON IT

In the Preface of his book, Detroiter Peter D. Keefe recalls cruising 8 Mile Road in his Mustang in 1968 when he heard a commercial about Bell & Howell's new auto-reversing tape recorder—something he had already invented in crude fashion. "I almost wrecked the car!" he wrote.

"This is NOT going to happen to you" with the correct intellectual property guidance, he promises. "The Inventor Handbook" is clearly a step in the right direction.

Written in step-by-step fashion—progressing from inventing to patenting to marketing—and crammed with photocopies of USPTO forms and diagrams to help guide readers through the inventing process, the book is a conversational aid that provides the inside scoop from a senior patent attorney on inventing and how to protect your work. Keefe's credentials include being the inventor of a superconductive heat engine (U.S. Patent No. 4,638,194), and creator and past president of the Inventors' Association of Metropolitan Detroit.

More than a guide, "The Inventor Handbook" provides much anecdotal reassurance and caution to personalize the process. Keefe even provides online support at PatentApplication.com.

One of the book's five-star reviews on Amazon says: "Peter Keefe has written a truly engaging and useful text (now updated to a 2nd edition) that makes you feel like you're having a chat with your best friend: a patent attorney. With 40 years of experience in patent law and as an inventor himself, Keefe has plenty of personal experience and practical advice to share."

If you can get past the cluttered book cover with the done-to-death light bulb art, you'll appreciate Keefe's depth of expertise and his passion to help others with this valuable resource for inventors at any level. —*Reid Creager*

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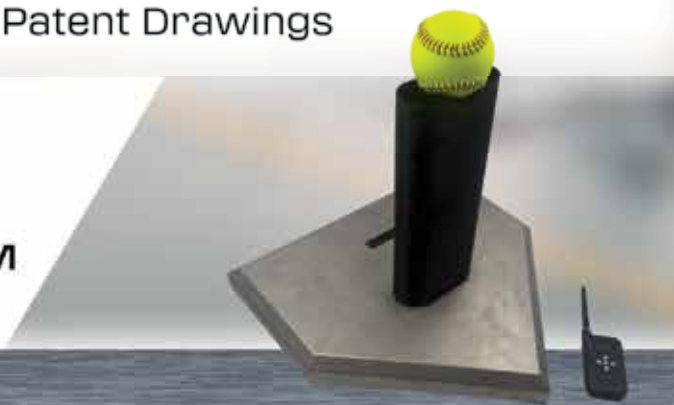

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How to Monetize Patents

Owners must do the unglamorous work of collecting data and understanding what buyers want **BY GENE QUINN**

Managing patent portfolios requires investment. There are significant costs associated with building and maintaining patent portfolios, but too often only a fraction of their potential business impact is realized.

The strength of any particular patent, family or portfolio is not always tied to overall strength. Frequently, the problem is that the organization does not really know what it owns, why it owns what it owns, where patents fit from a strategic perspective, and whether the assets can be credibly used to support any commercial outcome.

That is a serious problem. A patent portfolio that is unmanaged, unmapped or misunderstood is not a strategic asset. It is a cost center masquerading as an asset.

Companies are eager to talk about licensing, enforcement, sale, assertion, litigation funding, damages, venue, Patent Trial and Appeal Board (PTAB) risk and potential buyers. And while those issues matter, turning patents into revenue cannot begin when a company decides to assert a patent or shop a portfolio. It must begin much earlier, with the disciplined internal work required to understand the portfolio itself.

Before a patent portfolio can be monetized, it must be made monetizable.

That requires structure, data and business alignment. It also requires a taxonomy that connects patents not merely to technology labels but to products, services, markets, revenue streams, customers, competitors and future business priorities. Without that foundation, even potentially valuable patents remain buried in the portfolio—legally owned, but commercially invisible.

Can you answer these questions?

Many companies have portfolios that grew organically over years or decades. Sometimes, companies inherited patents through acquisitions. Other times, patents are acquired through organic creation stemming from R&D projects that may or may not have ever matured into actual products or services.

Assets are frequently maintained because no one wanted to make the hard call to abandon them. The result is familiar: portfolios that look impressive on paper but are fragmented, redundant, stale or entirely misaligned with current commercial realities.

Too many companies lack a reliable answer to very basic questions: Which patents cover current products? Which patents map to discontinued products? Which assets read on competitor activity? Which patents support defensive objectives? Which ones are truly core? Which ones are stranded? Which ones have no realistic business use? Which ones might be valuable to someone else?

These operational questions determine whether the portfolio can support licensing, acquisition diligence, cross-licensing, divestiture or enforcement.

A revenue-ready portfolio requires a more granular and commercially relevant understanding of what the assets actually do.

Visibility before value

Although patent volume can be a useful proxy for some industries, such as in the standard essential patent space, it is a huge mistake for most patent owners to believe volume is a useful metric.

The threshold question is visibility. That means the first step in transforming a passive patent portfolio into a strategic asset is to impose order.

That means collecting and normalizing the relevant data: patent family status, jurisdictions, expiration dates, maintenance fee obligations, claim scope, ownership records, encumbrances, licensing history, standards relevance, product mapping, business-unit alignment and evidence of use where available.

This is unglamorous work, but it separates real portfolio management from spreadsheet theater.

Without normalized data, teams cannot make confident decisions. They cannot determine whether a patent should be retained, abandoned, sold, licensed or grouped with related assets. They cannot identify whether the company is overinvested in legacy areas and underprotected in emerging areas. And they certainly cannot expect sophisticated buyers, licensees, investors or litigation funders to take the portfolio seriously.

Today, anyone evaluating patents for purchase, license, assertion or financing expects a credible package: claim charts, evidence of use, prior art analysis, ownership clarity, realistic valuation expectations and a clear story about why the assets matter.

A patent that appears interesting in the abstract is far less valuable than a patent connected to real-world products, services, systems or standards. So, evidence of use is particularly important. Absent infringement or a desire on the part of a party to obtain a license so they are not infringing, patents have no real recognizable value.

The same is true for prior art diligence. No one wants to spend time and money on a patent that collapses the moment it is challenged.

In today's environment, where validity attacks remain a central feature of patent disputes, patent owners need to know their own weaknesses. While uncertainty cannot be eliminated, it can be managed by beginning with credible diligence.

Create packages, not lists

One of the most common mistakes is presenting patents as a list rather than a portfolio. A list is just a collection of patent numbers.

If the goal is to create revenue-ready assets, patents should be organized into commercial groupings that make sense to the intended audience, and which have a thesis. That may mean grouping by product functionality, accused use case, technical architecture, customer market, implementation layer, standards relevance, competitor, supply-chain position or business problem solved.

The grouping matters because it affects how the portfolio is evaluated. A single patent today will not create enough leverage, but a coherent group of related patents—with overlapping claim coverage and evidence of use across multiple products or market participants—can present a much more compelling opportunity, and it can demonstrate the existence of real risk that must be mitigated.

Gene Quinn is a patent attorney, founder of IPWatchdog.com and a principal lecturer in the top patent bar review course in the nation. Strategic patent consulting, patent application drafting and patent prosecution are his specialties. Quinn also works with independent inventors and start-up businesses in the technology field.

Measuring Tools of the Trade

About the tried-and-true dial caliper, with other tips for accurate renderings **BY JACK LANDER**

Just because it's a prototype doesn't mean you can take an "approximate" approach.

Prototypes justify precision in order to represent the eventual product. This means working with precision tools.

The tool I find the most useful for my prototyping is the dial caliper. It's available in two options: length and readout.

The length in inches determines the maximum size that can be measured. The readout is either mechanical in the form of a round dial or electronic.

The basic caliper length for most of my work is 6 inches, although at times I find the 12-inch handier.

My caliper readouts are both round dials, probably because they are both at least 30 years old. The more recent models have an electronic readout with numerals that are large and easy to read. The option that the electronic readout provides—and the round dial does not—is the ability to switch from inches to millimeters.

Caliper vs. micrometer

The three basic kinds of measurement afforded by either mechanical or electronic readout are inside, outside and depth.

Inside and outside measuring is obvious from the physical appearance of the tools. But depth is measured by a somewhat hidden, narrow, rectangular probe that slides out the end of the tool.

For most measuring, the caliper is the fastest and most convenient tool. It has replaced its older version, the micrometer, which is a "C-clamp with calibration."

Some old-timers (like me) insist on using the micrometer for gaging the thickness of sheet materials, but I find the caliper to be just as accurate—in some cases, more.

In fact, for measuring soft materials such as paper, plastics, cloth, etc., the caliper is less likely to compress the material and distort the measurement. A micrometer can apply relatively high pressure due to its finely threaded screw.

For measuring soft materials such as paper, plastics, cloth, etc., the caliper is less likely to compress the material and distort the measurement.

Guidelines for various lengths

Measuring length beyond 2 or 3 feet accurately requires more skill and judgment than the use of calipers. First, we must assess the measuring tools.

Wooden rules or yardsticks can change with humidity and temperature. Steel tapes require visual interpolation that may have an allowable error of plus or minus .010 inch. Folding rulers depend on tightly fitted pivots to maintain accuracy.

The best bet for accuracy in a measuring length less than 3 feet is obtained using gage blocks plus calipers. The best you'll get with a setup like that is about .002 inch. For distances between 3 and 4 feet, gage blocks can be used at the beginning and adding a three-foot etched steel ruler.

Gage blocks are readily available in 1-, 2- and 3-inch lengths. They can be used at the beginning of a steel-etched ruler to gain 1, 2, 3, 4, or 6 inches, or combinations thereof. It's a trying setup, only used when extraordinary precision is demanded.

I can't imagine making a prototype with one dimension longer than 3 feet, but a laser measuring tool may be the answer. One of the best-rated lasers claims to be accurate to 1/16 inch at 100 feet.

I assume accuracy is in proportion to distance, which would result in .0062 inches at 10 feet. But I'd check with the manufacturer to make sure my speculation is substantiated.

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.

INVENTOR UPDATE

Homecoming in Atlanta

Dr. Ayanna Howard has come home.

The renowned inventor, roboticist, entrepreneur and higher education leader—and October 2019 *Inventors Digest* cover story subject—was named Spelman College president on June 5. The 12th president at the historically black college or university, located in Atlanta, recalled her mother teaching in the city as an adjunct professor while she herself mentored students in her robotics labs.

"I'll never forget my first Spelman student who looked at me one day and asked if I would mentor her," she said in her introductory video. "I told her I would do much more than that: I could help her find funding. And we did."

Dr. Howard's research includes human-robot interaction, assistive robotics, field robotics and AI, with over 300 publications, four patents and more than 140 invited talks. A former NASA engineer, she was the first female dean at the College of Engineering at Ohio State University.

"The future demands more than advanced algorithms. It requires the creativity, critical thinking, ethical framing and human judgment that are uniquely cultivated right here at Spelman. ... I'm ready to fight for you, and with you."

Revenge of the Tangibles?

The immense physical capital needed for AI data centers and tech is changing the patent equation **BY LOUIS CARBONNEAU**

I am a devout believer in the power of intangible assets. My entire career—from Microsoft to founding Tangible IP—has been built on the premise that intellectual property is the most valuable asset class of the 21st century. And for 50 years, the numbers have agreed with me.

Ocean Tomo's famous Intangible Asset Market Value Study just released its 2025 update, and the headline number is as eye-popping as ever: Intangible assets now account for 92 percent of S&P 500 market capitalization, up from a mere 17 percent in 1975.

The "economic inversion," as Ocean Tomo calls it, has been one of the most dramatic structural shifts in the history of capital markets—a 75-percentage-point swing in a single human lifespan.

If you are in the business of buying, selling, or licensing patents, this fact has been your best friend at every conference, every boardroom pitch, and every investor meeting for the past two decades.

In 2026, the five largest hyperscalers—Amazon, Alphabet, Microsoft, Meta and Oracle—are collectively projected to spend between $660 billion and $690 billion on capital expenditures, the vast majority directed at AI data centers, GPU clusters and networking infrastructure.

To put that in perspective, this is more than the GDP of all but the top 20 national economies on Earth.

Amazon alone plans to spend $200 billion this year, a figure that caught even the most bullish analysts off-guard. Google owner Alphabet is targeting $175 billion-$185 billion. Meta expects $115 billion-$135 billion. Microsoft is tracking toward $120 billion or more.

Each company's individual 2026 budget approaches or surpasses what it spent in the previous three years combined. And they are doing this by laying off tens of thousands of employees to fund their new arms race.

This is not software eating the world. This is concrete, steel, copper and silicon eating the world.

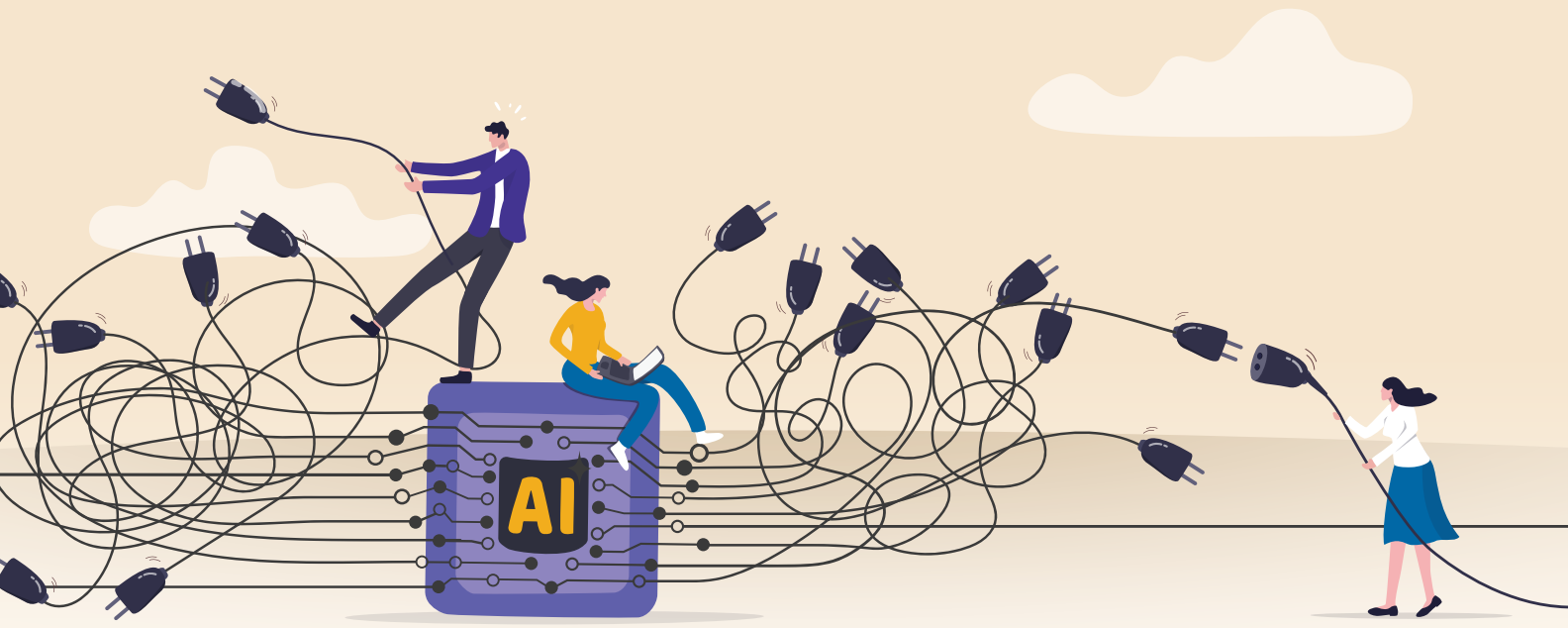
These are physical structures on physical land, drawing physical water from physical aquifers, consuming physical electricity from physical power plants. William Blair's global strategist Olga Bitel has aptly called it the "Revenge of the Tangibles"—a global investment cycle centered on renewed spending on physical assets and industrial development.

After a decade where the lightest, most asset-free business models commanded the highest valuations, the market is now rewarding companies that are building the modern equivalent of railroads, steel mills and power grids.

The irony is exquisite.

The same companies whose soaring valuations created the 92 percent intangible asset figure are now pouring hundreds of billions into tangible infrastructure—land, buildings, servers, cooling systems and power generation.

When Meta's Mark Zuckerberg announces a data center "so large it would cover a significant part of Manhattan," he is not describing an intangible asset. He is describing a pyramid.



And like the pharaohs, he is building it because he believes it will secure dominion over a vast territory—in his case, the AI economy rather than the afterlife. (The jury is still out on which bet is more speculative.)

The great rebalancing

Now, let me be clear: I am not predicting that intangible assets are about to collapse to 50 percent of the S&P 500 overnight. But the structural forces at work are real and deserve attention from anyone who advises on IP strategy or patent valuations.

First, the sheer scale of tangible asset accumulation on Big Tech balance sheets is unprecedented. Data center capex grew 57 percent last year to $726 billion globally and is expected to cross the $1 trillion mark in 2026—a milestone the industry did not expect to hit until 2029. These are depreciable physical assets (property, plant, and equipment) that will show up in book value calculations for decades.

AI assets typically depreciate at around 20 percent per year, meaning the hyperscalers face an annual depreciation expense of approximately $400 billion by 2030—more than their combined profits in 2025. When you add $2 trillion in tangible AI-related assets to the balance sheets of the companies that dominate the S&P 500, the denominator in the intangible asset calculation gets a lot bigger.

Second—and this is the part that keeps me up at night—these physical investments are creating barriers to entry that look nothing like the IP moats we have spent our careers analyzing.

The intangible economy turns out to require an enormous physical footprint of land, water, energy and concrete. It is rather like discovering that the cloud is actually made of rocks.

A patent portfolio creates a legal barrier. A trade secret creates an informational barrier. A brand creates a psychological barrier. A $200 billion data center network creates a gravitational barrier: It bends the competitive landscape around it so completely that smaller players simply cannot escape its pull.

When the capital requirement for competing at scale in AI infrastructure makes even Oracle's $50 billion look inadequate, we are no longer in the realm of intellectual property competition. We are in the realm of who can pour the most concrete and buy the most graphics processing units. That is a very different kind of moat, and frankly, not the kind that keeps patent brokers in business.

The cost no one talks about

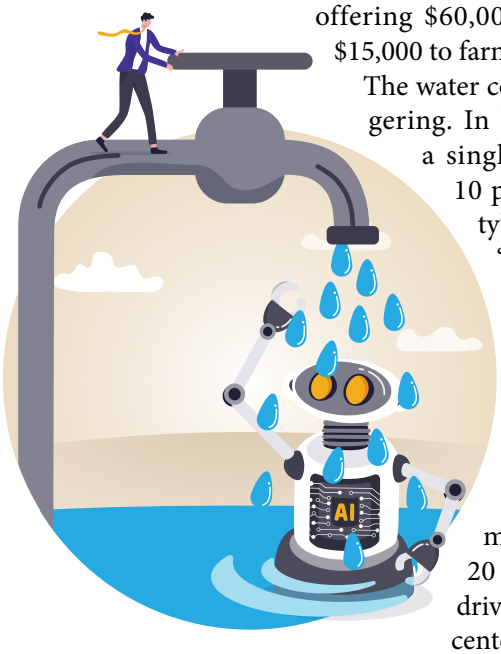
The financial implications are striking, the physical ones sobering.

The AI data center buildout is devouring American farmland at an alarming rate. In

Oregon's Columbia River Basin, developers are expected to target 3,000 additional acres over the next decade. In Morrow County alone, between 35 and 40 data centers have already been built on land that was zoned exclusively for farming.

In Jerome County, Idaho—one of the state's most productive agricultural areas, producing roughly $1 billion in farm products annually—tech giants are transforming irrigated cropland into server farms that produce a rather different kind of yield.

In central Illinois, where glacial soil produces 234 bushels of corn per acre, developers are offering $60,000 an acre for land worth $15,000 to farmers.



The water consumption is equally staggering. In Newton County, Georgia, a single Meta facility consumes 10 percent of the entire county's water supply. In Virginia's "Data Center Alley," which handles roughly two-thirds of the world's internet traffic, data centers now account for nearly 40 percent of the state's total electricity consumption.

Electricity rates in the mid-Atlantic surged up to 20 percent in summer 2025, driven in significant part by data center demand.

Think about that for a moment. The intangible economy—the weightless economy, the economy of pure ideas and code—turns out to require an enormous physical footprint of land, water, energy and concrete. It is rather like discovering that the cloud is actually made of rocks.

The human cost

Meanwhile, the same companies building these physical empires are systematically dismantling the human capital that once justified their intangible valuations.

Nearly 80,000 tech workers were laid off in the first quarter of 2026 alone, with almost half of those cuts explicitly attributed to AI and automation.

The pattern is unmistakable: Invest in physical infrastructure, divest from human capital. Since early 2022, U.S. job openings have declined from roughly 12.1 million to about 7.7 million—a 36 percent drop—while the S&P 500's total return has risen 48 percent.

We are witnessing something that would have been heretical to say five years ago: The most valuable companies in the world are becoming more physically intensive and less human-intensive at the same time. They are building pyramids, but without the labor force that used to justify the pharaoh's divine status.

What this means for IP

For those of us in the patent market, this paradigm shift demands some uncomfortable questions. If the primary competitive moat in the AI economy is not a patent portfolio but a $200 billion network of data centers and exclusive GPU supply agreements, what happens to the premise that patents are the crown jewels of corporate value? If the barrier to entry is physical rather than intellectual, does the IP premium shrink?

I do not think the answer is as dire as the question implies, but I do think the answer is more nuanced than the patent community has been willing to admit.

Patents remain critically important for the applications built on top of this infrastructure—the algorithms, the model architectures, the specific implementations that differentiate one AI service from another. The drugs that emerge from AI-designed clinical trials will still need patent protection. The semiconductor innovations that make these data centers possible are still patented. The networking protocols, cooling systems, and chip architectures are all covered by vast patent portfolios.

The same way I described moats and speedboats in my last column, physical infrastructure

PTAB IN FREE-FALL

For those who have read this column for a while, you know my feelings about the Patent Trial and Appeal Board. Well, the data are finally catching up with the rhetoric.

According to Unified Patents' first-quarter 2026 report, total PTAB petitions fell to 131 in the first quarter—a 12-year low and a staggering 64.2 percent drop year-over-year. *Inter partes* reviews, which also challenge the validity of U.S. patents, plummeted 66.3 percent.

Dennis Crouch at Patently-O counted only 11 IPR filings in the four weeks ending May 2—the lowest 4-week stretch since the system opened its doors in September 2012. Institution rates have collapsed from roughly 65 percent in October 2024 to about 37 percent in February 2026, and the board's pending inventory has fallen below 2,000 for the first time in 20 years.

Now, cue the howls.

On April 27, Google filed a petition for certiorari in *Google v. VirtaMove*, asking SCOTUS whether the USPTO may deny IPR petitions based on a patent owner's "settled expectations" (the VirtaMove patent was 14+ years old when Google pulled the trigger) and whether Article III courts can review such denials at all.

The chutzpah is something to behold: The most prolific PTAB user of the past decade—still the No. 1 petitioner in the first quarter of 2026, by the way—has suddenly discovered due-process concerns precisely as the regime it helped shape starts imposing limits on it.

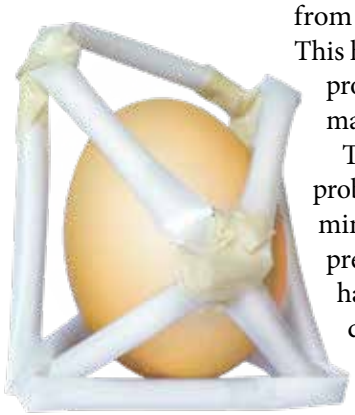
As Molly Metz and Erich Spangenberg put it on IPWatchdog, "the loudest objections come from the same parties that benefited from its earlier design."

and intellectual property are not substitutes; they are complements. But the relative weight is shifting, and anyone doing due diligence on a patent portfolio in 2026 needs to factor in whether the target market's competitive dynamics are driven primarily by IP or primarily by capital expenditure.

In an industry where the top four players are spending $650 billion a year on physical infrastructure, a patent that does not touch that infrastructure may find its leverage diminished.

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.

The Egg Drop Challenge: Get Cracking



Whether kids and teens are in school for parts of this summer or taking a break, they can hone their planning, prototyping and inventing skills through the popular Egg Drop Challenge.

A classic STEM experiment, the challenge encourages creativity, critical thinking and engineering skills. Participants design and build their contraption to protect a raw egg from breaking when dropped from a height. This has been done in classrooms, homeschool projects, STEM competitions and more, with many different attempts shown on YouTube.

This exercise promotes teamwork; problem-solving and creativity through determining the materials and structure that will prevent the egg from breaking; and learning hands-on about gravity, momentum, force distribution, energy absorption, air resistance and acceleration.

Can you break the record?

The current Guinness World Record for the greatest height to drop a protected egg without breaking is 25.3 meters (83 feet), achieved by the T/E Egg Drop Team from Conestoga High School and Valley Forge Middle School in Pennsylvania in 2024.

Seniors Matthew Ma, Charlie Gawthrop, Jeffrey Wang and middle schooler Breckin Shefflerwood, with teacher Derrick Wood as adviser, used a parachute-like plastic bag attached to their egg to slow its fall. They restricted themselves to straws, masking tape, note cards, cardboard and elastic cord.

The team raised the egg 83 feet using a crane, spread the parachute to control descent, and ensured the egg landed safely. The drop was filmed and verified by Guinness, which dropped the egg on the floor afterward to confirm it was unboiled.

A 2-time Invention Winner by Age 12

A space-themed board game. Biodegradable seed pouches made from food waste.

Kaia Minn doesn't just invent in ways that would be impressive for adults; her creations dramatically show her diverse skillsets and understanding of how things work.

Kaia, who lives in the suburban Boston neighborhood of Jamaica Plain, won the Best Pitch Award at the 20th Annual Young Inventor Challenge at the Chicago Toy & Game Fair (CHITAG) last November. She designed her game, Alpha Centauri Quest, from scratch. It invites players on a journey through space to reach Alpha Centauri, the closest star system to our own, using NASA-sourced facts as part of the playing.

Earlier last year, she was Massachusetts' State Merit Winner in the 3M Young Scientist Challenge for her biodegradable seed pouches that are designed to be air-dropped to reforest areas affected by wildfire or deforestation.

The pouches are made from lemon peel bioplastic—a flexible, environmentally friendly material created using food waste, chemistry and engineering. They protect young seeds until rainfall triggers the bioplastic to dissolve and release them safely into the soil.

Kaia has been sketching, prototyping and experimenting with ideas since early childhood.

Follow the Money

The **Seybert Foundation's Innovation Grants Program** provides one-time grants for specific proof-of-concept purposes, intended for emergent or existing Philadelphia-youth-serving nonprofit organizations wanting to either test a bold new approach or pursue a time-sensitive opportunity that could lead to significant change.

The 2026 program will award approximately $125,000 in grants to youth-serving nonprofits. Individual grants will range in size from $20,000 to $60,000. Fall cycle applications will be accepted August 3-September 11.

The program seeks to fund: new, high-potential concepts for projects that require validation and can be validated for under $60,000; seemingly small interventions that when accomplished can have significant impact to addressing a big problem; projects and organizations that have discovered novel and better ways of solving pervasive problems that affect children and youths. *seybertfoundation.org/innovation-grants-program*

ID Flashback

February 2023: When Michael Jackson betrayed friend Paul McCartney by outbidding him for the Beatles' music catalog in 1985, it wasn't the first Beatles-related intellectual property misadventure. A heavily researched *Inventors Digest* cover story tells how the group's ill-fated deal with Northern Songs on February 22, 1963, handcuffed them contractually in many ways--a lesson for all who want to protect their creatiive works. *inventorsdigest.com/issues*

What IS That?

This lightly scented candle delivers a cute message of romance and longing. But do you get a whiff of desperation here?

Get Busy!

The United States is the world's largest market for pet products—a field ripe for inventors and innovators. Thousands will converge August 12-14 at Las Vegas' Mandalay Bay resort-casino for **SuperZoo**, the pet industry's largest trade show for retail professionals, with an estimated 22,000-plus attendees and more than 1,200 exhibitors. *superzoo.org*

WHAT DO YOU KNOW?

1 **He wrote: "All creation is a mine, and every man a miner. The whole earth, and all within it … are the infinitely various 'leads' from which, man, from the first, was to dig out his destiny."**

A) Abraham Lincoln
B) Benjamin Franklin
C) Thomas Jefferson
D) Thomas Paine

2 **True or false: The European Patent Office is the largest regional patent office in the world.**

3 **Which toy was invented first: the Super Ball, or Rubik's Cube?**

4 **As of last July, which company had the most worldwide patents?**

A) State Grid Corp. Of China
B) Chinese Academy of Sciences
C) Samsung Electronics
D) Midea Group

5 **True or false: There is a patent for a cigarette with a recorded voice chip that says "I stink, and I might kill you" when lit.**

ANSWERS: 1.A. Second Lecture on Discoveries and Inventions (1859). 2. True. 3. Super Ball, 1964; Rubik's Cube, 1974. 4. A. 126,698 patent families, per patentleaderboard.com. 5. False—but hey ...

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