

# Inventors

MARCH 2018 Volume 34 Issue 03

DIGEST

## LEFT TO OUR OWN DEVICES

SMART HOME PRODUCTS'  
INNOVATION AND IMPACT

Hottest Offerings • Origins  
Industry Insight • Inventor Tools

### The First Industrial Robot

HOW TWO INNOVATORS  
MADE A TOUGH SELL HAPPEN

### 5 Uncommon Trade Shows

EVENTS RANGE FROM  
UNUSUAL TO BIZARRE

### Andrei Iancu's Challenge Begins

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TACKLES EMBATTLED  
PATENT SYSTEM



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## EDITOR'S NOTE



## A Home Revolution, Kick-started for Keeps

The big microphone on Roy Morejon's desk could have been imposing as I sat down recently to be interviewed for an Art of the Kickstart podcast, but I had fielded questions from an interviewer on many other occasions. Besides, Roy—the president of Charlotte-based Enventys Partners—is such a comfortable person to be around that the time flew by. (To hear the podcast, go to <https://artofthekickstart.com/exploring-new-way-invention-funding-reid-creager-aotk223/>.)

I tried to recall the last time this writer/editor was on the other end of the interviewing process. My best guess was the summer of 2002, when I was the Detroit Tigers correspondent for *The Sporting News* and did a radio interview from home.

It's astonishing how much has changed, especially technologically, in those 15-plus years.

In 2002, we were still five years away from the release of the first iPhone. The now-antiquated flip phones were the mobile communications device *de rigueur*; the internet was accessible only through your PC or laptop. (In fact, just seven years earlier, scientist Clifford Stoll publicly predicted that the internet would be just a fad.)

Now, each of us can be a human internet station via connected devices that have many people tethered 24/7. This heightened connectivity has morphed into smartphone-enabled devices that can monitor our homes, turn off lights and provide other security from thousands of miles away. Inside our homes, we can turn on music, get weather updates, control home entertainment and more with simple voice commands.

This month's issue of *Inventors Digest* spotlights the smart home devices explosion, the impact of which was underscored by Amazon Echo Dot being the top-selling product on amazon.com during the past holiday season. This isn't a fad or a craze. This ain't the Hula-Hoop, folks—no Pet Rock or Rubik's Cube. Smart home devices are part of a lifestyle evolution in our world that is here to stay.

What's next? Probably, the next evolution cycle of the new internet frontier that began in the mid-1990s: more conveniences through automation that will allow even more connectivity between devices. How about cars that can arm your home security system? Digitalized cutting boards?

We no longer laugh at these outlandish concepts—because as we demonstrate on these pages each month, our ability to dream, invent and execute them knows no bounds.

—Reid  
([reid.creager@inventorsdigest.com](mailto:reid.creager@inventorsdigest.com))

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# Contents

March 2018 Volume 34 Issue 3



## Feature

### 14 **Smart Home Devices**

How They Work; Most Popular Products; Origins; Industry Insight; Inventor Tools; the Next Wave

## American Inventors

### 12 **Getting Over the Underwear Struggle**

Undercare Fastens at the Waist

## Departments

### 6 **Bright Ideas**

Spotlight on Innovation

### 8 **Time Tested**

The First Industrial Robot

### 10 **Lander Zone**

Positioning as a Start-up Strategy

### 28 **Prototyping**

5 Uncommon Trade Shows

### 30 **Rau's Research**

Consider Inventions Linked to Apps

### 32 **Patent Pending**

Avoid Admissions as Prior Art

### 34 **IP Market**

The Year Things Finally Change?

### 38 **Eye on Washington**

Iancu Era Begins; a Firsthand View of Patent Double Standard; U.S. Falls Again in Patent Ranks

### 46 **Inventiveness**

Focus on the Fun and Fascinating



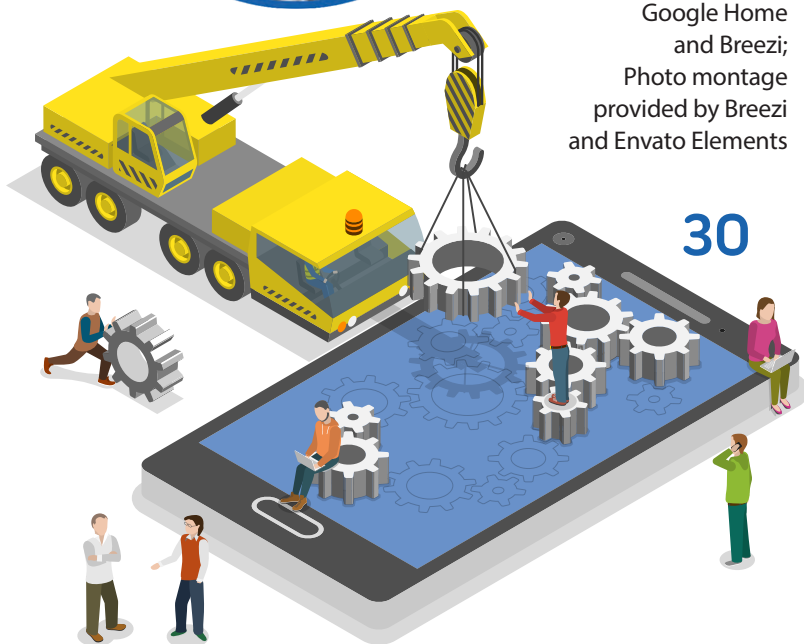
28



#### ON THE COVER

Nest thermostat, Amazon Echo, Melnor RainCloud, Google Home and Breezi; Photo montage provided by Breezi and Envato Elements

30





# BRIGHT IDEAS



## Feddz

### ELECTRIC MOPED

[feddz.com/en/](http://feddz.com/en/)

Billed as “the most authentic electro two-wheeler of its kind,” Feddz does not have a conventional moped or scooter design with integrated electrotechnology. Powered by a 4-drive mode electric motor, the winner of several design awards and available in multiple color combinations, it is also lightweight—103 lbs., including the battery.

Bluetooth compatible with a smartphone app, the bike has many customizable options, including: additional wiring for navigation systems and smartphones; foil wrapping

“The difference between genius and stupidity is, genius has its limits.”

—ALBERT EINSTEIN

on screens/covers; graphics; and a load trailer with inertia brake. Other features include a charge-level display for monitoring battery capacity; USB port for exporting data/remote/maintenance diagnostics, and CAN communication between the controller and display.

Suggested price for the German-made product is €7,800, or roughly \$10,800 U.S.



## Embrace

### EPILEPSY MANAGEMENT SMARTBAND

[empatica.com/en-eu/](http://empatica.com/en-eu/)

Embrace, which recently received FDA approval, identifies convulsive seizures and sends an SMS and automated phone call to caregivers via its Alert App. Working as a simple but stylish watch to be worn at all times, it also provides sleep, rest and physical activity tracking.

Embrace is a Class IIa Medical Device, according to Directive 93/42/EEC, for patients with epilepsy or at risk of having epilepsy. The technology behind the device began at MIT in 2007 and was involved in long testing at hospitals before Embrace's crowdfunding launch in 2014 netted \$800,000.

The buy price on the product's Empatica website is \$249.





## Spider Interactive

### SMART PUTTER

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

This putter combines the performance of TaylorMade's Spider Tour putter with real-time stroke analytics powered by a Blast Motion Sensor within the grip. The addition of the sensor is said to have no impact on stroke mechanics.

Stoke data for 11 putting metrics including backstroke time, forward stroke time, tempo, speed and face rotation are synched directly to your mobile app. Spider Interactive features a guided journey of step-by-step drills, as well as an app tutorial and putting tips from "Me and My Golf."

Available beginning in March, Spider Interactive shows a price of \$399.99 on the TaylorMade website.



## Head Impact Monitor System

### SMART MOUTHGUARD

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

Prevent's smart mouthguard uses four 3-channel accelerometers that measure potential concussion-causing impacts in real time and alert sideline personnel to identify athletes for assessment.

The mouthguard LED turns red upon sustaining above-threshold impact; the app shows details of force, rotation and location as well as number of impacts. The mouthguard comes with an embedded, shock-resistant flexible circuit board. Prevent developed the Head Impact Monitor System after six years of development at the Cleveland Clinic.

The new Gen 1.2 system will be commercially available to select schools and youth associations beginning with the 2018 football season. Pricing for the boil-and-bite IM Mouthguard will be \$199 per player. Individual storage cases will cost \$39 each, and the team case will be \$299.





# Brothers in Arm

HOW GEORGE DEVOL AND JOSEPH ENGELBERGER DEVELOPED THE FIRST INDUSTRIAL ROBOT **BY REID CREAGER**

**J**ohnny Carson didn't know what to make of what he just saw. "Did you see that? What a crazy machine!" the legendary talk-show host said after watching the first industrial robot debut on "The Tonight Show" in 1966.

Reaction to the two-ton machine's performance rivaled "The Tonight Show" debuts of Joan Rivers, Jerry Seinfeld, Drew Carey and Garry Shandling. But this time, the audience wasn't laughing. It gasped as the robotic arm used a golf club to make a perfect putt, open and pour a beer, and conduct the band.

Joseph Engelberger, an accomplished engineer and cofounder of the world's first robotics company, used a remote control to direct the robot while standing next to Carson. A star was born, and it wasn't Engelberger.

## Obstacles and breakthroughs

Unlike the comedians who became household names shortly after their appearance on Carson's show, this robot was no overnight sensation. The Unimate, as it came to be called, was years in the making before it eventually transformed modern manufacturing as the first programmable robotic arm. The biggest impetus came at a cocktail party.

That's where Engelberger met George Devol, a prolific inventor/entrepreneur who amassed more than 40 patents in his lifetime. Two years earlier, in 1954, Devol had filed a patent for a device called the Programmed Article Transfer and was looking for a partner in the venture.

Engelberger was all in, but the two were in for a lot of rejection as they attempted to sell the concept, even with a working prototype. "To get the financing, I visited 46 different companies before I could find

someone who believed that it was even possible to do such a thing," Engelberger told The History Channel.

In an interview produced by Scott Vollmer on Vimeo in 2011, Devol amplified the difficulty of selling such an unconventional product. "To try to get a normal businessman to understand a robot, they thought you were talking about science fiction or something like that."

Fully aware of the public's fascination with robots and their inclusion in many 1950s movies, the two used some marketing savvy to help their bid. Programmed Article Transfer was simplified to a "manipulator" before they decided to refer to the device as a robot.

The breakthrough came in 1961, when Devol's programmable robotic arm received U.S. Patent No. 2,988,237. He and Engelberger started their company, Unimation, in Danbury, Connecticut. Its "star" was Unimate, an electronically controlled hydraulic robotic arm with a 7-foot reach that flawlessly performed unpleasant and dangerous tasks. It could position objects within 50/1000ths of an inch.

That same year, General Motors bought Unimate and put it in a Trenton, New Jersey plant to remove red-hot parts from a die-casting machine. Automation was nothing new at automobile companies, but Unimate was different because it met the International Organization for Standardization's definition of an industrial robot. Per ISO 8373:2012, that definition is "an automatically controlled, reprogrammable, multi-purpose manipulator programmable in three or more axes, which can be either fixed in place or mobile for use in industrial automation applications."

Unimate had become a pioneer in the kind of technology that automates assembly lines throughout the world.

## Places in history

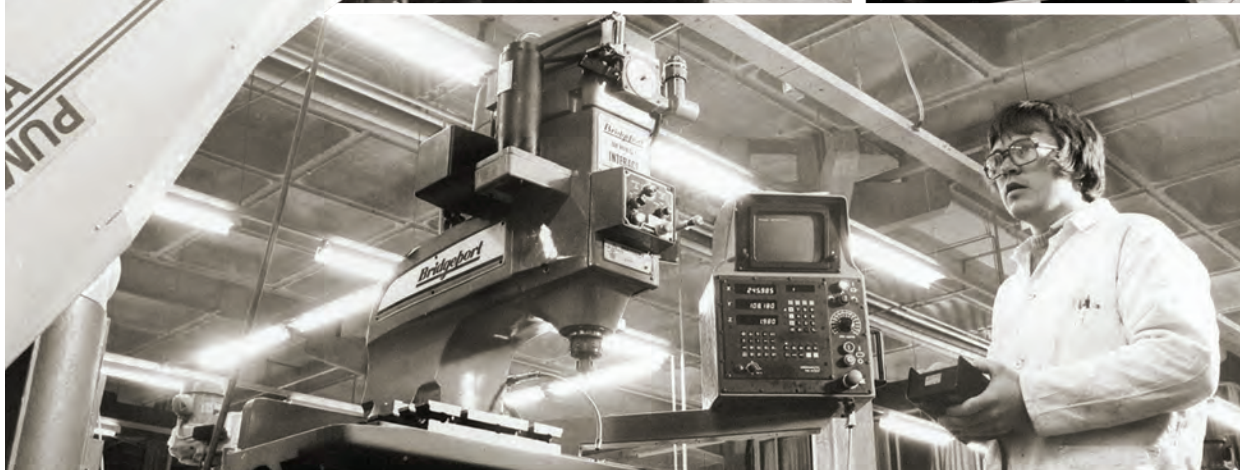
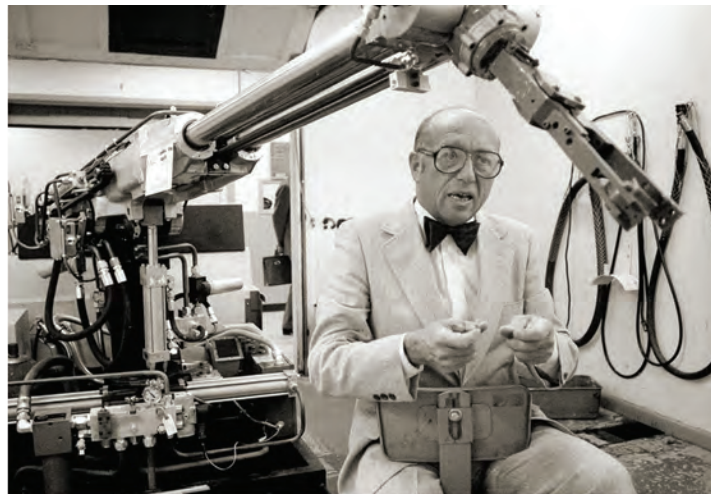
Before long, Chrysler and Ford were using the technology as well. Unimation later developed robots for welding on auto bodies, spray-painting, applying adhesives and other duties.

But even then it wasn't all smooth sailing for Unimate, in part due to opposition from U.S. labor unions. "I had a



Joseph Engelberger (left) and George Devol are served by a mechanical arm they developed.





Above left: George Devol invented the first digital and programmable robotic arm in 1954.

Above: Joseph Engelberger demonstrates the technology in 1980.

Left: Unimate's success with robotic arms led to a late 1982 merger with Westinghouse, which bought a 78 percent interest in the company.

**“To try to get a normal businessman to understand a robot, they thought you were talking about science fiction or something like that.” —GEORGE DEVOL**

hard time with (the) American industrialist,” Engelberger said in an interview with *The Trentonian*. He recalled that following the robot’s ballyhooed appearance on national TV, “the only calls I got were from people who wanted my robot to be the entertainment at the county fair.”

Unimate was very successful in other countries—especially Japan—and eventually, the automation’s utility and competitive advantage won out in the States. Unimate’s place in history is secure, having been named in 2002 by *Popular Mechanics* as one of the top 50 inventions of the past 50 years. An early model appears at the Smithsonian Institution’s National Museum of American History.

The partners’ legacies will endure as well. Three months before his death in August 2011 at age 99, Devol was inducted into the National Inventors Hall of Fame. Engelberger was inducted into the U.S. Manufacturers Hall of Fame in 2009, six years before he died at 90.

Depending on the source, Devol or Engelberger is routinely heralded as “the father of robotics.” The History Channel simply refers to Devol as the grandfather of robotics and Engelberger as the father of robotics. But given their business partnership, shared commitment, determination and impact on worldwide innovation, they were more like brothers. 📦

## INVENTOR ARCHIVES: March

### MARCH 16, 1963

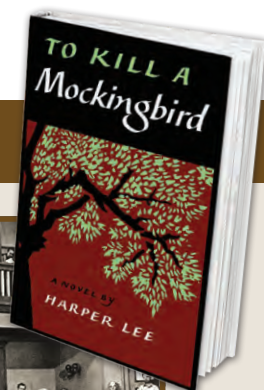
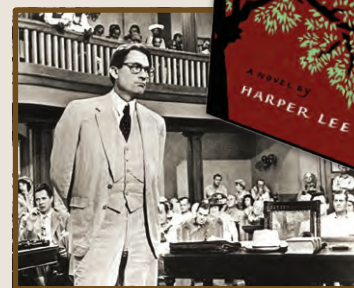
The movie “*To Kill a Mockingbird*,” based on Harper Lee’s novel of the same name, was copyrighted. The film had been released on Christmas Day of the previous year, although studios were reluctant to release it because it has no action or love story.

Gregory Peck’s character, Atticus Finch, was named by the American Film Institute as the top film hero of the century. Finch was inspired by Lee’s father.

The book, first published in 1960, has been the subject of some copyright controversy. In 2013, Lee sued her former literary agent, Samuel Pinkus, to retain the rights to her novel. She claimed she was duped into signing over the copyright. The suit was settled out of court.

On April 28, 2014—her 88th birthday—Lee announced that she agreed to make the book available as an ebook and digital audiobook. However, in a statement released through her publisher, HarperCollins, she said: “I’m still old-fashioned. I love dusty old books and libraries.”

Lee died in 2016 at age 89. The book has sold well over 30 million copies.



# Use Positioning as a Start-up Strategy

DETERMINE KEY ASPECTS OF YOUR PRODUCT,  
AND THE COMPETITION'S **BY JACK LANDER**

**P**ositioning is the process of deciding your eventual product's features, benefits, quality, price and channels of distribution, in the context of knowing those same things about its competition.

Positioning starts with describing your typical customer. What is his or her income level? In what kind of a home does this person live? Is this person a conspicuous consumer, or a modest consumer who is a bit embarrassed by his or her luxuries? Is this the average person who mows the lawn, fixes the bathroom faucet when it leaks, and prefers to flip the light switch manually? Or is this a person who loves the latest wireless conveniences that respond to the spoken word, or even to his bodily presence, and is willing to pay the price of their purchase and maintenance?

Positioning is an option in forming a start-up because it can satisfy a niche market that is willing to pay the price the start-up must charge in order to make a profit. Most start-ups struggle with insufficient profit and cash in-flow in the beginning. Early sales volume is often low, and is mismatched with the production methods that will pay for themselves when sales volume reaches the eventual forecast volume.

## Production cost decisions

A common example is a plastic injection mold needed for a molded part. Such a mold can cost between \$20,000 to \$150,000, depending on the size and complexity of the part it produces. The start-up faces three basic choices:

- Forgo investing in the volume-production mold until sales volume and income justify it.
- Pay for the volume-production mold by taking in an investor.
- Position its product for a niche market willing to pay the price that earns a profit early, when sales volume is low.

Forgoing investing in the volume-production mold means that your unit cost to produce will be high relative to your target selling price. The option is to use low-volume methods and tooling, and

sacrifice profit. For example, most plastic parts that are injection molded can be machined by the material-removal method. The cost is higher because the removed plastic is scrap compared with the near net use of plastic that results from molding. Also, the machining time is usually high compared with molding time. Even a simple part, made by machining, may cost two to 10 times its molded cost.

It's attractive to take in an investor, but most of them want to see a history of sales from which they can calculate return on investment. It's rare to find an angel investor who will share your dream of producing and marketing a new product. Dreams don't get financed, except perhaps by your rich Uncle Oscar.

Positioning your product is not always possible. It may be that your product has a very specific market and an upscale version is not opportune.

But I recall laughing at the idea of a robotic vacuum cleaner. Who would buy such an item? No robot is going to clean the edges and corners of my floors like I can with my handy Oreck. (Boy, was I wrong—about anyone wanting it, I mean!) True, the robot lacks a bit of finesse when it comes to edges and corners, but it does an adequate job on 90 percent of the area. I can catch up on the rest of it later.

## The seven positioning steps

I hope you aren't planning to launch another vacuum cleaner. But whatever your tentative product, you must consider all of the features, benefits and price of a product that competes directly with your own, and you must decide how you can shape your product to fit advantageously into the market in order to maximize your profit.

Start-ups often fail because the inventor/entrepreneur omits the conscious, painstaking positioning process and plunges in with only an intuitive approach to features, benefits, price, etc. Intuition is valuable but should be double-checked, not just taken as a wild guess.

The positioning steps, assuming you have a rough idea of the product you have invented:







## Positioning can satisfy a niche market that is willing to pay the price the start-up must charge in order to make a profit.

1. Decide your marketing channel(s). This will determine discounts to the sellers.
2. Set the retail price for your product. Set it on the high side at this point.
3. Decide what fraction of your retail price you can devote to manufacturing cost. It may be as low as 20 percent for wholesale/retail distribution, or 50 percent if you do most of the distribution functions yourself.
4. Determine which features and benefits you can include in the manufacturing cost.
5. Evaluate your competition and compare positions.
6. Repeat the above until an acceptable balance is achieved—until you have defined a potential or actual niche in the market.
7. Perform the market research to verify that the niche has enough potential customers to support your start-up.

### Variation options abound

There are several ways to morph an ordinary product into a niche variation. Upgrade its materials; use stainless steel when regular steel is the usual; make the product smaller or larger; adapt it for use by people with handicaps; guarantee it for 25 years; simplify it by omitting features; add features; include a free video for setup, use and maintenance. Etc.

A good example of a simple variation is the cell phone. You may have seen an ad in a magazine for a cell phone with large numerals for ease of dialing. The phone is basic, without all of the goodies that most of us want. It appeals to older people who may have trouble seeing or punching the numerals due to arthritis.

Another variation of a common item is the hearing aid for \$200. It looks a lot like the one for which I paid \$1,400. No doubt mine is tuned to the defects in my natural auditory spectrum. But I'll bet the one for \$200 would be adequate for most conversational deficiencies, and for watching TV. It also serves to confirm the benefit of a hearing aid for the deniers who still insist that their wife or husband mumbles a lot.

Selling a niche item may have the advantage that it fits in with other niche items that are sold to a certain kind of consumer, such as products for temporarily handicapped persons. A person who has had a hip joint replaced will find a store not too far away that sells a device to aid in putting on socks during the early days of recovery. An entrepreneur without a good idea for a product could call on such a store and ask whether there are any devices that its customers ask for that are not on the market.

We can set our product's selling price based on our best guess. But in the end, the market determines it. Positioning may be the way you can succeed with a selling price that yields a profit when you need it most—in the early days of your venture. 📌

**Jack Lander**, a near legend in the inventing community, has been writing for *Inventors Digest* for 21 years. His latest book is *Marketing Your Invention—A Complete Guide to Licensing, Producing and Selling Your Invention*. You can reach him at [jack@inventor-mentor.com](mailto:jack@inventor-mentor.com).



# Getting Over the Underwear Struggle

UNDERCARE FASTENS AT THE WAIST, ENDING THE AGE-OLD DRESSING BALANCING ACT **BY EDITH G. TOLCHIN**

**I** studied apparel design more than 40 years ago. Styles have changed many times for women and men, as well as for unisex trends. Fashion goes in cycles--miniskirts, maxi dresses—and the same garments, with slight variations, reappear about every 10 years or so.

What about undergarments? For more than a century, there have just been bras and panties (with the occasional “slip,” though they are rarely used nowadays). We’ve only seen changes in fabrics, cut and so on. Then came Sara Blakely’s Spanx brand, which revolutionized figure control in the late 1990s. And of course, there are boxers and briefs for men’s styles.

Here is a revolutionary idea in adaptable underwear, invented by Susanne Shoemaker.

**Edith G. Tolchin (EGT):** How did Undercare come about?

**Susanne Shoemaker (SS):** I happened to observe some elderly women struggling to self-dress following a swim class at the YMCA in White Plains, New York. The women used grabby sticks—those long poles with a pincer on one end—to assist themselves in dressing. I thought to myself, “What if I could design undergarments that didn’t require you to bend, balance, or stand on one leg in order to get dressed?” And that is exactly what I did. I went home and began cutting and sewing undergarments together to develop a prototype.

**EGT:** How is the design easier for seniors and those with limited mobility?

**SS:** Who says you need to put on your undergarments the old-fashioned way? Undercare has taken an everyday object, underwear, and redesigned it so that you do not need to place your feet and legs through a leg opening. Instead, you simply wrap and fasten with a soft and flexible hook and loop.

We think of ourselves as the anti-Spanx. Rather than struggling to get into your underwear, Undercare wraps you in a hug, like putting on a bathrobe. The first step is taking two ends and fastening at center waist. This creates a “belt” feature. This holds the undergarment in place and frees up both hands to pull the pull-through panel from back to front and attach on left and right sides. Once on, Undercare may be pulled up and down in one piece. It looks, feels, and functions like regular underwear.

Undercare is not an incontinence product. It is reusable and sustainable. However, incontinence pads may be easily inserted. In fact, because the undergarments open flat, it is very easy to attach or remove an adhesive pad. We looked into using absorbent fabrication for purposes of incontinence, but we think that disposable pads are preferable.

**EGT:** Do you have a fashion background?

**SS:** I did not have a fashion background when I started, but I do now! I am entirely self-taught regarding production of my product line. I worked at *The New Yorker* for five years after college as an editorial proofreader. Though it has nothing to do with garment production, it required attention to detail. That is a skill that is important in fashion.

After working in the publishing world, I married and had three children. While they were small, I went to art school and received an MFA in painting and drawing the human figure from the New York Academy of Art in the TriBeCa neighborhood. My education focused on learning traditional drawing skills and techniques centered on the figure. The goal of the program was to enable one to draw the figure out of the imagination upon graduation. To that end, I attended dissections, learned all the bones and muscles in the human body, studied the lift mechanisms of the body, rotation of the limbs—and most important, how to think spatially and translate visual ideas into 2D form. It was a terrific education.



**“I grabbed underwear from my dresser—my own and my husband’s! I began cutting and sewing them together.”**—SUSANNE SHOEMAKER





**EGT: How did you create your prototypes?**

**SS:** I grabbed underwear from my dresser—my own and my husband's! I began cutting and sewing them together. I went to department stores and bought two pair of the same style, same size. I combined the two pair into one.

It worked very well in helping me develop the prototype. Working with hook and loop was challenging because it can be scratchy. We sourced soft and flexible hook and loop and made sure it was placed so that it did not touch the body. Once I had a working prototype, I used a professional sample and pattern maker to prepare for production.

**EGT: How many different styles are you featuring?**

**SS:** I am launching with three styles: men's briefs, women's briefs, and a unisex boxer.

**EGT: Please share your patent process.**

**SS:** I made an appointment at a top IP patent firm in downtown Manhattan. I arrived with my hand-sewn prototype. I was whisked into a conference room with a large oval table and three lawyers. I was on a high floor, and you could see views of the Statue of Liberty out the window. It was intimidating.

I had a bout of insecurity as we began to talk. I had heard that Sara Blakely of Spanx had gone around with her prototype and people thought it was a joke, that she was sent by "Candid Camera." This was my fear. I was afraid the lawyers would find the idea ridiculous. To my delight, they did not laugh at the idea; in fact, they told me that they love it when a client walks in with a working prototype. Many people come in with just an idea in their head or a drawing on a napkin. Furthermore, I was the sole owner and inventor of the idea. This is also something IP lawyers prefer to work with. I have achieved four patents, and I have two pending.

**EGT: Where are you manufacturing?**

**SS:** I have spent years figuring out manufacturing. I am currently manufacturing the woven boxers in New York and the briefs in India. My wish is to manufacture

in the United States but because underwear margins are small, it is simply not sustainable at this point. Once I have volume, I will revisit USA manufacturing.

**EGT: What obstacles did you encounter in developing your products?**

**SS:** Manufacturing was without a doubt the biggest obstacle. I had many vendors over-promise and under-deliver. It is very important to have a production partner who is trustworthy and reliable. It is important to choose a production manager who has experience in managing production. It is necessary to have control over the factory. Timeline is important, and sticking to dates. You must find a factory that treats its workers well; otherwise, you can kill your brand.

I attempted production in China. Unfortunately, inferior trims were used for the production and the inventory was unusable. Another run in China could not be used because production went forward without having had the pre-production sample approved and it was incorrect. These mistakes are costly and time-consuming. You cannot begin selling unless you are sure you will be able to deliver the product when promised.

**EGT: Any plans to add additional styles?**

**SS:** Yes, we are very excited about our other underwear styles, our bathing suit line (it is awesome), and our athletic wear.

**EGT: Any advice for novice inventors?**

**SS:** Don't cut corners. If you don't know something, learn about it. Micro-manage every aspect in the beginning. Stay on top of vendors with whom you are working. Develop a timeline and stick to it. 📅

Undercare is launching with three styles: a unisex boxer, women's briefs and men's briefs. Instead of placing your feet and legs through a leg opening, you simply wrap and fasten with a soft and flexible hook and loop.

Books by **Edie Tolchin** ([egt@edietolchin.com](mailto:egt@edietolchin.com)) include "Fanny on Fire" ([fannyonfire.com](http://fannyonfire.com)) and "Secrets of Successful Inventing." She has written for *Inventors Digest* since 2000. Edie has owned EGT Global Trading since 1997, assisting inventors with product safety issues and China manufacturing.



# OUR HOUSES, OUR COMFORT

A PRIMER ON HOW SMART HOME DEVICES WORK, AND  
SOME OF THE MOST POPULAR PRODUCTS **BY JEREMY LOSAW**

A smart home product pioneer, Nest thermostat has an Android app that lets you remotely control the temperature. It learns your temperature-setting tendencies and can adjust settings when you're not home.



In 1969, Graham Nash wrote the Crosby, Stills, Nash & Young song “Our House” that inadvertently foreshadowed the joys of the smart home age. The 1970 hit was written within an hour after Nash and Joni Mitchell returned from an antique store, where Mitchell bought a vase.

Recalling that routine day at home in Los Angeles’ Laurel Canyon decades later, Nash said the song “was born out of an incredibly ordinary moment.” The simplistic tune reflects the joys of home comfort and warmth—“Everything is good/ Such a cozy room”—which for many of us has morphed into using smart devices to control the climate and environment inside our homes with smart thermostats and lighting.

A later passage in the song goes: “Life used to be so hard/ Now everything is easy ‘cause of you/ And our la la la la la la la la la”—with the word “la” ultimately being sung 54 straight times to emphasize the lazy, carefree life to which so many of us aspire. In the 21st century, such serenity

and peace of mind are further associated with smart security systems watching over our homes and the gadgets that keep our lawns and gardens watered properly while we are away.

A group of spirited entrepreneurs, visionary engineers and designers are expanding on Nash’s idyllic theme to bring smart connected devices to our modern-day homes. In just one decade, smart home devices have gone from the realm of science fiction to the aisles of big-box retailers. Here is an overview of the basic elements of the smart home and the primary categories and products that form its backbone.

## Smart home product basics

Smart home products perform a few basic functions but at a very high level. They either monitor a condition in your home or make a change to its environment or elements. Some do both. The key element that makes these products “smart” is web or network connectivity to control the devices remotely. Most smart home devices are controlled by smartphones synced with the devices. This is typically done with pairing via Bluetooth, or over the web with Wi-Fi or cellular connections.

PHOTO COURTESY OF NEST



Monitors or sensors are the essential building block of the smart home suite. For example, a temperature sensor can monitor the conditions inside a room and give you clues as to how the heating and air conditioning system is working. Adding sensors to your home can yield key insights and provide guidance for how to make adjustments, so that your home is more comfortable and/or efficient.

However, sensors can only give insight, not make adjustments. In order to make a change, you need some kind of actuator or control. This can come in the form of a light bulb, motorized door lock, thermostat control or any other device that can create a state change. Plenty of smart home products just function as an output, such as smart lighting or Bluetooth speakers that can be controlled via the web.

Smart home products become really powerful when sensors are paired with actuators to make changes to the home environment in real time. However, the smart home environment you choose to create may include a mixture of monitors and actuators to yield the desired result.

If you are going to go through the effort of taking an analog device and getting it connected to a network for monitoring or control, make sure there is a significant upside or “why” for doing it. The biggest reasons for smart home products are efficiency

(energy and cost savings), security and comfort. Here are some mainstream products that form the backbone of the smart home.

### Smart home hub

The “gateway drug” of the smart home is a smart home hub. These voice-controlled devices have a microphone and speaker and are connected to a home’s WiFi. The connectivity allows the devices to be queried to give us weather reports, sports scores and recipes; play songs, or control other connected devices. The two biggest players are the **Amazon Echo** and the **Google Home**. Amazon products are controlled by the Alexa platform; Google has its own equivalent personality.

### Climate-control thermostat

The first smart home product that had significant market penetration and widespread adoption was the **Nest** thermostat. This elegantly designed smart thermostat installs in place of existing thermostats to control your HVAC system. It learns how you adjust the temperature and over time creates the perfect temperature profile for your tastes. It also uses motion sensors and your phone’s location so it knows if you are home or not, and can adjust temperature settings to save on energy costs.

## \$40 BILLION

The estimated global smart home market by 2020, according to [statista.com](http://statista.com), with the smart home security market reaching \$18 billion.

Google recently set up a page that lists all of the things Google Home can do, broken into categories such as “home control,” “games & fun,” and “productivity.”



## OUCH, THAT SMARTS: THE COST OF INSTALLING FULL HOME AUTOMATION

Many smart home devices are attractive because of their low cost and the ease of installing the app onto your smartphone, then connecting that app to a WiFi network. But basic devices such as the Amazon Echo Dot have their limits. If you want a comprehensive smart home automation system and aren't handy enough to install it yourself—which is often the case—the price tag may give you cause for pause. These figures are from HomeAdvisor.com.

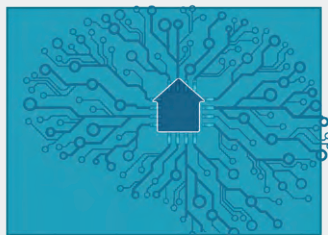
### Cost to install a home automation system

**National average** \$1,203

**Typical range** \$426-\$2,048

**Low end** \$61

**High end** \$4,500



### Installation costs breakdown

**Basic starter kits** (lights or dead-bolt controls) \$40-\$500

**Wireless mesh systems** (Z-Wave, etc.) \$300-\$600

**Monthly service** \$35-\$70 per month plus activation fees (\$200-\$500). Equipment is usually free.

**Cloud automation** \$179-\$299

**Hardwired systems** (not basic plug-in systems), which are more reliable and less prone to hacking \$3,000-\$15,000



### Lighting

Smart lighting allows the homeowner to control his or her lights remotely to save energy and create the perfect ambiance. The market leader is the **Phillips Hue**, but most connected lights work in a similar fashion.

The Hue comes in three different flavors of starter kits in increasing prices from single-color white, multi-temperature white and full color. The lights require the Hue Bridge, which gives the user control via a smartphone or the variety of physical switches that can be installed. The lights can be programmed to have different colors or intensities at different parts of the day and, like the Nest, can learn your daily routines to become more efficient.

### Smart plugs/outlets

Smart plugs help monitor and control the energy usage at each outlet. Although there are numerous brands of smart outlets, the **Wemo** is one of the most popular. The outlets connect to WiFi and monitor the electricity usage at each outlet, then report statistics to a smart phone app that include the real-time cost of energy at each outlet.

This also allows you to turn off outlets remotely, which can help cut down on the electricity bill if you happen to leave the lights on. You also have the option to use this setup for a dimmer switch.

### Security

Smart home products can also help keep our homes secure. Window/door sensors and motion detectors monitor the key entry points of our home and provide feedback when there is a breach. Web-connected cameras and alarm systems are usually also part of the suite of products that make up a smart home security system.







There are a number of different products in the security category, but the **Wink Lookout Smart Security Essentials** is a great place to start. It provides a selection of sensors and a hub to get your home secured quickly, with an app to provide alerts. The **August Smart Lock** is another great option for home security. The August replaces the existing door lock with a motor-driven unit that can be locked and unlocked remotely via its app.

### Smart garden

Smart home devices aren't limited to that which is associated with the home's structure. The lawns and gardens surrounding our homes are ripe for these solutions. Smart water control for the garden is a great way to reduce water usage so we only water our plants when they need it.

Smart irrigation controls such as the **Orbit B-hyve** and **Melnor RainCloud** systems allow our garden hoses and lawn sprinklers to be controlled remotely. The B-hyve even monitors your local weather station and will suspend watering during a rainstorm to prevent unnecessary watering. Watering can also be controlled via an app so that you can water your garden while on vacation. 🏡



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



## ECHO AND ALEXA RUN AWAY TOGETHER



So in keeping with our typically unorthodox thinking at *Inventors Digest*, the question is: Will more new parents be naming their daughter Alexa, or will fewer choose it because they don't want confusion in their smart homes?



It's indisputable that millions of people are calling for Alexa in their homes—and the numbers are rapidly increasing. The voice-controlled personal assistant is the trigger for the Amazon Echo brand of smart speakers that were the runaway sales leader on Amazon.com this past holiday season, a turning point in the world of the Internet of Things and smart home devices.

The puck-shaped Echo Dot was the No. 1-selling product on the site (at \$50 during the holidays, with a price drop after that); other Echo incarnations such as the Echo Spot and Echo Buttons sold out. Amazon did not release sales figures for the Dot—saying only that millions were sold—but late-2017 data by Consumer Intelligence Research Partners said Amazon held 76 percent of the smart-speaker market.

People's love of convenience, combined with the generally affordable price throughout the line, have made Echo a logical addition for their smartphone as the next step in our connected world. Although it's not a comprehensive smart home system, with just the sound of your voice you can play music, search the internet, get instant weather reports, create shopping lists and control smart home devices without taking your smartphone out of your pocket. (The first generation of voice-assisted devices required the user to press a button; not so now.)

Some users are uncomfortable with a device that "listens" to their conversations and responds with "I do not know the answer to that question" when the name Alexa is brought up in conversation. But you can change the voice trigger or "wake word" to Amazon, Echo or Computer.

On January 30, Amazon announced that it updated its Alexa service with support for sending SMS text messages by voice to Android phones. Now you can ask Alexa to send a message to your smartphone contact, and it can be routed through SMS or Alexa's messaging platform. The feature does not work on third-party devices at this point, so she's not perfect. Yet.

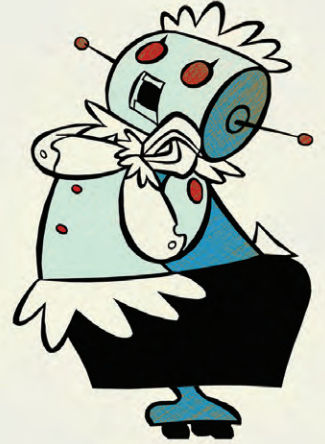
—Reid Creager



# INVENTING A LIFESTYLE

THE SMART HOME DEVICES CONCEPT  
AND ORIGINS GO BACK AT LEAST 70 YEARS

BY REID CREAGER



**R**ay Bradbury saw it coming, from inside the walls of an imaginary empty house decades away.

The acclaimed author's 1950 short story, "There Will Come Soft Rains," is precious in its prescience: "In the kitchen the breakfast stove gave a hissing sigh and ejected from its warm interior eight pieces of perfectly browned toast, eight eggs sunnyside up, sixteen slices of bacon, two coffees, and two cool glasses of milk."

Then came a voice from the kitchen ceiling. "Today is August 4, 2026 ... Insurance is payable, as are the water, gas and light bills. Somewhere in the walls, relays clicked, memory tapes glided under electric eyes. ...

"Nine-fifteen, sang the clock, time to clean. Out of warrens in the wall, tiny robot mice darted. The rooms were acrawl with the small cleaning animals, all rubber and metal. They thudded against chairs, whirling their mustached runners, kneading the rug nap, sucking gently at hidden dust. Then, like mysterious invaders, they popped into their burrows. Their pink electric eye faded. The house was clean."

In a 1950 short story, Ray Bradbury described an automated kitchen that made breakfast inside a self-cleaning home in 2026.

## 'Push-Button Manor'

Although many of us picture the 1950s as a time of almost primitive innocence in grainy black-and-white, there was an underlying current of a simmering technological revolution. Published a year before Bradbury's story, George Orwell's iconic book "Nineteen Eighty-Four" foreshadowed, among other things, a telescreen—a TV that observes those who are watching it. (Fortunately, we're not there yet.)

Emil Mathias didn't just imagine. He obsessed. He built. Oh, did he build.

In December 1950, Mathias's meticulous innovation was spotlighted in a *Popular Mechanics* story that detailed the six-room "Push-Button Manor" he shared with his wife in Jackson, Michigan. His uncanny foresight is a reminder that although today's smart home devices market is dominated by corporate behemoths and other companies, the most impactful inventions often are rooted in the ingenuity of the independent inventor.

Ray Bradbury, a mid-century push-button house and 'The Jetsons' all foreshadowed smart home devices.





An overhead diagram of the Mathias home showed 14 hidden “mechanical servants” on the property that were all operated through a master-control room in the couple’s bedroom, which used to be a closet. Among the house’s features were radio and dinner-bell controls; automatic draperies and windows; a floor-lamp control box, and a basement elevator.

The master-control area was a maze of “switches, relays, clocks that turn on things, clocks that turn off things, thermostats, transformers, rectifiers, yards of wire connecting everything to something else!” the article said. These projects entailed 7,000 feet of wire, all of it cleverly concealed between floor joists and walls.

Some of the innovation was rudimentary by today’s standards but ingenious nonetheless. In order to prevent rain from getting inside the house during the night or when the family wasn’t home, Mathias placed a small metal cup beneath a downspout that tipped down when filled with water. This triggered a switch that closed the windows. Voila: “Automatic windows.”

These projects were years in the making not only in “Push-Button Manor,” but in the couple’s previous house. One particular innovation there was a forerunner to today’s home security systems.

In order to avoid having to walk around the house each night to ensure all of the doors were locked, Mathias set up a light circuit to run through every exterior door lock in the home. The article explained: “When the bolts were all latched, the current ran through, lighting the light in the bedroom. If one (door) was unlocked, the circuit was broken and the light failed to go on when he turned on the test switch.”

## Living in George’s world

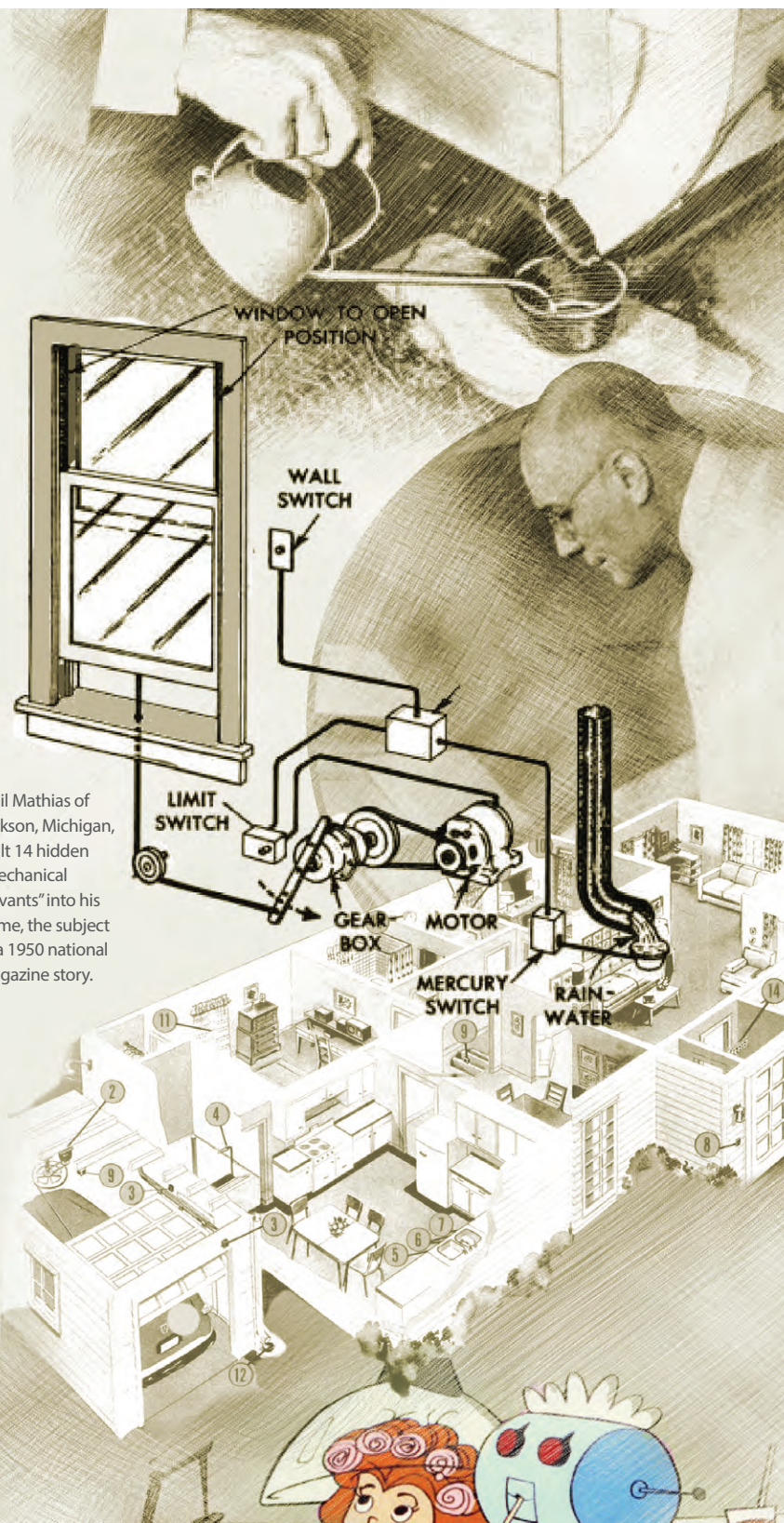
*“Meet George Jetson! Jane, his wife! Daughter Judy!”*

Meet our future, our present. The 2062 flying-cars world of “The Jetsons” may have seemed unimaginable when the cartoon favorite first aired in 1962. Maybe that’s part of the reason the show’s original incarnation—the first show ever broadcast in color by ABC-TV—lasted only 24 episodes. (New shows were produced in the 1980s.)

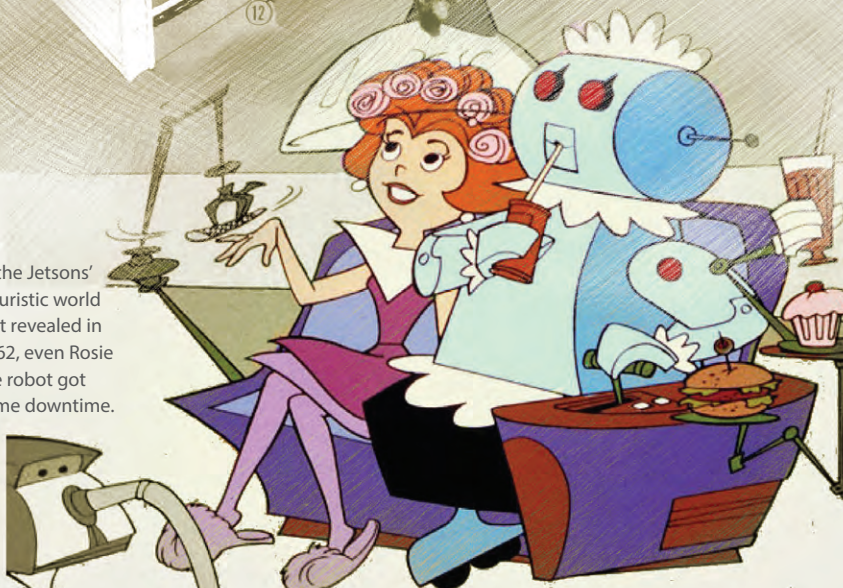
Many of the show’s then-otherworldly premises have become reality, including robotic help and 3D-printed food in the smart home category. Sometimes in “The Jetsons,” smart home devices made even Rosie the robot housekeeper superfluous. In one memorable scene, she’s relaxing on the sofa with Mrs. Jetson while the latter has her nails done by a machine and a pop-out-of-the-floor vacuum cleaner is doing its thing.

In the past few years, major media outlets are touting 3D-printed food that uses real food ingredients loaded into stainless-steel capsules. It may not be everyone’s taste, but it’s yet another flavor of what’s here and what’s ahead. 📺

Emil Mathias of Jackson, Michigan, built 14 hidden “mechanical servants” into his home, the subject of a 1950 national magazine story.



In the Jetsons’ futuristic world first revealed in 1962, even Rosie the robot got some downtime.





# LEARN FROM NEST'S SOCIAL MEDIA SMARTS



INVENTORS CAN USE THESE 3 PROMOTIONAL TOOLS

BY ELIZABETH BREEDLOVE

Since Nest Labs introduced its first learning thermostat in 2011, the brand has become nearly synonymous with the smart home industry. Acquired by Alphabet Inc. (Google) in early 2014, the Nest brand now includes an entire range of smart home and home automation products including programmable, self-learning, sensor-driven and Wi-Fi-enabled thermostats, smoke detectors, security cameras and other security systems.

As Nest continues to grow as a brand, so does its social media platforms. The brand's Facebook page has more than 500,000 Likes. Nest has more than 179,000 followers on Twitter, 71,000-plus followers on Instagram and more than 40,000 subscribers on YouTube.

So, what can inventors of smart home products and home automation solutions learn from Nest's success on social media? Here are three tools inventors and product developers can apply to their own product's social profiles.

**Native video on Facebook.** Facebook's algorithms determine what types of content users see and are constantly changing, but one constant is the importance of native video. Facebook users respond well to both organic videos and paid video ads, and Facebook's algorithms appear to be pushing video to the top of the newsfeed.

Nest uses videos on Facebook in two primary ways. First, it has created a series of short, 20-second-long, branded videos that show why a Nest product is better than the old way of doing things. For example, in a video promoting the Nest security system, someone is shown installing a traditional alarm control panel and destroying the wall in the process—and then someone is shown plugging in a Nest security system and walking away in order to show the simplicity of the company's installation process.

Second, Nest relies on user-generated content to create shareable videos. Users are encouraged to submit funny or entertaining footage captured on their Nest cam, which Nest then re-posts to Facebook. Submissions include a dog climbing over a baby gate, an out-of-control mail truck, pets destroying a house and more. This brings us to something else inventors can do to promote their product on social media.

**Encourage engagement via user-generated content.**

A significant portion of Nest's social media posts on Facebook, Twitter, Instagram and YouTube are made up of user-generated content. One big initiative to encourage Nest users to submit content is the Nestie Awards. Nest hosts these awards yearly and encourages users to submit video caught on their Nest cameras. Anything from pets to baby's first steps to time lapses and more are accepted, and winners are announced in various categories. Winners are given prizes that include a suite of Nest products, a free year of Nest Aware and a trophy.





User-generated content such as Nest cam videos helps improve a product or brand's social media presence in two ways. It gives the social media manager more content with which to work. Social media requires you to post high-quality content quite often, and coming up with creative, original, quality content 365 days a year is not easy.

Also, and perhaps more important, fans love to see their content on social media and are more likely to interact with it. In the case of the Nest cam videos, not only is the person who submitted it likely to share it with friends and family once Nest posts it, but others are likely to share as well. This is an easy way to get more people looking at your content. A video posted in January of two pets destroying a house while their owner was away racked up more than 300 shares!

**Provide another avenue for customer service and support.** Social media is a great place for product-based brands to interact with their customers in a casual, real-time setting, and customer service and support is no exception. Nest does an excellent job of responding to their followers' questions, inquiries and problems in a timely and helpful manner.

For example, consider one Facebook post for the Nest Secure. Two different Facebook users commented on the post, asking when Nest products would be available in other countries, and Nest responded promptly to both fans. Another user asked about promotions and pricing, and again, Nest's social media management team provided more information about promotions Nest is currently running.

On another Facebook post, someone commented about an issue with his or her Nest thermostat setting itself to the wrong temperatures and not working with

Amazon Alexa. Nest's social media team offered several solutions and provided a link to an article on Nest's website that could help troubleshoot the problem.

Overall, Nest does an exceptional job providing customer service and support on social media. When it can address the problem immediately, it does; when it can't the company directs the user to the correct area on the website or to phone support. Quickly responding to customers is helpful because you are very likely answering a questions others have as well.

Additionally, Nest's social media management team does a great job of balancing responding to comments and providing assistance with not provoking internet "trolls," or those who post inflammatory, rude or negative comments just to incite an argument or create a negative environment. Generally, the best way to deal with trolls on social media is to ignore them. Often, a brand's loyal customers will come to its defense, creating no need for the brand to get involved.

Whether you've invented and launched a smart home product or something else entirely, it's always helpful to examine what other brands are doing well on social media and let that guide your own strategy. Looking at Nest's Facebook, Twitter, Instagram and YouTube accounts is a great place to find inspiration for your own social media profiles, especially if you're promoting a smart-home or other techy product. 📱

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



# 5 Questions With... KIRK GOODWIN



## WHIRLPOOL HEAD OF PATENTS DISCUSSES THE LATEST SMART APPLIANCES

Below and opposite page, top: The Whirlpool® Smart Door-Within-Door Refrigerator has dedicated cooling designed specifically to keep the bottom section of the in-door shelving cold.

**S**mart appliances are a major component of the smart home experience. As head of patents at Whirlpool Corp., Kirk Goodwin, head of patents at Whirlpool Corp., talked with *Inventors Digest* Editor-in-Chief Reid Creager about what's new and what's next.

**Reid Creager:** What are your responsibilities and challenges as they pertain to connected home devices?

**Kirk Goodwin:** It's been very exciting to lead the patent team at Whirlpool Corporation. Over the past year, Whirlpool has been collaborating and forming collaborations with big names like Google, Amazon, and Apple to make its smart appliances available and appealing to a broad audience.

We are adding connected features to make our smart appliances even more appealing to consumers, including Scan-To-Cook, and Download & Go technology; and an adaptive Touch Screen. We are even launching an Apple Watch integration this year for our smart appliances.

A next-level convenience for consumers is Whirlpool's upcoming integration of the

popular recipe app, Yummly. Whirlpool Corporation acquired Yummly last year, and now we're connecting this powerful tool to our appliances. Yummly 2.0 will improve life in the kitchen by offering guided cooking from select recipes within the app. It will also provide advanced image recognition technology to recommend recipes based on the ingredients people have in their kitchen. It already helps streamline grocery shopping and meal prep with scheduling features and step-by-step video recipe tutorials.

This requires Whirlpool to develop and protect strong consumer-facing connected features and develop healthy and ongoing working relationships with companies such as Amazon, Google and Apple. From a patent perspective, another benefit we're realizing is the ability to use connected capabilities to help protect our consumers from counterfeit products.

**RC:** Which products are in your company's Smart Home Lineup?

**KG:** Whirlpool brand is launching more than 25 connected products in 2018. We're not launching innovative technology for technology's sake; these are purposeful innovations helping consumers care smarter for their loved ones easier, better, and faster. Look for voice control features with smart home assistants, guided cooking with Yummly, and remote control and notifications.

Whirlpool® Smart Kitchen Appliances will help consumers care for their families through the following features:





- Assisted Cooking, featuring award winning Scan-to-Cook technology
- Remote Control and Notifications
- Smarter Customer Care
- Guided Cooking with Yummly
- Amazon Alexa and Google Home Voice Command capabilities
- Amazon Virtual Dash

In the area of design, there's the new sunset bronze suite of appliances that were well received at the Consumer Electronics Show in January. This includes a refrigerator with a pantry-inspired layout featuring a touchless screen that learns, adapts and suggest customized presets based on the family's routines; a dishwasher with the Download & Go option allowing consumers to send customized cycles to the dishwasher right from their phones; and the range and over-the-range microwave with Scan-to-Cook Technology, which eliminates guesswork by sending cooking instructions from a phone to the cooking appliance.

**RC:** Didn't these products get special recognition at CES?

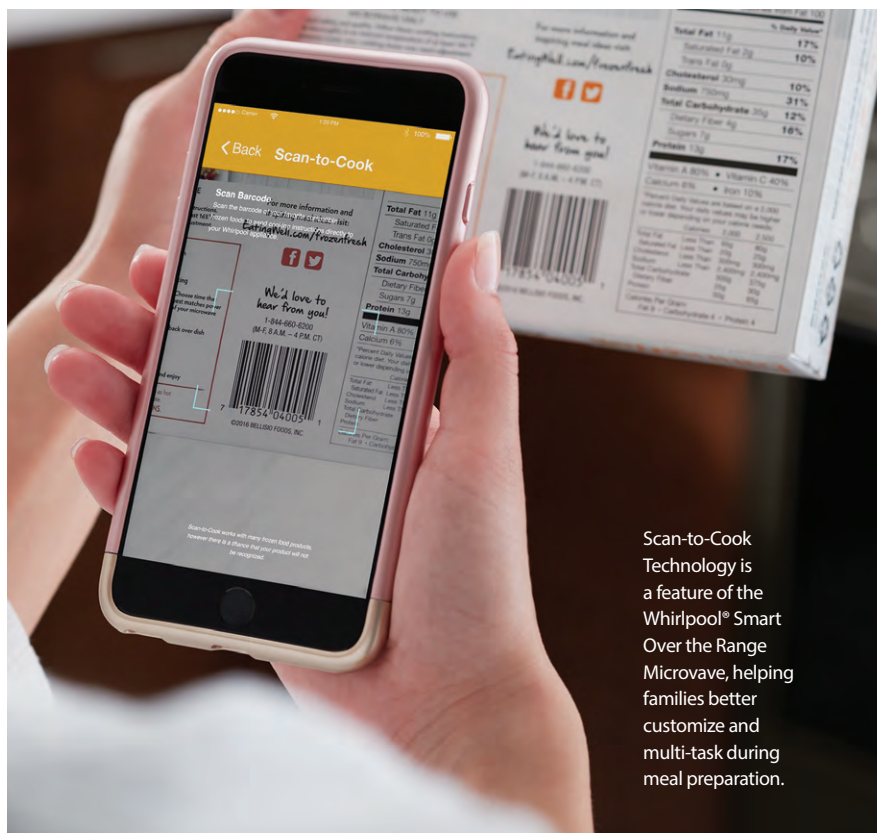
**KG:** People loved what they saw. Whirlpool brand and Yummly earned three CES 2018 Innovation Awards—including Whirlpool® Smart Appliances in Fingerprint Resistant Stainless Steel, Whirlpool® Smart Over the Range Microwave with Scan-to-Cook Technology, and Yummly 2.0 ingredient recognition and connected recipes.

**RC:** Whirlpool has a long history as a leader in home appliance sales. Tell us about the impact it has had on innovation.

**KG:** Innovation is built into Whirlpool Corporation's culture, and it's inseparable with making certain features that are meaningful to consumers. We've long been on the cutting edge—even creating the first Space Kitchen for NASA in the 1960's—but the real key is understanding how appliances are used in the home. Knowing our consumers—their likes, dislikes, habits and aspirations—helps inspire us to create innovations that improve their experience with our products. We believe the most powerful innovations are those that can adapt to and fill real human needs. For more information, follow #CareSmarter.

**RC:** What do you see in the future for these devices? As they become more popular, might the idea of a comprehensive smart home become more affordable?

**KG:** Whirlpool offerings are price competitive. As the feature benefits continue to increase, so does the consumer value of these products. Look for these connected appliances to have purposeful innovation at an affordable price point for mass consumer adoption. 📱



Scan-to-Cook Technology is a feature of the Whirlpool® Smart Over the Range Microwave, helping families better customize and multi-task during meal preparation.





# THE NEXT WAVE

3 START-UPS SHOW THEIR SMARTS ON AIR QUALITY, WATER USAGE AND PETS

BY JEREMY LOSAW

Buoy Labs CEO Keri Waters (standing in the background) says the Buoy smart water device was conceived to save water and money.

**T**he smart home has come a long way since the Clapper. The subject of ever-present, laughable commercials when it introduced wireless control into many of our lives in 1985, the Clapper was one of the first commercially available smart home products. Just plug it into an outlet, plug your lights into the clapper, clap twice —and viola! Sound activates light.

Thirty-three years later, we have a whole suite of wireless smart home devices that allow us to control our thermostat, locks, lights and outlets as well as collect data on air quality, power consumption and temperature.

The age of the smart home has truly arrived. Amazon Echo dominated sales during the past holiday gift season. Millions of homes are connected to the web via the Echo's virtual assistant, Alexa, or the Google Home.

Consumers are comfortable with connected technology and are not afraid to control devices in the home with their phones. Big-box stores carry a multitude of devices; many of the more obvious products for connected technology such as lights, climate control and locks have been developed and are commercially available. These breakthrough products have paved the way for a new generation of smart devices to help us keep our properties safe from damage and keep our families healthier.

These three start-ups hope to become the next staples of the smart home environment.

PHOTOS COURTESY OF BUOY LABS AND BREEZI



## Breezi Air Pulse

Although the Nest thermostat is great for controlling the climate inside the home, it does little to tell us about the health of our HVAC system. Tim Seaton and Tommi Parkkila, founders of Breezi, recognized that hole in the marketplace and developed a device called the AirPulse that notifies homeowners of clogged filters and can prevent costly and unnecessary HVAC repairs.

AirPulse is a simple device that is inserted into the face of an HVAC air filter. The so-called “fitness tracker for HVAC systems” measures pressure variances across a home’s air filter to detect clogged filters. The device (suggested retail price: \$50) communicates via Bluetooth to a user’s smartphone when filters need changing, and can be linked to the user’s Amazon account to order filters automatically. The device, currently in beta testing, is scheduled to be available to consumers sometime this year.

The AirPulse resulted from frustration with the state of smart home products. The founders felt that most smart home devices were just gadgets that did not add value for the homeowner. “You can only have so many light bulbs that change a million colors,” Seaton said. “I felt like we could create a product that adds some IQ points to the smart home.”

## Buoy

Minimizing home water usage is a perennial issue for homeowners. This is especially true as more regions have been affected by drought in the past decade. The Buoy smart water device helps monitor home water usage and can shut off the water if it detects a problem.

The submarine-shaped device ties into your home’s water line between the main shutoff valve and your home. It monitors water flow and reports usage to your smart phone via Wi-Fi. The Buoy app allows you to monitor daily and long-term water usage and where it is being used, so you can improve your water-use habits.

The Buoy also can help prevent damage to your home with a built-in valve that can shut off water to the house in case of an emergency. The app alerts homeowners if an abnormally high amount of water is being used and sends an alert to the user’s phone. A button on the app cuts the water flow and helps prevent damage. The Buoy is available for \$799, including installation by a professional plumber.

Keri Waters, CEO and cofounder of Buoy Labs, said the product is the result of three factors.

“First, I read that almost every home in the U.S. loses 10 percent of its water to leaks. Ending those leaks will have a huge impact on water usage without any lifestyle change. We can keep our long showers if we know

Breezi Air Pulse, which will be available this year, is a “fitness tracker for HVAC systems.”



# 47 %

The percentage of millennials who own at least one smart device; 70 percent of those plan to buy another one, according to [alarms.org](http://alarms.org).

37 %

The percentage of people who don't have smart products in their house and do not see themselves as early adapters to the technology, per [alarms.org](http://alarms.org).

Petrics products include a comprehensive food app, as well as a smart pet bed and activity tracker to get real-time health data.

about and fix that running toilet or leaking hose. This is especially helpful during droughts or water emergencies, but normal, day-to-day water use is becoming more important.

"Second, I saw that water rates are rising nationwide, and a Michigan State University study found that within five years, almost 40 percent of U.S. households won't be able to afford their water bills. We need to replace aging infrastructure, and we need a proactive approach to household water. ...

"Third, I looked around at our smart homes and knew technology could help. This is the point of all our innovations—to use technology to make life better. ... Buoy fits right into the smart home environment, helping you take control of something that's essential for life and health: water."

## Petrics

Our pets are a part of our families. We love, care and pamper them with everything from gourmet food to designer clothes. However, aside from regular checkups, we often overlook their health and well-being. Are they eating well? Are they overweight? Do they get enough exercise? Studies estimate that more than half of all pets are overweight or obese, which can lead to health problems.

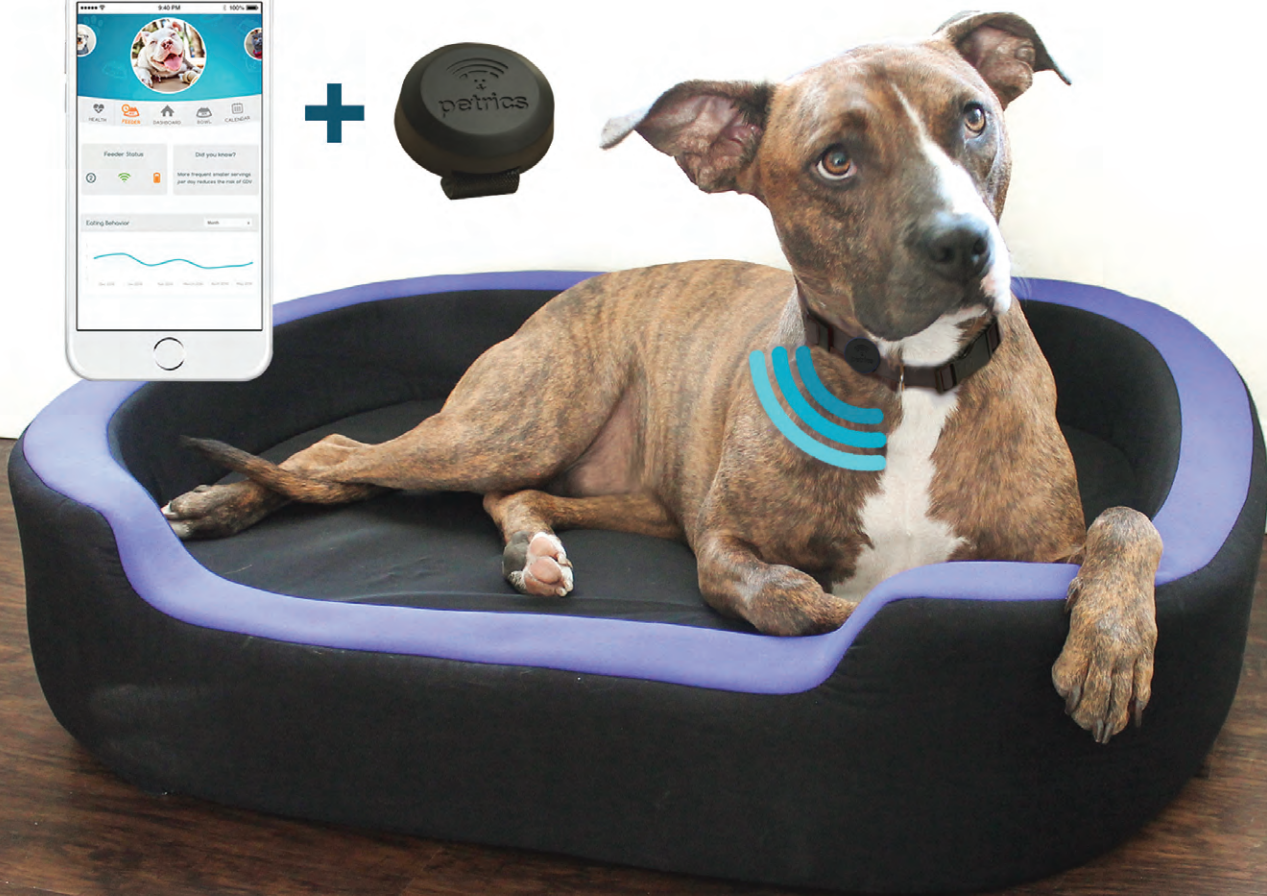
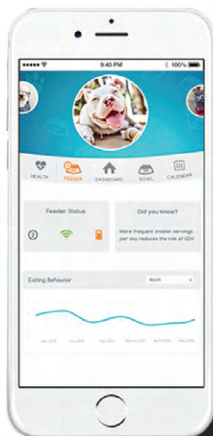
The Petrics suite of products—including a connected pet bed, activity tracker and app—allows dog

and cat owners to keep a watchful eye on their companions. The team started by launching a comprehensive pet food app, in which data on more than 15,000 different pet foods were aggregated and analyzed. Users can input their pet's info (breed, age, weight), and the app matches appropriate food options while allowing the user to order food directly from the app.

The Petrics team supplemented its app with the development of a smart pet bed and activity tracker to get real-time pet health data. The bed has sensors that record your pet's weight and how long it sleeps. It also monitors the animal's temperature and provides climate control to ensure it has optimal sleeping conditions.

The system includes an activity-tracking collar that records data on the activity of your pet and provides feedback to the Petrics app. The systems, launching early this year, will cost between \$100 and \$300 (depending on the size of the bed). The activity tracker can be purchased and used separately.

"We created the pet bed to fill a gap in pet wellness and care—which is the tracking of weight on a consistent basis, and providing a system to report weight findings as well as the detection of health issues from fluctuations of the weight for early detection and intervention," Petrics CEO Ed Hall said in an email to GamesBeat. 🐾







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# Gross, Macabre and Creepy? Sign Me Up

5 LESSER-KNOWN EVENTS NOT ON *INVENTORS DIGEST'S* TRADE SHOWS LIST **BY JEREMY LOSAW**

**W**hether you are a product development professional or a shade tree inventor, chances are you will find yourself at a trade show someday.

These are gatherings of industry professionals, vendors, buyers, media and the rest of the ecosystem that supports the development and sales of products. They are often set up in large convention centers with exhibitors showing their wares and visitors checking them out—though not all of them are available to the public. (*Editor's note:* See the January issue of *Inventors Digest* and [inventorsdigest.com](http://inventorsdigest.com) for a list of the major 2018 shows. Each issue of *Inventors Digest* runs a list of major shows for that month near the back of every issue.)

Most trade shows center on a theme (electronics, baby products, hunting, etc.). They are a great place for people to meet, see new products and trends, and network with others in the industry.

The biggest trade shows, such as CES (the Consumer Electronics Show) and the International Home + Housewares Show, get lots of media coverage because the exhibitors are showcasing consumer-facing products for huge markets. However, there is a whole underbelly of trade shows for industries that are not necessarily top of mind. Five worth noting:



## Casket and Funeral Supply Association of America Fall Conference & Trade Show

[cfsaa.org](http://cfsaa.org), 2018 date TBA

Perhaps the most sobering trade show in the United States, the CFSAA show brings together industry pros to show off the latest funeral products. The 2017 show in Indianapolis last November featured more than 40 exhibitors, including a multitude of casket makers, chemical suppliers (for embalming fluid) and companies that make funeral decorations.

## International Pizza Expo

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

March 19-22, Las Vegas

The International Pizza Expo boasts more than 500 exhibitors and 1,400 booths. The only catch is that it's open only to pizzeria owners, operators, managers, food suppliers and distributors.

The world's largest pizza industry show brings together pizza pros from all over the world. Exhibitors include ingredient suppliers, pizza equipment manufacturers, and promotional firms to help independent and chain pizzerias maximize their businesses.

The IPE also hosts a competition called the World Pizza Games that includes five events to test pizza makers' skills. You can compete in Freestyle Acrobatic Dough Tossing, Fastest Dough, Largest Dough Stretch, Fastest Pizza Box Folding and the Pizza Triathlon. For an additional fee, show-goers can go on a guided tour of the best pizzerias in Las Vegas.

There has never been a better excuse to open your own pie shop.





## PestWorld

*npmapestworld.org*  
October 23-26,  
Orlando, Florida

Working on a better mouse trap? PestWorld brings together pest management firms, technicians and the latest tech in dealing with animal pests like termites and rats, as well as fungus and mold.

Nearly 4,000 people attended the 2017 show in Baltimore to peruse the 125,000 square feet of exhibit space and 200 exhibitors. This is the premier event for debuting new pest control products such as insect sprayers, pesticides, bird and mammal control products and the cadre of equipment that goes with it (dispensers and safety equipment).



## TransWorld's Halloween and Attractions Show

*haashow.com, March 22-25, St. Louis*

Sticking with dark themes, the Halloween and Attractions show has been bringing together Day of the Dead professionals together for three decades. The show caters to anyone in the attractions industry (Halloween-related or not), from people who run corn mazes and paintball fields to those who work at amusement parks and Halloween stores. Exhibitors include prop and mask makers, as well as more high-tech amusements such as virtual reality.

The 2018 show features "Escape Room City," a show area devoted to the burgeoning escape-room industry, as well as a pre-show bus tour to Nashville to visit a haunted house. I will take Halloween in March over Christmas in July any day.

**I will take Halloween in March over Christmas in July any day.**

## Electronic Cigarette Convention

*ecc-expo.com, February 9-11, Ontario, California*

Was that a minor earthquake, or did the Marlboro Man just roll over in his grave? The Electronic Cigarette Convention, the first trade show devoted to the e-cigarette and vaping industry, has been going strong for six years.

The first day of the February show was limited to industry insiders but open to the public for the rest of the weekend. Attendees got face-to-face access to their favorite vaporizer and liquid brands, and got to try new technologies and blends. The show has proven so popular that an event has been added in Detroit in April. 📱



# Consider Going MOBILE

INVENTIONS ASSOCIATED WITH APPS HAVE A LOT OF ADVANTAGES, AND CHALLENGES **BY JOHN G. RAU**

**H**ow would you like to invent something that meets the following criteria or has the following benefits:

- One of the world's fastest-growing market segments.
- No significant barriers to entry.
- Possible low start-up costs (but not always).
- The option of a large "labor pool" of specialists and team members to help you develop your new product.
- The ability to usually field a prototype in a few weeks or a few months.
- Free computer tools to help you develop your new product and determine your development costs.
- Many potential revenue sources.
- The ability to track, in real time, your daily sales performance and see how it compares with competitors.
- A potentially patentable invention that may have trademark and copyright possibilities.
- The ability to generally do all of the above within the 12-month period provided by filing a provisional patent application—and, if things aren't going well, bow out before you have to file your non-provisional patent application.

So, what is that something? If you're one of the billions of worldwide smartphone users, it's right there in your hands in the form of a mobile app.

For the uninitiated, a mobile app is a software program you can download and access directly, using your phone or another mobile device like a tablet or music player. If you have a smartphone or other mobile device, you probably use apps to play games, get turn-by-turn driving directions, access news, books, weather and more.

However, it is important to recognize that commercializing and patenting smartphone apps involves a different set of issues than those confronting people who deal with traditional types of inventions. To wit:

**Picking a vendor and riding the platform.** A smartphone app is basically a software product "riding" on a mobile platform. The owner/developer of that app has

paid for the right to ride on that platform. The platform to be used depends on the type of smartphone you are using.

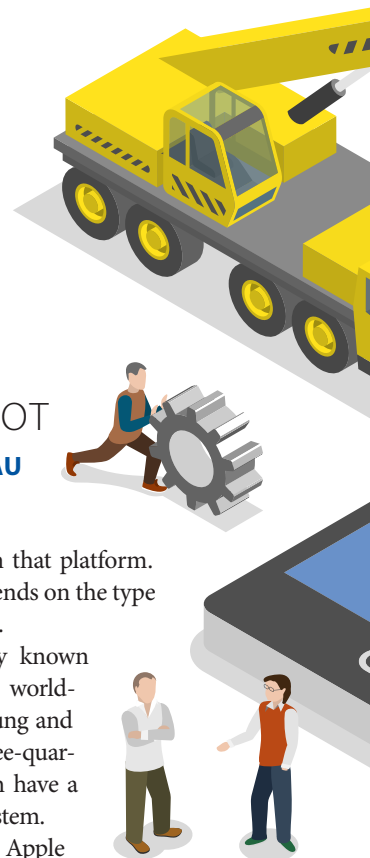
The two most commonly known mobile phone vendors by worldwide market share are Samsung and Apple, which own about three-quarters of the U.S. market. Both have a different type of operating system.

Samsung uses Android; Apple uses iOS. This means that your software development team needs to develop the product to be compatible with whatever type of phone you plan to use for your app. To ride on a platform, then, the app inventor must apply to the operating system for approval and establish an account.

Although other mobile platforms are available to mobile apps developers (such as Microsoft Windows Mobile), most likely your competitors will be using one or both of these platforms. This means that now the operating system can track how well the apps products are performing; you can compare your app's ranking in the app store to other apps within the same category.

**App components and considerations.** It's fairly straightforward to develop a mobile application, which consists of: visual components that the user can see on the screen; non-visual components that are the invisible things with which an application interfaces; events that can happen when instigated by the user of the phone; behaviors that are actions executed by the application; and so-called variables such as memory kept by the application.

By connecting and combining these pieces, you can create a mobile application for a phone. It is not necessarily easy to do this, but it is a straightforward process—resulting in an extremely crowded market. As of last December, the total number of apps in the Google Play Store was approximately 3.5 million; the total number







## Commercializing and patenting smartphone apps involves a different set of issues than those confronting people who deal with traditional types of inventions.

of iOS apps available at the Apple App Store was about 2.2 million in the most recent data available.

**The need for software skills.** Because an app is exclusively a software device, development will generally require the use of people with software development skills. For those with these skills and/or background, software assistance tools are generally available for free or low cost.

A good example of such a product is App Inventor, which is maintained by MIT and allows computer programming newcomers to create software applications for either the Android or Apple iOS platforms. You can use App Inventor to build a prototype. No more “duct tape and cardboard” prototypes!

Other software tools are available to help you determine a best estimate of the most likely cost for development of your new app invention.

**Unique IP possibilities.** An app’s mix of components could result in many potentially patentable opportunities. However, the code that runs the software cannot be patented (although it ordinarily could be copyrighted). What gets protected with a software patent is the system and architecture of the system, independent of exactly how it is coded. Logos may be trademarked; screen shots and other visual displays may be potential design patent candidates and copyright protected, giving an app the potential for significant intellectual property value.

The potential economic life of the app may be shorter than the time required to obtain the necessary patent protection, so it may not be worth the investment to secure this. In many situations, the best strategy may be to just make your money and run!

**Monetizing options.** Potential methods for monetizing an app would include charging for the use of the app, the download fee; offering what are known as in-app purchases, similar to what you would see at a company’s website where you can order products; and banner advertising or other types of in-app advertising.

In most cases, the typical revenue share model is based on the standard 70/30 split, in which the developer gets to keep 70 percent of the revenue derived from sales and the platform owner gets the other 30 percent. Note: Google and Apple are pushing developers to sell year-long subscriptions as in-app purchases, and the transaction fee for these subscriptions has been reduced to 15 percent.

The next time you pick up your smartphone, look at it fondly as a potential source of invention and associated revenue opportunities—all embedded in that tiny device. ☛

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



# When Filing, Avoid Admissions as Prior Art

STICK TO POSITIVELY DESCRIBING THE INVENTION  
AND NOTHING MORE **BY GENE QUINN**

**T**here are many ways people speak and explain things in real life that can *really* get a patent applicant into trouble. Every word matters; it is just that simple.

When you file a patent application, everything in that application should be a self-serving description of the invention. Patent applications should not read like a laboratory notebook or be written to tell the history of what you have done (or tried) and why.

Patent applications positively describe the invention, period. Stick with the invention and do not embellish. Describing your invention as you might to a friend at a cocktail party will only get you into trouble.

And for goodness sakes, don't make any admissions! These are unnecessary. Anything you may want to say in order to set up an argument you plan to make later can be argued *later*, without making comparisons or unnecessary statements about the prior art in your patent application.

As long as you adequately and accurately describe your invention positively in the patent application, those arguments and explanations can be made during prosecution only if and when they are necessary.

## Words can be used against you

So, what is an admission? It's a statement made during patent prosecution, identifying the work of another as prior art. Admissions can and will be relied upon by patent examiners for both novelty and obviousness determinations per the United States (patent) Code, regardless of whether the admitted prior art would otherwise qualify as prior art under the express terms of the statute.

Admissions should be avoided at all costs, regardless of how innocent they seem. All new patent practitioners and inventors must take this to heart. No matter how innocuous the statement may seem, always remember that no good deed will go unpunished!

Everything you say can and will be used against your patent once it issues—forever. Patent applicants should be given a Miranda warning before they file.

If the specification of your patent application (i.e., the written portion of the application except for claims) identifies work done by another as prior art, the subject matter so identified is treated as admitted prior art. Ordinarily, there is no good reason to identify the prior art in the specification of a U.S. patent application.

Of course, notice that the focus here relative to admissions is on what is included in the patent application itself.

It can be and most frequently is extremely beneficial for the inventor and patent practitioner to spend time identifying exactly what is unique compared to the prior art, so that the invention can be described to ensure that uniqueness is explained with as much detail as possible in the patent application. You just want to be extremely careful about actually identifying the prior art and/or making any comparisons (or explaining differences) vis-a-vis the prior art in a patent application.

## Avoid Jepson claims, too

A statement relating to the work of the inventor, however, is not an admission that the inventor's own work is prior art. The law presumes that the inventor is knowledgeable of his or her own work and will continue to build upon those inventions.





## Everything you say can and will be used against your patent once it issues—forever.

Drafting a claim in Jepson format is an implied admission that the subject matter contained in the preamble is the prior art work of another. Nevertheless, Jepson claims are disfavored in the United States and should be avoided.

Having said this, a Jepson claim format can offer a useful analytical framework for inventors and novice patent practitioners as they attempt to “sketch” a claim. It is crucial that the claims of the patent application incorporate what makes the invention new and nonobvious (i.e., unique). A Jepson claim offers a somewhat easier analytical format for novices in that it explains specifically what makes the invention unique in the claim.

But I do not recommend using Jepson claims, because this claiming technique makes it very easy for the patent examiner to use your own words against you and simply focus on finding those elements you have specifically identified as the only ones contributing to the invention being unique. (Of course, writing text that specifically identifies what you view as the improvement and what

you view as being within the prior art can be a useful exercise that helps focus you on the important aspects of what must be disclosed in a patent application.)

So there is a difference between the work you do yourself to help understand the parameters of the invention and what you actually write into the patent application.

Sketching claims and making sure you have identified the core uniqueness of the invention is absolutely essential. Saying that it is a core uniqueness or making statements about the prior art in the patent application itself is a big mistake. 🚫

**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.





# The Year Things Will Finally Change?

AS WE AWAIT SCOTUS RULING ON PTAB PROCESS, DEBATE HEATS UP **BY LOUIS CARBONNEAU**

**T**he gloves are off when it comes to patent validity in the United States, which points to the constitutionality of Patent Trial and Appeal Board proceedings and the decision from the Supreme Court that should be announced by June—either upending or confirming the status quo.

I have talked about this at length in the past, so no need to revisit what is at stake. Meanwhile, however, it is clear that the PTAB has now been further politicized as a quasi-judicial body.

On one hand, several parties are openly accusing the tribunal of bias. On the other hand, the PTAB is aggressively pushing back on both native tribes and universities that have claimed their sovereign immunity shields them from the inter partes review process so often referred to as the “patent death squad.”

To add to the fierce debate, a series of recent articles bring into question how 60 percent of the same patents held to be valid after a lengthy court process could be subsequently invalidated by the PTAB. These articles point to the extremely high “kill rate” that still endures, based on recently released statistics.

## Losing faith in the system

While we eagerly await the Supreme Court decision, this situation has so clearly deteriorated that many patent owners have lost faith in the due process that is supposed to protect them from arbitrary decisions. This issue should be pretty high up on the new United States Patent and Trademark Office director’s “to do” list. In this regard, if you believe in educating the community,

politicians and other decision makers about the importance of a strong IP system to support an innovative economy, there is a new “IP Awareness” YouTube channel (courtesy of the Center for IP Understanding) on which you can watch very good content that attempts to provide a more balanced narrative.

Interestingly, many of the U.S. legislators who were associated with the “infringers lobby,” as certain people call it, and who were behind the America Invents Act patent reform that led to the current erosion of patent rights—namely U.S. representatives Bob Goodlatte, Lamar Smith and Darren Issa (all Republicans)—have recently announced that they will not seek re-election in November. This should provide a tremendous opportunity for pro-patent organizations to have their voices heard by a new group of men and women who may see the world as it is now, and not be so beholden to the old “patent troll” myth that has been largely debunked at this stage. This, in turn, may provide some cover to the courts and continue the trend to a more pragmatic view of the world in which we look around and realize that it is time to stop the mostly self-inflicted damage to the U.S. innovation engine.

All in all, we are relatively bullish about 2018!

## Buyers and sellers

The patent market has stayed fairly active with several reported recent transactions. Korean sovereign patent fund operator Intellectual Discovery offloaded another portfolio of about 30 assets in the audio coding and processing arena to U.S.-based Unified Sound Systems





Inc. In nearby Japan, Panasonic sold a dynamic random access memory and NAND flash memory-related portfolio to Canadian non-practicing entity WiLAN. (An NPE is a person or company holding a patent for a product or process but with no intentions of developing it.)

The big news, though, was learning that well-known French licensing company Technicolor, after disappointing results in 2017, was about to sell its whole patent licensing business to an undisclosed buyer. Technicolor has been one of the staples of the licensing worlds for decades. This announcement is a sign that the licensing market has changed tremendously over the years and is probably ripe for new players and new strategies.

In the U.S., Network-1 Technologies, a patent licensing company, said it acquired a patent portfolio relating to the Internet of Things (IoT), machine-to-machine industries and next-generation consumer mobile technologies from M2M and IoT Technologies LLC. Then it announced it was divesting its general unsecured claim against Avaya Inc. for \$6.32 million. ... Mountain

**On one hand, several parties are openly accusing the PTAB of bias. On the other hand, the board is aggressively pushing back.**

View, California-based Synopsys announced that it is expanding its DesignWare IP portfolio with the acquisition of Kilopass technology. ... Finally, rumor has it that China-based Xiaomi, one of the most active patent buyers in the past couple of years, is on the verge of announcing another large transaction. Stay tuned!

### Winners and losers

If you can believe it, several pundits say that the pharmaceutical industry—which has been fairly absent from the patent market in past years—is apparently expecting a resurgence in transactions. This would be the result of the new U.S. tax bill and its impact of repatriating money held in foreign accounts, which would then be used to stock up on IP assets. We will watch this closely. On the other hand, the recent PTAB position that U.S. universities have waived their sovereign immunity by suing for patent infringement in front of the courts could, if upheld, put a lid on a new string of patent transfers (and litigations) that were in the works in order to avoid the whole IPR process.

I talked recently about newly created Avanci, which is creating an IoT patent platform. Well, it just added Japan-based IP Bridge as a new member. Finally, owners of standard essential patents (SEPs) can only feel dejected after a key ruling in the U.S. about FRAND (fair, reasonable and non-discriminatory) royalty rates that can be charged to those practicing the standard—a decision denounced as “highly biased in favor of infringers” by Gustav Brismark, Ericsson’s chief IP officer who has filed the case in California. This is contrasted with the situation in China

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## Huawei's ability to obtain an injunction against Samsung around SEP patents shows yet again how the patent system in China is now much more protective of patent owners than the U.S. system.

in which large tech company Huawei was able to obtain an injunction against none other than Samsung around SEP patents. This shows yet again how the patent system in China is now much more protective of patent owners than the U.S. system. As a result, Chinese smartphone manufacturers no longer see patents (or the lack thereof) as an obstacle to entering the U.S. phone market, which would have been unthinkable just a few years ago.

### I'll see you in court

Although there were fewer new cases filed in 2017 alleging patent infringement, one should not assume everyone is kissing and making up; witness the recent rare case of **IBM** filing a patent lawsuit against online behemoth **Amazon**. It will be quite interesting to see if this is the beginning of a new trend, or just some outlier.

Meanwhile, Italian-based **Sisvel** sued music streaming company **Spotify** for allegedly infringing several of the patents it had acquired from Philips. In the same media area, **TiVo** hit **Comcast** with a new round of patent lawsuits. Security company **Skybell**, for its part, sued fast-growing start-up and competitor **Ring**. Finally, **Citrix** filed a lawsuit against its smaller rival **AVI Network**.

### Around the world

We are awaiting the court decision in **Germany** on the constitutionality of the Unitary Patent Court System. Meanwhile, the German Bar Association has come out publicly and called the complaint "inadmissible." A positive court decision would help remove one of the remaining obstacles that has marred the path to adopting the UPC in **Europe**. ... In **Brazil**, the patent office is considering a drastic move to rid itself of a huge backlog of pending applications and may automatically grant a quarter-million patents. Beware of a Brazilian PTAB lurking! ... Finally and not surprisingly, **Chinese** inventors have for the first time cracked the top five in patents awarded by country in 2017, a sign that this trend is here to stay. 🇨🇳

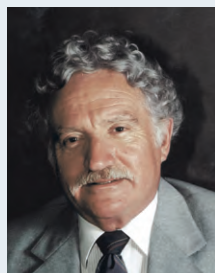
**Louis Carbonneau** is the founder & CEO of Tangible IP, a leading IP strategic advisory and patent brokerage firm, with more than 2,500 patents sold. He is also an attorney who has been voted as one of the world's leading IP strategists for the past seven years. He writes a regular column read by more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





# Our Inventors Are America's Lifeblood

BY LAWRENCE J. UDELL



**F**or well over 60 years, I have had the pleasure and disappointment of working with and mentoring inventors—the dreamers who have created everything we have in our lives. Turn on a light switch, put on your shoes, make a phone call, drive to work: All around us are the examples of creativity that built our great nation and much of the world's products.

In the early days, I had to crank out a mimeograph to send California Inventors Council newsletters to several hundred inventors across the country. I have worked with world-famous inventors including Bill Lear, Jim Fergason, Marty Cooper, Bob Parker, Forrest Bird, and others who brought us life-saving medical devices, the cell phone and other innovations.

The products of tomorrow do not all originate in universities or major corporate research labs. Hundreds, maybe thousands of the products that we use in our everyday lives came out of the garages and basements of inventors across America. Other than inheritance or winning the lottery, inventing is one of the few ways for an individual to become wealthy and in some cases famous.

The opportunities that exist today are greater than at any time in history. Ideas are built upon ideas, which result in inventions following the paths of those technologies that came before. Teenagers are making big consulting checks from companies that want them to develop new apps and games to be played on computers and cell phones.

My lifetime working in Silicon Valley and beyond has been devoted to mentoring creative individuals of all ages, plus creating several inventor organizations. During these exciting years, I also started many corporations from inventions as well as educational programs for the United States Patent and Trademark Office.

I encourage folks of all ages to look around you and find all of the things that need improving. Put your creative juices to work and educate yourself with all of the wonderful resources available to turn your creativity into cash.

Just walk down the aisles of any large retail store and see the new products that were not there last year or last month. Inventions with the right planning and team become new products that create employment and add to the economy of the world.

Join me in beautiful New Mexico at the third annual Inventors & Entrepreneurs Workshop this April 13 and 14. Enjoy the creativity and splendor of the campus at New Mexico Tech.

For free info and to learn more about me, go to [california-inventorcenter.org](http://california-inventorcenter.org), check me out on Google or email [larry@les-svc.org](mailto:larry@les-svc.org).

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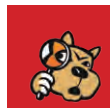
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## Iancu's Challenge Begins

NOW CONFIRMED, USPTO LEADER HAS NO SHORTAGE OF WORK—OR ADVICE **BY GENE QUINN**

**O**n February 8, Andrei Iancu began his first day as Under Secretary of Commerce for Intellectual Property and director of the United States Patent and Trademark Office.

It was the first of many challenging days ahead. Iancu—nominated by President Trump for the position last August and unanimously confirmed by the U.S. Senate on February 5—will provide leadership and oversight to one of the largest intellectual property offices in the world, with more than 12,000 employees and an annual budget of more than \$3 billion. He also will be the principal adviser to the president, through the Secretary of Commerce, on domestic and international intellectual property policy matters.

Iancu is the 59th leader of the USPTO. He replaced Michelle Lee, who resigned last June.

Among the urgent issues on his plate are the flagging confidence of the independent inventor, linked by many to alleged patent-unfriendly rulings and practices of the Patent Trial and Appeal Board—a key factor cited by the United States Chamber of Commerce in recent worldwide rankings in which America dropped to a tie for 12th in patent protection.

“Andrei’s diverse intellectual property background and leadership will prove invaluable to the USPTO’s efforts to bolster economic growth and promote American innovation,” said Secretary of Commerce Wilbur Ross. “I look forward to working with Andrei and the rest of the USPTO team.”

Many others are hopeful for Iancu. Among his legal community accolades, the *Daily Journal*, *California Lawyer* magazine, the *Los Angeles Business Journal*, Chambers USA, The Best Lawyers in America and many others have acknowledged his expertise in

## One expert's 12-point plan for Iancu

**Not surprisingly**, leaders in IP circles have no shortage of advice for Iancu as he begins his first government job. John White, partner at Berenato & White, a U.S. patent attorney and a principal lecturer/author of the PLI patent bar review, offered a 12-point plan:

1. Sit down with (former USPTO director) Dave Kappos, (former USPTO Commissioner for Patents) Bob Stoll and (current USPTO Commissioner for Patents) Drew Hirshfeld and get to know what it is to run the PTO day to day (examination and policy), and year to year (money, money, money). Spend several hours; get to know the issues, and the levers that operate the enterprise.
2. Meet the union rep(s) for the Patent Office Professional Association off-site, just as Kappos did, and get the union perspective, unfiltered by senior PTO staff.
3. Believe in your product.
4. Believe in your staff to deliver that product.
5. Eliminate impediments to (3) and (4).
6. Meet with the board and learn the politics of that entity.
7. Rid them of those politics.
8. Get and keep the fees paid to the USPTO.
9. Use those funds to eliminate impediments to (3) and (4).
10. Include, as a part of annual examiner training, searching training to find the best prior art that exists, across the globe, in each examination. The best and most powerful tools, using the best and newest training, will yield the best prior art
11. Enjoy yourself, and give talks that indicate the pride you have in the system you oversee. Be a proponent of the patent system.
12. Call me, if any of this is confusing.



commercial litigation and intellectual property law. Iancu also has received the Patent and Trademark Office Society's 36th annual Rossman Award, the Hughes Aircraft Malcolm R. Currie Innovation Award and the Melville B. Nimmer Copyright Award.

### Seeking a 'culture of excellence'

As previously reported, Iancu has an impressive record in many high-profile IP cases. Most recently he was the managing partner at Irell & Manella LLP, where his practice focused on intellectual property litigation. He was front and center on many matters in front of the USPTO, U.S. district courts, the Court of Appeals for the Federal Circuit and the U.S. International Trade Commission.

He has represented clients across the technical and scientific spectra—including those associated with medical devices, genetic testing, therapeutics, the internet, telephony, TV broadcasting, video game systems and computer peripherals. He also has taught patent law at the UCLA School of Law, and has written and spoken publicly on a variety of intellectual property issues. Before his legal career, Iancu was an engineer at Hughes Aircraft Co.



## Many people and organizations are hopeful for the 59th director of the USPTO.

"Our patent system is the crown jewel that provides both the incentives and the protections necessary to enable innovation and growth. I look forward to working together with my colleagues as we lead the office in a culture of excellence that serves the interests of all of its constituents and the public at large," Iancu said. 🗨️

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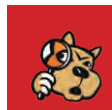
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# A Firsthand View of the Patent Double Standard

MY ATTEMPT TO GET IP FOR INVENTION BODES POORLY FOR INDEPENDENT INVENTORS **BY TÉSIA THOMAS**

**I** recently went to the United States Patent and Trademark Office's National Inventors Hall of Fame and Museum with my comrades from US Inventor. I soon realized that many, if not most, of the Hall of Fame inductees were individuals who were part of established companies.

At first I was struck with awe, wonderment—and hope: Maybe I will be listed here one day. But then I got sad. I realized that all of these successful inventors have expired patents, and many successful individual inventors today have invalidated patents. And that is what I expect for myself.

I thought, maybe none of my generation will make it into this Hall of Fame because none of us will have valid patents, valid inventions. Maybe none of my generation will thus be independent inventors. Maybe the independent inventor's time is over.

## Zipper's history is telling

For the past two centuries before the 2011 America Invents Act—which created the Patent Trial and Appeal Board to wipe out bad patents and so-called patent trolls—patent laws in the United States were strong. During that time, the first zipper was created.

In 1851, Elias Howe invented the first toothed fastener device (U.S. Patent No. 8,540).

In 1892, Whitcomb Judson invented the toothed fastener with a slider device (Patent No. 504,037).

In 1914, Gideon Sundback created the modern toothed fastener (Patent No. 1,219,881). Sundback is often credited with inventing the toothed fastener in general.

Nearly 200 years since Howe's concept, there are well over 10,000 patents on toothed fasteners—yet we're all still using toothed fasteners that look and function almost indistinguishably from these prior patents. Toothed fasteners as a class are zippers with individual and separate rigid, interlocking parts that sit along a fabric tape and which a slider closes and opens. I don't think Gideon Sundback's patent would have survived the PTAB in lieu of Elias Howe's and Whitcomb Judson's combined prior art.

The second zipper was created during a time of strong patent laws.

In 1927, Sundback created a zip track with slider (Patent No. 1,959,318).

In 1927, Harry Sipe created a zip track with slider (Patent No. 1,959,319).

In 1937, David Freedman improved Sundback's zip track (Patent No. 2,144,755).

In 1951, Borge Madsen improved on Sipe's zip track and created the modern zip track with slider (Patent No. 2,613,421). Madsen is often credited with inventing the zip track in general.

Nearly 100 years since Sundback's and Sipe's efforts, there are now well over 10,000 patents on zip tracks—yet we're all still using zip tracks that look and function almost indistinguishably from these prior patents. Zip tracks as a class are zippers that are wholly flexible and easily pressed together with fingers, or with a slider.

I don't think Madsen's patent would have survived the PTAB in lieu of Sipe's, Sundback's and Freedman's combined prior art. Perhaps all 10,000-plus recent patents wouldn't survive the PTAB either.

These past inventors never had the worries created by the PTAB. They had security, knowing that if their patent was approved that it was valid and would stay that way—that the patent office would not suddenly seek to take away the patent. No matter how iterative the improvement was, patents remained valid, strong and worthwhile.

## New solution is discouraged

Large corporations own most of the recent zipper IP and have huge research and development labs. They have spent billions, if not trillions, of dollars over nearly two centuries to perfect the zipper. Still, these large corporations are selling closures that closely resemble Gideon Sundback's.

The government has huge R&D labs and it, too, has spent billions of dollars on zipper R&D over the last couple of centuries. Still, after testing every zipper in existence since 2016 and paying others for patent searches and development, the military is still searching for something new, something better.



That is where I come in.

I currently have the only publicly disclosed closure that the military has not tested—and has not denied as not meeting its needs.

I contacted a government agency early on and asked for resources, which it has provided to others through grants. The agency denied resources despite open grants and asked me to give it the technology so it could bring the research and development in-house.

My largest zipper competitors reacted to my public disclosures, even contacting me about obtaining my earliest prototypes and descriptions of my thought processes, yet denied knowing what the technology was.

Two centuries of time and billions of dollars spent and, finally, a visibly brand-new solution from a young and comparably broke inventor.

Now, after dozens of people and companies have contacted me with interest in my closure, deeming it visibly unique and well suited to their needs, I wonder whether my technology will be utilized—yet my patents will be invalidated because the government and my private competitors so obviously don't want me to own the IP to this creation.

### Mixed message to minorities

I hope that as the government and large technology companies try to encourage young women and minorities to innovate that they will reflect on how they have treated me—a young, female and minority inventor. I wonder if they would consider their initiatives fulfilled if my IP were to be allowed and then invalidated, as has happened to my friends who hold important, valuable, yet not-expired patents. I wonder if either the government or private companies would try to invalidate the third zipper ever, while the patents of 10,000-plus iterations of the first two closures are left to expire.

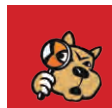
I just want you to know that you'd be killing the future—because I won't invent in the United States anymore if my current patents are issued and subsequently invalidated and those 10,000-plus iterations are not similarly invalidated. But that isn't how the patent office works; it only invalidates the patents of some under the guise of enhancing patent quality. The patents of those who threaten the status quo are challenged, while patents of market leaders are left intact.

**The patents of those who threaten the status quo are challenged, while patents of market leaders are left intact.**

Perhaps the patent office should review the patents of Hall of Fame inductees under current legal standards to determine whether those inventors really deserve to be there. After all, when the law changes, it is retroactively applied against inventors today. My guess is, many celebrated inventors would be unceremoniously removed from the Hall of Fame if they were to have their patents reviewed as part of a quality enhancement program the USPTO calls the PTAB. 📌

**Tésia Thomas** is the founder of Zipr Shift. She has five years' experience in materials science R&D. She loves playing with her bunny, programming to automate her life, blogging, reading and painting.





# U.S. Drops Again in Patent Rankings

AMERICA KEEPS A SHRINKING, SLIM LEAD IN OVERALL GLOBAL IP PROTECTION **BY GENE QUINN**

**T**he United States repeated as the top-ranked country in overall score for intellectual property protection in this year's U.S. Chamber of Commerce International IP Index, but the rankings are closer than ever.

The United Kingdom is within .01 points of the United States on the scale. The U.S. position was helped by improved scores relating to copyrights and trademarks but was dragged down as the U.S. patent ranking decreased again—the result of a patent climate that the chamber characterized as causing “considerable uncertainty for innovators.”

Last year, the United States fell from first place to 10th worldwide in offering patent protection to innovators; now it has dropped to 12th, tied with Italy.

## Many others gain on patents

Many countries have taken positive steps in the patent protection rankings, including countries you might not ordinarily consider as patent-friendly jurisdictions. Canada, China, Ecuador, India, Israel, Italy, South Korea, Spain, Taiwan and the Ukraine all improved their scores relative to patent protection in the past year. China rose from a score of 4.35 (out of 8) in 2017 to 5.5.

The United States joined these countries with a weaker patent-protection ranking in the past year: Turkey, Saudi Arabia, Peru, Mexico, Indonesia, Columbia, Chile and Australia.

To justify the patent ranking given to the United States, the chamber cited Supreme Court decisions on patent eligibility (i.e., *Mayo Collaborative Services v. Prometheus Laboratories*, 2012; *Myriad Genetics v. Association for Molecular Pathology*, 2013, and *Alice Corp. v. CLS Bank International*, 2014), and in particular the recent interpretations of those cases and guidance from the United States Patent and Trademark Office. The chamber also expressed concern over how easy it has become to challenge patents in post-grant proceedings at the Patent Trial and Appeal Board.

**The U.S. Chamber of Commerce listed many factors—and consequences—in America's fall to 12th place in patent rankings.**

## Fall by U.S. is detailed

The chamber explained: “[T]he patentability of basic biotech inventions was compromised by the Supreme Court decisions” in the *Mayo* and *Myriad* cases. “The rulings raised uncertainties over the patentability of DNA molecules that mimic naturally occurring sequences as well as other patented products and technologies isolated from natural sources.

“In 2017, interpretation of the recent Supreme Court decisions in *Myriad*, *Mayo*, and *Alice Corp. v. CLS Bank International* by lower courts and guidance from the USPTO remained inconsistent and difficult to apply.”

The chamber was clear about who is adversely affected: “There is considerable uncertainty for innovators and the legal community, as well as an overly cautious and restrictive approach to determining eligibility for patentable subject matter in areas such as biotech, business method, and computer-implemented inventions. This seriously undermines the longstanding world-class innovation environment in the U.S. and threatens the nation's global competitiveness.

“As a result, in 2017, a number of legal societies and industry groups called for legislative reform of Section 101 of the U.S. Patent Act, citing the need for clarity on patentability in a wider, legislative context rather than in highly specific guidelines and case law.”

The chamber also singled out the inter partes review trial proceedings as troublesome. “With respect to opposition proceedings, despite the best intentions of new opposition mechanisms introduced in the America Invents Act, the ease of challenging patents during the post-grant period, particularly through inter partes review, has led to a high volume of trials (particularly for life sciences claims) and a disproportionate rate of rejections. Concerns have also been raised over a perceived reduced opportunity to amend claims in opposition proceedings and a lower burden of proof for opposing parties than in district court proceedings.

“As such, the opposition system in the U.S. provides a channel for bad faith actors and injects a great deal of cost and uncertainty for patent owners compared with other post-grant opposition systems.”





## 'Alarm bells continue to ring'

"The majority of countries took steps to strengthen their IP systems and foster an environment that encourages and incentivizes creators to bring their ideas to market," said David Hirschmann, president and CEO of the U.S. Chamber of Commerce Global Innovation Policy Center. "While a clear pack of leaders in IP protection top the rankings, the leadership gap has narrowed in a new global race to the top. There is still work to be done, and we hope governments will use this Index as a blueprint to further improve their IP eco-systems and grow competitive, knowledge-based economies. When countries invest in strong IP systems, we all benefit."

Innovation Alliance Executive Director Brian Pomper said of the U.S. falling to 12th place in patent system strength:

"The alarm bells continue to ring. This disturbing ranking follows warning signs in similar measures, including the recently released Bloomberg Innovation Index, which showed the U.S. falling out of the top 10 most innovative countries for the first time." ☐

## Top Scores, Overall Economy

United States, 37.98  
United Kingdom, 37.97  
Sweden, 37.03  
France, 36.74  
Germany, 36.54  
Ireland, 35.98  
Netherlands, 35.33  
Japan, 34.58  
Singapore, 33.45  
Switzerland, 33.42  
South Korea, 33.15  
Spain, 32.58  
Italy, 32.58  
Australia, 32.11  
Hungary, 30.21

## Top Scores, Patents

(Maximum score of 8)

Singapore, 7.75  
United Kingdom, 7.5  
Switzerland, 7.5  
Sweden, 7.5  
Spain, 7.5  
South Korea, 7.5  
Netherlands, 7.5  
Japan, 7.5  
Ireland, 7.5  
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Management Systems Society)**

*Health care IT*

Venetian-Palazzo Sands Expo Center, Las Vegas  
855-326-8342; himssconference.org

**March 5-9**

**International Wireless  
Communications Expo (IWCE)**

Orange County Convention Center, Orlando, Fla.  
800-927-5007; iwceexpo.com

**March 10-13**

**International Home + Housewares Show (IHA)**

McCormick Place, Chicago  
847-292-4200; housewares.org

**March 11-15**

**OFC (Optical Fiber Communication  
Conference and Exhibition)**

San Diego Convention Center  
855-326-8341; ofcconference.org

**March 19-23**

**Game Developers Conference (GDC)**

*Video games*

Moscone Convention Center, San Francisco  
415-947-6926; gdconf.com

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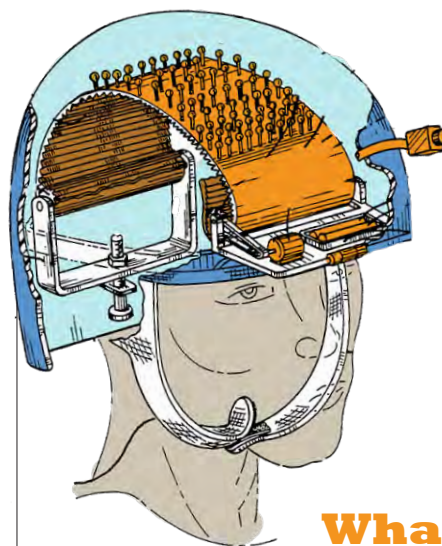
## IoT Corner

Now that we've updated you on a key Internet of Things driver—the smart home devices phenomenon—here are some data that forecast the overall impact of IoT components.

According to London-based **IHS Markit**, the number of connected devices will reach 30.7 billion by 2020 and 75.4 billion five years later. (Intel's projection is far more dramatic, predicting 200 billion such devices within the next two years.)

Wearable devices, a cover theme in the September 2016 *Inventors Digest*, are projected to grow from 28.3 million units in 2016 to 82.5 million units in 2020, per IDC Research.

Naturally, this will have massive economic impact. Business Insider predicts that total business spending on IoT solutions will reach \$6 trillion by 2021.



## What IS that?

Patent No. US 5081986, issued Jan. 21, 1992 (since lapsed), is for a “**massaging and combing helmet for insomnia**.” There isn't space to explain everything going on in this diagram, but the patent says the helmet features “an endless belt which rubs the wearer's head with belt areas of various textures. The belt runs over two rollers located inside the helmet near the forehead and nape. An electric motor and batteries power the belt, which rubs the scalp from front to back.” Sleepy yet?

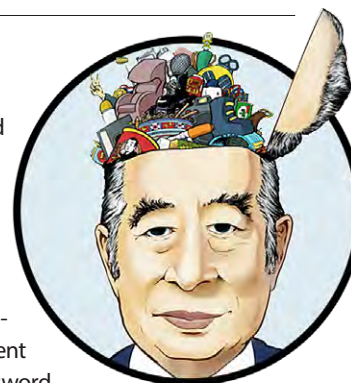
## Wunderkinds

When **Kylie Simonds** of Inman, South Carolina was diagnosed with cancer in 2011 as an 8-year-old, she invented an attractive, functional backpack—patented in 2015—that gives kids an alternative to clumsy, ugly IV poles. After months of chemotherapy and radiation treatments, Kylie is now cancer free. She remains committed to seeing the IV Pediatric Backpack for Kids in children's hospitals, even after a 43-month GoFundMe campaign launched in 2014 raised only \$55,451 of its \$250,000 goal. In her latest Facebook update on the project, she wrote that she has been trying to have the backpack 3D printed.



## 4,000+

The number of patents claimed by 89-year-old Japanese inventor **Yoshiro Nakamatsu**, known as Dr. NakaMats, who says that is a world record. Many sources do not support this claim. Among his declared inventions: the floppy disk, a toilet seat lifter, and a wig for President Donald Trump that has a built-in sword. (Dr. NakaMats said he is not a Trump supporter.)



TOKYOWEEKENDER

## WHAT DO YOU KNOW?

**1** Abbott and Costello's baseball comedy routine “Who's on First,” copyrighted in March 1944, was also recorded by:

- A) Marty Brennaman and Joe Nuxhall
- B) Paul Simon and Art Garfunkel
- C) Jack Burns and Avery Schreiber
- D) None of the above

**2** **True or false:** Irell & Manella, the firm where newly confirmed United States Patent and Trademark Office Director Andrei Iancu served as managing partner, once defended Donald Trump in a legal action.

**3** **True or false:** The Google Doodle, which frequently appears on the website's homepage with various artistic renderings, has a patent.

**4** Which March patent came first—the coin press, or shoelaces that feature plastic end tips?

**5** Name the 20th-century icon who is credited with the following invention-related quote: “Whether you think you can or think you can't, you're right.”

- A) Henry Ford
- B) John Lennon
- C) Mother Teresa
- D) Albert Einstein

**ANSWERS:** 1. D. 2. True. Mark Bethea sued Mark Burnett Productions, NBC Universal and Trump in U.S. District Court, claiming that his proposed show “C.E.O.”—which ideally would have been hosted by Trump—was used to create the show “The Apprentice” in 2004. Both sides settled out of court in 2006. 3. True. Google cofounder Sergey Brin was credited as sole inventor in the 2011 patent. 4. Englishman Harvey Kennedy got a patent in 1790 for his variation of shoelaces that include an aglet, the metal or plastic sheath that protects the ends of the laces. Franklin Beale invented the coin press in 1836. 5. A.



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