

Inventors

NOVEMBER 2019 Volume 35 Issue 11

DIGEST

SUN SPLASH

ELECTRICAL VEHICLE CHARGER
POISED FOR A WORLD OF IMPACT



Sci-Fi Movies

IMPOSSIBLE INVENTIONS
THAT BECAME POSSIBLE

'Shark Tank' Lessons

TV SHOW PARTICIPANTS
SHARE THEIR WISDOM

Market Scorecard

CURRENT, FUTURE TRENDS
SHOW GUARDED OPTIMISM

Desmond Wheatley
CEO, ENVISION SOLAR

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Making Good Use Of a Hot Concept



Desmond Wheatley is an inventor, but in some ways he is also an innovator.

The words "invention" and "innovation" are often used interchangeably—although technically, that's incorrect.

An invention occurs when someone comes up with a new idea and files for a patent. Innovation is when someone improves on an existing idea.

Wheatley's solar-powered electrical vehicle charger that is the cover subject in this month's *Inventors Digest* is the first of its kind, a true invention. But it also builds on the long-ago developed idea of making the sun work for us.

Wheatley is among many who are leveraging an exciting era in solar-powered discovery. We already have or soon will have solar-powered lights, generators, power plugs, watches, fans, cars, homes, homeless shelters, even entire solar-related systems. And consider some of the latest, courtesy of greencoast.org:

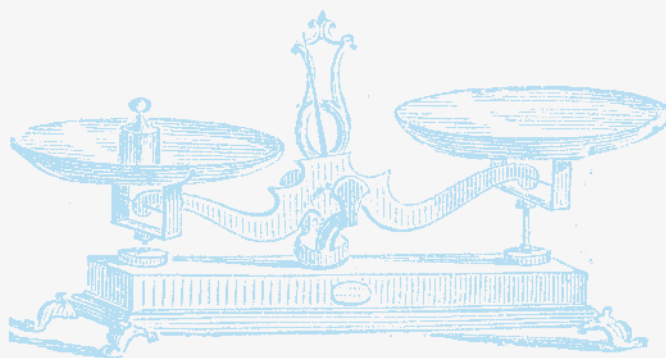
- A solar road. Yes, you read that right. SolaRoad is a bike path in North Holland with solar panels. The electricity generated by the panels powers the traffic lights and streetlights.
- Portable, small solar panels by Renogy quickly charge your gadgets—a huge benefit for travelers.
- A solar-powered sports stadium in Kaohsiung, Taiwan, is powered by 8,844 solar panels artistically affixed to the roof. It also can create enough power to cater to about 80 percent of the households in its locality!
- An off-grid solar backpack by Voltaic Systems ensures you have power for your devices even when far away from a grid power connection.
- Solar-powered paint by the Royal Melbourne Institute of Technology can absorb energy from the sun and moisture. The paint turns the entire surface it's affixed to into an efficient clean energy generator.

Harnessing solar power in such productive ways is a beautiful tribute to the inventive spirit—and the innovative spirit.

—Reid

(reid.creager@inventorsdigest.com)

American innovation needs to hit the gym



Weakened patent protections have reduced the value of American inventions. To strengthen American innovation, support the STRONGER Patents Act—legislation designed to restore strong Constitutional patent rights, limit unfair patent challenges, and end the diversion of USPTO fees.

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

This is the first time I visited your website. I found so much interesting stuff from the tons of comments on your articles.

I guess I am not the only one having all the enjoyment here. Keep up the good work.

—HIEROPHANT TAROT

"5 Tips From a Patent Attorney" (November 2017):

Really, the tips are very beneficial and as it is from a patent lawyer, there is no need to doubt in these. Thank you for posting such an important information here. Keep posting such kinds of information in the future.

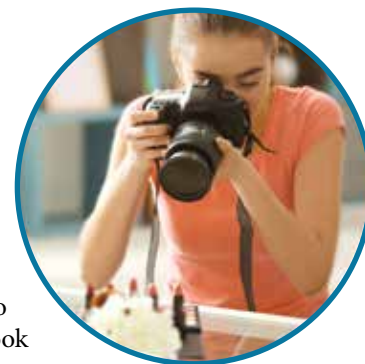
—DONALD SMITH, CHIPPERSON LAW GROUP

"5 Tips for Great Product Photos on Social Media" (August 2018):

Thanks for the tips. It's very helpful. Then if someone wants to edit and optimize his product photos properly, he can contact some photo editing studio and make them look professional.

It seems to work well, as it offers some crucial parts of product photography.

—LISAMERY11@GMAIL.COM



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COURT GIVES WINWOOD SOME LOVIN'

The 6th U.S. Circuit Court of Appeals has ruled in favor of singer Steve Winwood in a copyright infringement case, and the plaintiffs will have to roll with it.

The case centered on the claim that Spencer Davis Group's iconic 1966 hit "Gimme Some Lovin'" stole the bass line from a 1965 song. Winwood was the lead vocal on the hit that reached No. 7 in the United States and No. 2 in the UK; the song was written by him, Spencer Davis and Muff Winwood, although it's solely credited to Steve Winwood on the UK single label.

Muff Winwood once said the song was conceived, arranged and rehearsed in a half-hour.

The court's September 17 ruling affirmed a lower court judgment in favor of Winwood because the evidence of the alleged copyright infringement was inadmissible hearsay.

Plaintiffs Willia "Deanie" Parker and Rose Banks, the widow of songwriter Homer Banks, claimed that Steve and Mervyn Winwood lifted the bass line from Parker's

song "Ain't That a Lot of Love."

According to the American Intellectual Property Law Association, Parker cited an excerpt from a 1990 interview with Spencer Davis in which Steve Winwood apparently admits to taking the bass groove, and a similar Billboard magazine interview posted on stevewinwood.com. But the 6th Circuit held that the former interview wasn't allowable as an "ancient document," and the other interview wasn't a "party admission" because Winwood didn't say it. Further, it said the posting of the article on Winwood's website didn't "manifest his adoption" of it.

The plaintiffs—who had written their song in Memphis, Tennessee, and registered it with the U.S. Copyright Office in 1965—called the ruling a "grave injustice." "Ain't That a Lot of Love" was not a commercial success.



The defendants said they had never heard of Parker's song. But the plaintiffs claimed that the Spencer Davis Group members could have copied the bass line in the 21 days between the debut of their song and the commercial release of "Gimme Some Lovin'."

According to Leagle.com, 29 other cases were cited in the Winwood case, featuring corporations that ranged from Bright Tunes Music to DaimlerChrysler to Goodyear Dunlop Tires to Janus Capital to Burger King.

News reports did not say whether the bass line from "Ain't That a Lot of Love" was played in court. *Inventors Digest* could find no recordings of it online.

BRIGHT IDEAS

SlingBelt

CARRIER FOR
CAMERAS, LENSES
cottoncarrier.com

A customizable, fixed-position carrying system, SlingBelt sits comfortably on the hips to hold cameras, lenses, binoculars and extra gear.

The Twist & Lock mount secures a camera or binoculars to the hip, with the option to add a second mount with a side holster. The Sling Tether allows the camera to hang for instant shooting. You can customize the system by adding a lens bucket or two.

DryBags protect against rain and are engineered to fit and clip into the bucket for a secure carry.

The complete SlingBelt system will retail for \$128, with shipping to Rewards backers set for January.



Ohsnap

MAGNETIC PHONE GRIP
ohsnap.com

Ohsnap is a magnetic, ultra-thin, one-finger grip that adheres directly to a phone or phone case.

Pressing the center circle of the Ohsnap releases the finger band. Use the “U” shape as a grip or connect the ends together to make a complete loop. With a finger through the loop, phone drops are next to impossible.

Ohsnap can be used as a snap-up kickstand. It also comes with one free sticky plate.

With a planned \$25 retail price, Ohsnap is to begin shipping to Rewards backers in December.



cnoc

**TELESCOPIC
TREKKING POLES**

cnocoutdoors.com

These carbon fiber, light telescopic poles are fully reparable in the field. Normally, you have to heat the end of a trekking pole to get the tip off. These tips screw off.

Easily portable, cnoc poles feature a great range of usable length. From 71cm to 158cm, they have the same durable feel. The extra-long deployed length allows for the poles to support most shelters in the market.

The Friction Quick Lock uses friction rather than compression to create a secure lock.

The expected price will be \$170. Shipping to crowdfunding Rewards backers is to begin in February.



“The very existence of flamethrowers proves that sometime, somewhere, someone said to themselves, ‘You know, I want to set those people over there on fire, but I’m just not close enough to get the job done.’”

—GEORGE CARLIN

Shine

**AUTOMATED
TOILET CLEANING**

try.shinebathroom.com

The Shine Bathroom Assistant automates toilet cleaning and maintenance without chemicals.

It can be installed within 5 minutes, without plumbing changes or screws. Fill it with water, insert an eco-friendly pod, and place it near your toilet. On a detected flush or command from the app, Shine cleans and covers the bowl in now-electrolyzed water, cleaning and deodorizing simultaneously.

Shine’s automation manager can detect leaks and overflows while tracking water use. The unit will retail for \$149, with shipping to crowdfunding Rewards backers in February.



Sci-Fi Movie Inventions

SO OFTEN THEY SEEMED IMPOSSIBLE—
AND SO OFTEN THEY WEREN'T **BY REID CREAGER**

Below: The lightsaber has been called the holy grail of sci-fi inventions.

Bottom: An iPad-like tablet (left) is featured in 1968's "2001: A Space Odyssey," in which Keir Dullea (right) poses with a futuristic gadget box strapped to his chest.

A RAPIDLY ESCALATING BLUR of technological advances has made modern life something of a science-fiction movie—though hopefully a little more predictable and not so expensive.

For more than a half-century, film producers have cashed in on our obsession with inventions that do impossible things. Only now, many of them are not so impossible.

Here's a fun look back at some memorable movie gadgets and their chances of becoming real-world reality:

Lightsaber in the "Star Wars" series:

Allworldreport.com says the lightsaber is the "holy grail of science fiction inventions, and has been the dream of arguably just about anyone who has ever seen or even heard of a 'Star Wars' film. The thought of using an energy sword of such incredible strength and power is a daunting and intimidating thought..." This is one of many "Star Wars" inventions, too numerous to list separately here.

Are we there yet? No, but it's not impossible. Allworld-report says that in the movie, the lightsaber uses a crystal and other technical aspects to power the sword and that if the development of a real-world model came to fruition, it would use precise, concentrated light/energy to create a beam. Sustaining something like this while also limiting its power would be very difficult.

Transporter in "Star Trek: The Motion Picture" (1979):

The transporter actually debuted many years earlier in the television series. In this movie, an accident resulted in two deaths. As with "Star Wars," "Star Trek" inventions that exist in real life are numerous, from personal computers to hands-free phones to big-screen TVs. Many of those originated in the 1966-68 TV show.

Are we there yet? No—and probably never, scientists say.

Tablets in "2001: A Space Odyssey" (1968):

The astronauts carried handheld computers, one of the earliest film depictions of the forerunner to the iPad.



Are we there yet? Obviously. In fact, the tablets used in the movie were the basis of a Samsung lawsuit against Apple in their legal battle over the creative rights to tablet computers. Apple claimed that the iPad was the first instance of a handheld computer; Samsung said the handheld computers used in the movie were proof that the idea had existed for a long time.

HAL 9000, from the same movie: The abbreviation is questionable—HAL stands for Heuristically Programmed ALgorithmic Computer—but the similarities to today's Alexa phenomenon are not. HAL was an AI character with a calm voice that controlled the spacecraft's systems and genially interacted with crew members. (In fact, writer Arthur C. Clarke noted complaints that HAL was the only real character in the first movie.) Douglas Rain, the Canadian actor who was the voice of HAL, died last November at age 90.

Are we there yet? Basically, yes. But Alexa has the personality of, well, a robot.

Video calls in "Metropolis" (1927): One of the first sci-fi movies, this timeless classic is about a city in the future where the powerful live in high-rise towers and lowly underground-dwelling workers operate the machines that power the city. One such machine is a wall-mounted video phone.

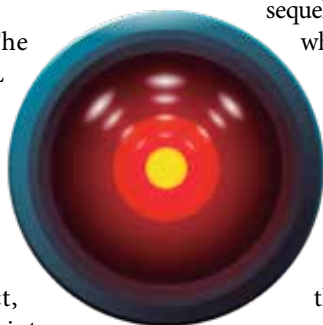
Are we there yet? Yes. For years, businesses have held meetings and conferences through video call

applications such as Skype and GoToMeeting. The iPhone app also provides video call capabilities.

Electromagnetic shrink ray in "Honey, I Shrunk the Kids" (1989):

Shrinking your two kids to the size of an insect sure would cut down on that grocery bill, but giving hugs would be a little less satisfying. (Then there's the sequel—1992's "Honey, I Blew Up the Kid," in which a ray that expands molecules blows up a toddler to 112 feet tall and growing.) What we want to know is, who was the screenwriter who invented the name Wayne Szalinski?

Are we there yet? No, but there's something about blowing up apples that tickles us to the core.



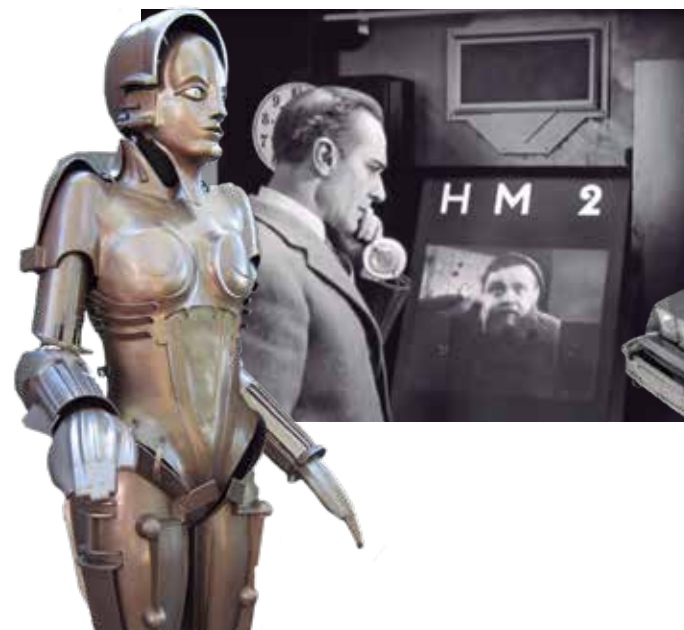
DeLorean car in "Back to the Future" (1985):

A car with doors that open vertically is novel but useless. So was the real-life performance of the car, which had about as much giddy-up as a tortoise on Valium.

Are we there yet? No, not in terms of time travel. But Doc Brown's concept of a space-age time machine (first popularized in H.G. Wells' 1895 novel, appropriately called "The Time Machine") certainly had wings: A study published in the journal *Classical and Quantum Gravity* theorized there is no mathematical reason that a time travel machine could not be able to disrupt the spacetime continuum enough to go backward in time. Still, do we really want to go back to manual transmissions, pre-remote TV, bell bottoms and AstroTurf?

Below left: A robot named Maria and the Metropolis Videophone are featured in the groundbreaking 1927 film "Metropolis."

Below: The DeLorean is one of the signature futuristic elements in 1985's "Back to the Future."





Hover board in "Back to the Future, Part 2"

(1989): The board was actually an extension of hover technology that had been explored on film, such as the landspeeder Luke Skywalker used in the "Star Wars" series.

Are we there yet? Yes. New Zealander Chris Malloy invented a hover bike that could theoretically travel up to 170 mph and climb 10,000 feet. The Malloy Hoverbike is a turbo fan-powered quadrocop-ter developed in 2006 that has been contracted by a U.S. engineering firm to produce such bikes for the Department of Defense.



The invisibility cloak far pre-dates the Harry Potter movies, and one has been invented in real life.

Invisibility cloak in "Predator" (1987): Not to be confused with last year's "The Predator," this movie gets major points for depicting an invisibility cloak (in this case known as the Invisibility System or Active Camouflage), without using the computer-generated imagery that is so commonplace now. Recent films employing the invisibility cloak include 2002's "Die Another Day" and the Harry Potter series.

Are we there yet? A surprising yes. In 2013, researchers at the University of Texas at Austin invented a micrometers-thick cloak that can hide 3D objects from microwaves in their natural environment from all directions. The process, called the mirage effect or photothermal deflection, is similar to what we may see on the road on a hot day.



Driverless cars in "Total Recall" (1990): The possibility of accidents with these vehicles was not addressed by director Paul Verhoeven, and the creepy humanoid robot in the driver's seat was unnecessary. But his ability to see the future can't be discounted.

Are we there yet? Yes. Will these vehicles be available to the public anytime soon? Check out the May 2019 *Inventors Digest* for possible answers.

Top: The hover board in 1989's "Back to the Future, Part 2" is an extension of real-life technology, including a bike that reportedly can travel at 170 mph and climb 10,000 feet.

Left: Mel Johnson Jr. played the mutant cab driver who is a spy working for the Mars Colony Security Force in 1990's "Total Recall."



Digital billboards in “Blade Runner” (1982): A dark classic that is intended to show life in Los Angeles in 2019—including flying cars—the movie depicts huge billboards with shifting images.

Are we there yet? Yes.

Translation collar in “Up” (2009): A collar that translates a dog’s thoughts into speech sounds like a good idea—especially for those of us who are tired of guessing when nature is calling. One the other hand, we would have one more living thing with the ability to argue with us.

Are we there yet? No, unless you count those stunningly unimaginative commercials where dogs talk.



Telepathic justice system in “Minority Report” (2002): In this film, set in 2054, a genetically mutated law enforcement squad has precognitive abilities to fight crime before it happens. The guilty are punished before the crime occurs.

Are we there yet? No, but the effects on courts and insurance companies sure would be interesting!

Virtual makeover machine in “Virtual Sexuality” (1999): A frustrated teenage girl, stood up on a date, goes to a virtual reality exhibition and seeks to create a 3D image of her ideal male partner. Alas, an accidental power cut turns her into her own perfect man.

Are we there yet? No. Are we glad we didn’t see the movie? Yes. 📺

Above left: Massive billboards with changing images provide a glimpse of the future in 1982’s “Blade Runner.”

Above: In 2002’s “Minority Report,” Tom Cruise leads a futuristic police force that uses scientific technology.

INVENTOR ARCHIVES: NOVEMBER

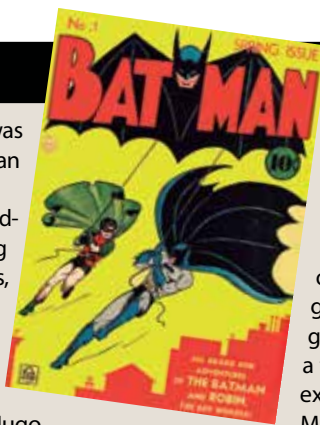
November 12, 1940: **Batman**, the original comic strip, was trademark registered—many months after the first Batman comic book was released.

The cover for Batman No. 1 (spring 1940), drawn by legendary comic artist Bob Kane, shows Batman and Robin swinging from ropes before a yellow background. Two iconic villains, the Joker and Catwoman (then known as the Cat), were introduced in the first issue. The comic book cost 10 cents.

The first facing inside page of the issue says “The Legend of the Batman—who he is and how he came to be!”

In the second story in the issue, Batman kills villain Hugo Strange by hanging him. Especially in the mid-1960s television show, Batman did not use lethal violence against his enemies.

An original but restored copy of Batman No. 1 and professionally graded 6.5 (on a scale of 10) was recently put up for auction on eBay with a starting bid of \$48,000, with no further bids.



November 24, 1953: **Tod Machover** was born. He is the leader of the MIT Media Lab’s Hyperinstruments/Opera of the Future group.

Machover has composed five operas and helped to develop many groundbreaking musical technologies. These include Hyperinstruments, a technology that augments musical expression for virtuosos (from Yo-Yo Ma to Prince) and amateurs, and

Hyperscore, software that allows anyone to create sophisticated, original music by using lines and colors.

Many of Machover’s principles involving “active participation” in music are exemplified in “Guitar Hero,” a series of music rhythm games first published in 2005, which grew out of his lab.

Inventing Space

MILLIONS OF HOMES FILLED WITH TOO MUCH STUFF
OFFER AN OPPORTUNITY FOR CREATIVE MINDS **BY JACK LANDER**

EVERY THREE MONTHS I pay a \$415 rental bill for keeping household things in one those self-storage units that we see popping up everywhere. (According to Spare Foot, a company that tracks the self-storage industry, there are more than 50,000 storage facilities in the United States.) And each month I ask myself why I spend more than \$1,600 every year to preserve stuff that I could probably replace for less than its costs to store.

I suspect that I have a lot of company in such folly.

Most of us accumulate more stuff than we conveniently have room for in our homes. Closets, kitchen cabinets, attics, basements and garages are overloaded.

Countertops are crowded with appliances that we no longer have room for in our cabinets. I can't even find room for my shaver or toothpaste in my bathroom cabinet or drawer. The problem is most serious in homes designed when architects didn't anticipate the present need for storage space.

Basic principles

Remember the typewriter? Many models had a carrying case. When we finished with the occasional formal letter that we wrote, we packed it up and put it back on the shelf in one of our closets.

It may surprise younger millennials that we actually hand-wrote letters to our relatives and friends before the days of computers, printers and Facebook. Unlike the old typewriter, a computer and its printer occupy about 24 square feet of space that wasn't considered when the floor plans of most homes and apartments were designed.

So, the problem isn't just storage; it's also the scarcity of space that results from the stuff that we leave in place all of the time.

As I've written many times in previous columns, annoyances are opportunities for inventions. So, what can we invent that comes to the aid of occupants of outdated, jam-packed living space?

I suspect that the gears in your internal computer are probably already turning, on the verge of providing a novel storage solution. It may help if I cover a few principles that apply when we consider storage space.

First, vertical storage is much more space than its horizontal equivalent. Walk through a Costco or a Home Depot, and look up at the space beyond your reach. It's loaded with inventory. The shelves below must be reserved for an optimum amount of each SKU (stock-keeping unit). Thus, storing above your head is efficient, if not always pleasing to the eye.

The space above the washer and dryer may offer a good amount of cubic space for shelves. Such shelves can free up space under your kitchen sink, as well as keeping handy the clothes washing articles.

What can we invent that is better than shelves, or increases our ability to utilize the wider-than-average shelves that we can install in the laundry room?

Thinking out of the box?

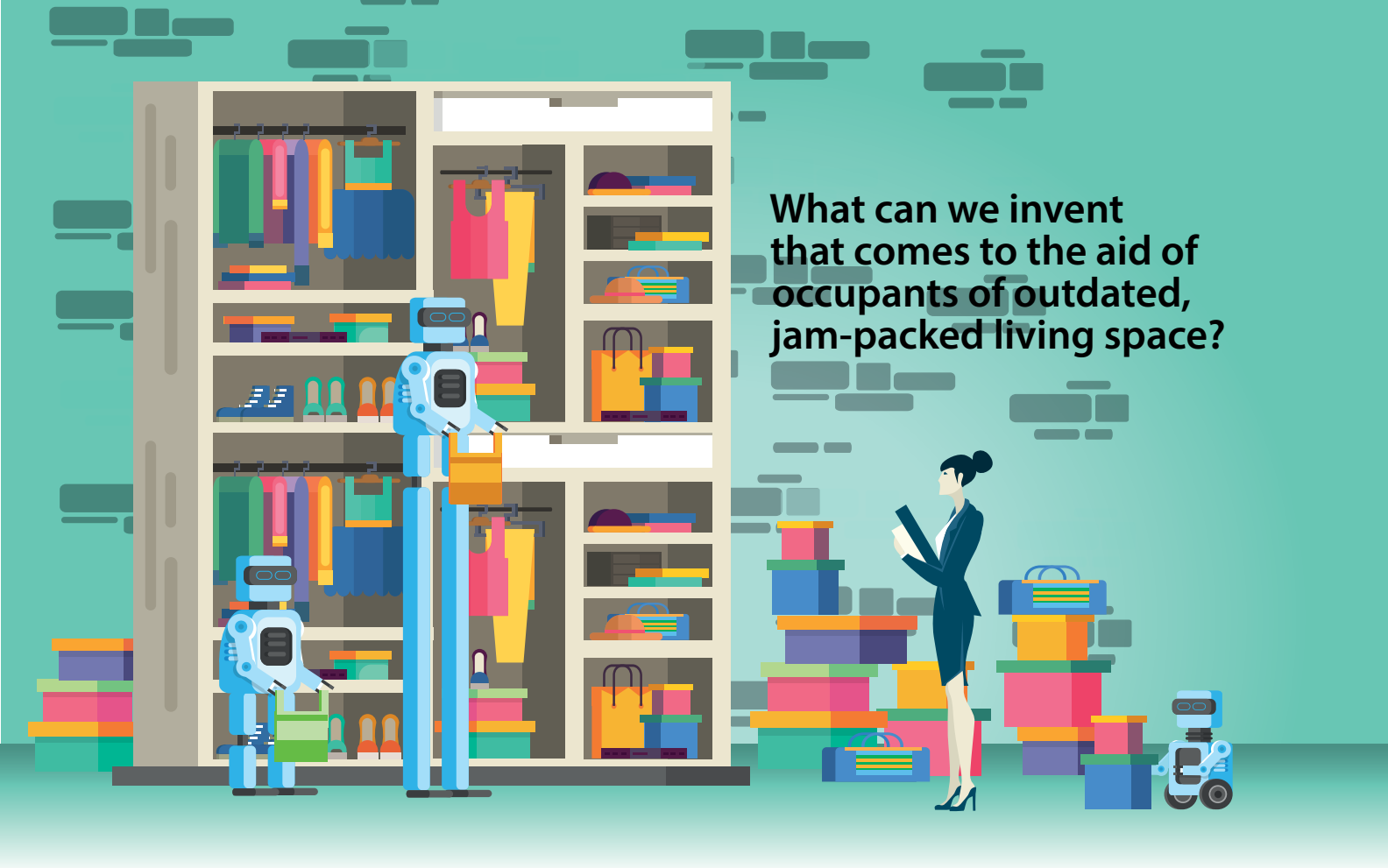
Bookshelves that extend to the ceiling are the most space effective. And who among us book lovers doesn't own a sizeable fraction that we haven't taken from the shelf in years? Those books belong on the top shelves, of course, which lets you place the titles that impress your friends at eye level. Better yet, donate or recycle those old novels and use the space for other items.

Excuse my interruption. I just came up with another of my "great ideas." Why not a box designed to fit the height and depth of bookshelves, the front of which is the simulated spines of classics? The six volumes of "The Decline and Fall of the Roman Empire" would provide space for that 35mm Nikon and the five rolls of Kodak film that I can't bear to discard.

On second thought, such a box was undoubtedly invented long ago.

Square or rectangular is better than circular. Shelves that rotate waste more than 20 percent of the equivalent square space. Slide-out shelving utilizes the corners. Is there a better solution?

One of the relatively recent space-saving ideas is that of the evacuated plastic bag for cloth items and pillows. These bags come in a variety of convenient sizes, the largest being about 32 by 40 inches. The bags have a valve through which the excess air exits, either by hand rolling the items or using your vacuum cleaner attachment.



What can we invent that comes to the aid of occupants of outdated, jam-packed living space?

The amount of compression varies, but my observation has been that about 25 percent to 50 percent of space is gained—even more for pillows. The vacuum reduces thickness more effectively than rolling.

But for traveling, rolling is safer if you want to assure that your clothes will fit your baggage all along the way. It's not likely that we can improve this storage system, but I cite it because it illustrates a novel principle. What other storage methods are ripe for a dramatic new upgrade?

One of the big space wasters in bedroom storage is the fitted sheet, a.k.a. the contour sheet. I suspect that most of us who have tried to fold these sheets ended up crumpling them in a ball and stuffing them in a drawer.

My friend, Jan Reinhart, invented what she named Wonderfold®, a patented device for folding a fitted sheet into a neat rectangle that looks essentially the same as the folded top sheet. (She does not yet have the full production item on the market.)

Plastic boxes of various sizes can be space savers as well as means of neater storage. Using many boxes of the same size is important. We can adjust shelves to prevent wasted air space above the boxes.

I found that the Hefty® 15-quart size is perfect for my needs. They're sturdy, they have latches that keep them secure, and they don't break your fingernails when opening them. I bought eight and arranged the shelves to fit them.

Nothing novel here, but the modular principle can be applied elsewhere. However, be aware that half-filled boxes can waste as much space as they are trying to save. Label your boxes so that you can mix several kinds of storables in the same box, and fill it.

Opportunistic equation

Enough examples. The amount of land in the United States is fixed, but the population continues to grow. As the cost per square foot increases faster than inflation, houses will probably get smaller but more efficient with respect to storage space.

Though many novel improvements have been accomplished, there are still more opportunities as the cost of space increases.

But before you rush off to a patent attorney with your “novel” spice rack that mounts on the back of a door, check out Amazon.com. You'll find several different models and sizes.

Hmmmm, maybe I could use one for my shaver and toothbrush. ☺

Jack Lander, a near legend in the inventing community, has been writing for *Inventors Digest* for 23 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.



5 Facebook Don'ts

AND 5 THINGS TO DO INSTEAD SO YOU CAN BUILD YOUR SOCIAL MEDIA AUDIENCE **BY ELIZABETH BREEDLOVE**

FACEBOOK is an easy-to-use, free social networking tool that can help inventors raise awareness about and market their invention. With more than 1 billion people on Facebook and more than 100 million people using the platform every month, it provides an excellent opportunity to reach people around the world.

If you've used Facebook for personal use, it may be tempting to think that you can use it in the same way for your product or business. However, this isn't the case.

Facebook's algorithm favors some activities and types of posts over others and displays those to users more frequently. In order to get the most out of your presence on Facebook, there are certain strategies you should follow.

Here are five things you shouldn't do and the tactics to follow instead.

Don't write clickbait-y captions or posts: If you've spent any time on the internet in the past few years, you've almost certainly seen these kinds of ads and headlines. This is text designed to entice users into clicking a link by providing something vague but exciting—and often misleading.

Consider these headlines:

"This simple trick will help you lose 40 pounds in 40 days."

"You won't believe what this guy did at his grocery store!"

"Here's how to quadruple your sales in one month!"

What do these have in common? They're all vague, likely exaggerated and written just to get a click.

Do talk about exactly what's in whatever link you're sharing:

The engineers at Facebook have designed their algorithm to recognize headlines that are likely clickbait, based on certain words and phrases often used in these types of captions. When the algorithm comes across a post or headline such as this, it shows the content to users less frequently.

If you want Facebook users to see and engage with your posts, your captions should encourage users to click or engage by talking about exactly what's in the accompanying link or image. Use your posts to provide value, not to be sneaky.

Don't ask for engagement: Years ago, a popular Facebook strategy was to ask users to do exactly what you

It's OK to post things that encourage engagement, such as asking a question, but don't specifically ask your users to like or comment.



wanted them to do. If you wanted them to like your post, you could write a post that said, “Like this post if you love our products.” If you wanted them to leave a comment, you could post something like, “Leave a comment and tell us which of our products you like best.”

Now, the Facebook algorithm looks for posts like this and downplays them in favor of posts that add more value. It’s OK to post things that encourage engagement, such as asking a question, but don’t specifically ask your users to like or comment.

Do look at what types of content gets the most engagement: Analyze past posts to see what content brings engagement. Take a deep dive into your Facebook Page insights and look for patterns to see if you can determine what content resonates best with your audience.

Remember, it’s fine to recycle old content, as long as you aren’t posting the same content too often. You don’t want your followers to tire of your posts and start scrolling past them.

Don’t forget to include links in your posts: The goal of any social media activity, whether on Facebook or elsewhere, is ultimately to drive sales. Having more followers and more engagement is a great way to sell more product, but having the most followers does nothing for your bottom line.

For this reason, use most of your posts on Facebook to drive traffic to your site or another site where your audience can purchase your product, such as Amazon. Include links in your posts whenever possible so that it’s easy for anyone who sees your posts to visit your site.

Do look at what types of content send traffic to your site: If you haven’t set up Google Analytics for your website, that should be the next item on your marketing to-do list. This tool provides invaluable information about how visitors come to your site and what they do once they get there.

You can use Google Analytics to measure how much traffic visits your website from Facebook, what page users initially land on, and what other content they view. This provides valuable information about what types of content your Facebook followers are interested in, which you can then use to adjust your strategy and ensure you’re sending as much traffic to your site as possible.

Don’t copy your competitors: If you’re new to Facebook or uncertain of which strategy to employ, it may be tempting to imitate what your competitors

are doing on the platform. Remember: To get the most out of your presence on Facebook, you must regularly publish unique, original, valuable content. Copying the competition is a great way to make your competitors angry and turn off future customers from your brand.

Do look at your competitors for inspiration—but do it better: If your competition seems to be doing something right on Facebook, it’s OK to use that as inspiration. For example, if you notice that this competition posts videos frequently and those posts get more engagement than other posts, try implementing your own video strategy. If most content the competition publishes is focused on providing tips and how-tos, try that tactic yourself. Just aim to do it even better and provide even more value to your followers.

Don’t make assumptions about what people want to see: Perhaps one of the most fatal mistakes a marketer can make is to build a strategy from assumptions. Decisions about marketing strategy should always be based on data. This is why it’s so important to use tools such as Facebook Insights and Google Analytics to measure your current efforts and build strategies for the future. Use this data to determine what your followers like to see on your Facebook platform and what types of content drive website traffic, and ultimately, sales.

Do ask your followers what types of content they want to see: An oft-overlooked method for determining what types of content to post is to simply ask. No one knows what your followers want better than they do.

For example, you can tell your followers you’re working on developing content for the next few months and ask them what content they want to see. You can ask how they would improve your invention, or how, where or when they use it.

There are many different ways to crowdsource content ideas, and social media users are typically happy to help you provide more value to them. That’s the great thing about platforms such as Facebook: They make it easier than ever for companies and customers to build a close relationship. 🗣️

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



Shark Sense

TECHNOLOGY EMITS LOW-FREQUENCY WAVES TO HELP PREVENT DEADLY ATTACKS **BY JEREMY LOSAW**

IT HAS been 44 years since the blockbuster movie “Jaws” embedded a fear of shark attacks into our collective consciousness. This concern has grown as the number of attacks worldwide more than doubled from 1999 to 2015; the latest reported figure is about 80 unprovoked attacks per year.

Researchers have noted a strong uptick in great white shark populations, especially in areas such as Cape Cod and the Carolina coast.

The company Ocean Guardian created a safe and effective way to reduce the chances of shark attacks on humans. It has a suite of products using a technology called Shark Shield, which uses electric probes to emit a bubble of low-frequency electrical waves in the vicinity of the device.

Sharks have a special sensory organ called the Ampullae of Lorenzini, which responds to electrical signals generated by living things—including their prey. The pulses from the Shark Shield aggravate a shark’s electrical receptors, which repels it from the device and lowers the probability of a strike.

One of the company’s most unique products is the Freedom+ Surf, which was specially designed to add Shark Shield technology to surfboards. The Freedom+ Surf uses a waterproof housing for the electrical pulse generator that attaches to the top of the surfboard and is covered with a comfortable foam pad; the probes are adhesively mounted to the bottom of the board.

Ocean Guardian CEO Lindsay Lyon told *Inside Gold Coast* in an interview this year that the company’s safety products “are trusted by ocean lovers around the world including (those) diving, spearfishing, snorkeling, surfing, fishing and for swimming around vessels.

“The company’s products are recommended safety equipment in professional industries such (as) navies and abalone diving. In western Australia, the government provides a \$200 rebate to surfers and divers who purchase Ocean Guardian products.”

Australian impetus

Amanda Wilson was an unlikely candidate to develop surfing products. She was originally from Minnesota and studied mechanical engineering at Iowa State University.

However, she fell in love and married an Australian man, and moved with him to the west coast of the country. While working at a marine safety company, she learned about a technology called Shark Pod that would repel sharks. The company where she worked was considering licensing the technology, but the deal never materialized.

Wilson and Lyon saw the opportunity and licensed the technology themselves.

“There were five fatal attacks over an 18-month period,” says Wilson, Ocean Guardian’s co-owner. “Sharks were on everybody’s mind ... beaches were literally empty.”

Wilson and Lyon started the business in 2012 and slowly built a portfolio of products that were mostly geared toward divers. However, Lyon is a surfer and understood how vulnerable they are to shark attacks. So they set out to integrate the technology into the board itself.

The first concept was to use the fins at the rear of the board to be the electrodes. They have a fairly large surface area and are always in contact with the water.

Although this seemed like a perfect way to implement it, there was a major flaw in the plan. Wilson recalls:

“We found out that everybody is so particular with their fins and we would have to have multiple types of fins ... and different fins would have to have electrical conductivity. That’s when we came up with the idea of putting it into a sticker. Everybody puts stickers on their boards anyway.”

This would allow Lyon and Wilson to shrink their electronics and keep surfers from having to drill holes in their boards to install it.

The sticker concept was a great idea, but it was crucial to make sure it was going to be effective in the water. To test the concept, the duo used one of their existing diver products and wired it up to some conductive stickers. They took the prototype into a special lab with a tank of saltwater and measurement equipment, and found that the prototype created a significant field of low-frequency pulses that have been proven to repel sharks.



Ocean Guardian CEO Lindsay Lyon notes that his company’s products are recommended safety equipment in professional industries.

They then took it into the ocean to test with real sharks. After chumming the water to induce interactions with the board, they found that the sharks were repelled by the surfboard.

Once the technology was vetted, the two took the next steps to refine the product. They solicited the help of world surfing champion Tom Carroll to ensure the product would integrate perfectly with the board. They had an industrial designer create an iconic shape for the electrode pad and designed the flexible circuit and tail pad to elegantly house the circuitry.

The team continued testing the device with surfers and with sharks, and in 2016 conducted a live test on the Australian version of “60 Minutes.” It successfully repelled baited sharks.

‘Shark Tank,’ almost

In an interesting twist of fate, Wilson and Lyon applied to bring their shark technology to the entrepreneur show “Shark Tank.” They took the product to an open casting call in Florida and made it through many rounds of auditions and interviews with

producers. However, they were removed from the running at the very end of the process because they are an Australian-based company, which was against the rules of the show at the time.

Despite missing out on their chance on the small screen, they have seen their product have great success within the surf community. It is an elegantly packaged product that does no harm to either humans or sharks and has withstood the rigor of many third-party scientific studies.

It is even helping people get back in water in western Australia, where the journey began. The Ocean Guardian team continues to develop new products and is working on devices to keep sharks away from fishing boats. 🐟

Details: sharkshield.com

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



The company enlisted the help of world surfing champion Tom Carroll to ensure that Shark Shield would integrate perfectly with a surfboard. The FREEDOM + Surf kit features a transferable power module.

The pulses from the Shark Shield aggravate a shark’s electrical receptors, which repels it from the device and lowers the probability of a strike.



Elegance in Pocket

MAN'S SQUARE HOLDER SOLVES AN AGE-OLD PROBLEM

BY EDITH G. TOLCHIN

YEARS AGO when I majored in apparel design, the focus was on women's fashions. Men were lucky if they had a few different styles of slacks (that's what they were called then!), shirts—mostly button-down and polo styles—ties, and a woefully small variety of accessories. We didn't even have the option to major in menswear!

Fortunately, markets and majors have evolved, and there's an exciting number of options for men's clothing and accessories. Here's an exciting new men's fashion item that changes those old, boring handkerchiefs that were folded and placed into a suit jacket chest pocket.

Edith G. Tolchin (EGT): How did the Best Pocket Square Holder come about?

Cedric Cobb (CC): My background includes retail management, outside sales and national nonprofit management. The Best Pocket Square Holder was birthed out of frustration and necessity. I was tired of seeing well-dressed men wearing apparel valued between \$300 to \$3,000 with no dignified solution to fix the century-old problem of how to keep their pocket square looking good all day.

The straw that broke the camel's back was when I saw a "Steve Harvey Show" segment about five years ago that revealed his secret of holding a pocket square in place with a piece of fabric tape. I thought it was criminal that arguably the sharpest-dressed man in America had to use such a primitive method to secure his look. Then I went on my mission to create the Best Pocket Square Holder. Two years later, I applied for my patent.

EGT: What are the advantages over just inserting a pocket square into a jacket pocket?

CC: No more falling pocket squares! The Best Pocket Square Holder is a hinged, pouch-like device that squeezes open, like a clamshell. Once you style your pocket square and insert it into the pocket square holder, the mechanism holds the pocket square fold securely. Then, you insert the full assembly into the sports coat chest pocket, and it will stay styled all day long. Problem solved!

There have been products submitted to the patent office for almost a century that have spoken to the symptom of this pocket square issue but never anything to be the cure for pocket square cancer. Our product is the official solution. Our product is to a pocket square what a belt is to a pair of pants—a must-have.

EGT: How many tries did it take before you created the perfect prototype?

CC: I had about eight different iterations of it before our final, perfected design. It is also available in a slim edition for slender pockets or smaller suits.

EGT: Are you manufacturing in the United States?

CC: I am proud to announce the Best Pocket Square Holder and many of our other products are produced right here in the United States of America. Our manufacturing facility resides in the heart of St. Louis, Missouri.

EGT: Can you share your journey from prototype to manufacturing to retail?

CC: This was a pretty arduous journey, because I was not able to produce the final prototype of the Best Pocket Square Holder all at once. It happened over time through trial-and-error research development focus groups and a lot of frustration, but never once was it an option to give up.

Overall, it took about five years to get a good working prototype that I felt confident enough with to put into the patent process and bring it to market for proof of concept. Educating consumers was the biggest challenge because men needed it but did not know it was



The Best Pocket Square Holder is a hinged, pouch-like device that squeezes open. Once the pocket square is styled and inserted into the pocket square holder, the fold is held securely. The full assembly is then inserted into the pocket.

“Our product is to a pocket square what a belt is to a pair of pants—a must-have.”

—CEDRIC COBB

available to them. Even still, the level of awareness has barely scratched the surface because it is a men's furnishing more than it is an accessory. That means it is a necessity for securing your style—not an option. We are trying to re-educate men all around the world.

EGT: Are you aware that there are MANY knock-offs of your exact product being manufactured and sold in China via alibaba.com?

CC: I am very much aware of everything that's going on in the market as it relates to our product. Although we were the ones who created this market, due to lag times and constant communication with patent examiners, the process of getting a patent has taken longer than expected. And even when you have a patent, you must make a decision about whether or not to put your resources and energy toward holding people accountable for infringement.

Once our patent is issued, we will make the determination about whether to shut them down. In the meantime, we will continue to innovate and stay far ahead of what any imitators can possibly think of. We have a superior vision.

EGT: Please tell us about your patent process.

CC: When going after a patent for the Best Pocket Square Holder, I did not want to run with a concept. I wanted to run with a fully developed product. Therefore, by the time I sat down with my patent attorney I already had a good working prototype, an initial marketing strategy, a production process, resources and relationships with materials manufacturers, a website, and a sales strategy. We are still patent pending, but our patent should be issued later this year.

EGT: How many styles, colors and fabrics are you featuring? Pricing? Packaging?

CC: The Best Pocket Square Holder and the Slim Edition Best Pocket Square Holder are available in 12 different styles and colors, with prices between \$19.99 and \$24.99. We also offer special packages like



the “Shark Tank Special” that range from \$44.99 to \$55.99. We always say our product is a \$20 fix for a 100-year-old problem!

EGT: Where are you selling?

CC: We offer a variety of avenues for people to purchase and/or resell our line of Best Pocket Square Holders and complementary products. Our products are available on our website, as well as amazon, etsy, ebay and cufflinks.com. We also wholesale our products nationally via approximately 500 retail outlets.

You can check the store locator on our website for participating locations. We distribute the bulk of our products through major trade shows such as the Magic Show, The COBB Show, and soon to be others such as the Chicago Collective, Northwest Buyers, and so on.

EGT: Please share your experience on “Shark Tank.”

CC: “Shark Tank” was truly an out-of-body experience and a huge blessing! After doing my homework, I learned that more than 55,000 people annually try out for the show. They narrow it down to a couple hundred businesses who get a national opportunity.

My “Shark Tank” experience has helped me understand that I am among a group of chosen few who

Cedric Cobb is aware that there are many knock-offs of his product but has experienced delays in getting a patent.

received worldwide recognition. I went into the tank with confidence, enthusiasm, pride and passion. I am proud that I represented myself, my family, my city, and my God at the highest level. Not only did I avoid being eaten in the tank, I also bagged a shark, Daymond John.

I am forever indebted and loyal to the “Shark Tank” family for the opportunities and exposure that resulted.

EGT: Do you have any plans to add to your product line?

CC: Yes, we plan to expand our pocket square holders and other complementary products and services. Due to our overall vision and demand from our clients, we have plans for custom, unique items that fit every personality. That’s all I can share right now, but stay tuned to our social media platforms and our free mobile app, “Best Wardrobe Solutions,” which is available for Apple and Android devices.

EGT: Which obstacles have you encountered?

CC: A few obstacles occurred with locating suppliers who could handle our quantities and turnaround times. In addition, we encountered obstacles with securing the right facility and team to continue manufacturing our products in the United States. Fortunately, we overcame these challenges and are equipped to fulfill all order levels—from the smallest to the largest.

EGT: Can you offer guidance to novice inventors seeking to develop their products?

CC: Absolutely! It’s important for you to understand that developing a product is more like a marathon than a sprint. Be open to change, tweak, and modify your idea so your product has the best chance to be accepted by the marketplace.

However, stay true to your vision! Also, protect your idea as much as possible, especially in its infancy stage. Secure an attorney for guidance and obtain a non-disclosure agreement before discussing your product or idea with others.

If your vision is big enough, the opinions of others should not matter. Many people around you will not have the same drive or zeal about your vision or product. You will experience fear throughout the process, but exercise courage by moving forward despite the presence of fear. Do it scared! 🐼

Details: bestwardrobesolutions.com

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



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Driving on Sunshine

DESMOND WHEATLEY'S COMPANY PUSHES THE FUTURE WITH SOLAR-POWERED ELECTRICAL VEHICLE CHARGER **BY ALYSON DUTCH**

SINCE THE DAWN OF TIME, invention has been the rocket fuel that propels mankind to the future. As Calvin Coolidge quipped: "privilege will not, education will not, but tenacity will." It's been a combination of need, unbridled curiosity and hardship that have manifested so much—from the discovery of fire to the powerful computers carried in our pockets.

Human invention has gone through many cycles, from utilitarian to industrial and now the computer age. But now we have reached a time when our inventiveness and human population are outgrowing Earth's ability to support our survival.

Some forecasters say that if we don't change the way we live our highly urbanized lives, the Southern Hemisphere will be uninhabitable in 40 years. Given that the global population is predicted to grow from the current 7.2 billion to 8.1 billion by 2025, we won't have enough land to farm animals for food. Will there be enough room in Russia and Canada to house a globe full of denizens? Enough land to survive rising seas? Will we have enough fossil fuels to power air conditioning under an unrelenting sun?

There is good news. A responsible combination of invention and capitalism, supported by governmental policy, will be the solution to get us out of this mess. Pioneers like Desmond Wheatley are at the forefront.

Shining potential

A Scot by birth and now a resident of California for 25 years, Wheatley created the first solar-powered electric vehicle charger, the Electric Vehicle Autonomous Renewable Charger. It's manufactured by the company he runs: San Diego-based Envision Solar International.

The EV ARC™ fits inside a parking space and generates enough clean, solar electricity to power up to 225 miles of EV driving daily. The system's solar electrical generation is enhanced by EnvisionTrak,™ which causes the array to follow the sun. This generates up to 25 percent more electricity than a fixed array.

Because 70 percent of the greenhouse gases that are warming our planet emanate from transportation and the generation of electricity, Wheatley sits in a position of significance.

Though internal combustion engine vehicles are on the wane and most of the world's automakers have embarked on the electric vehicle transition, fossil fuels are still being used to generate the electricity that charges them—an absurd irony. If EV chargers rely on the grid, the demand for the electricity needed to power them would far outweigh the capacity of the infrastructure.

"It's the absolute responsibility of every human to do something about the way they use transport," says the passionate Wheatley, still speaking with a rolling

This past summer, history was made with Envision Solar's sun-powered EV ARC™s being installed for the first time on a U.S. highway.

"It's the absolute responsibility of every human to do something about the way they use transport."

—DESMOND WHEATLEY

brogue accent. "This is the biggest contributor to the wrecking of our planet, the place we live."

As the electric vehicle industry prepares to replace the old hydrocarbon technology completely, Wheatley is making it possible to "Drive On Sunshine"—100 percent free, 100 percent renewable, 100 percent sustainable energy. His solution should make a tangible impact we'll likely witness in our lifetime.

A growing cause

According to the International Energy Agency: "Electric mobility is expanding at a rapid pace. In 2018, the global electric car fleet exceeded 5.1 million, up 2 million from the previous year, which almost doubled the number of new electric car sales." CNBC has reported that EVs will grow from 3 million to 125 million by 2030.

Currently, China is a leader in the EV industry, but it's locations such as California that are setting the pace for a rapid market penetration of EVs because of the zero-emission plans being put in place. And there is lots of room for growth. The world is carrying about 1.2 billion cars today, on the way to a projected 2 billion by 2040.

There are, of course, naysayers about the need for alternative energy. This past summer, while history was being made with Wheatley's sun-powered EV ARCs being installed for the first time on a U.S. highway, the U.S. administration threatened to disallow individual states from setting their own emissions standards in favor of a less stringent (and more polluting) federal standard.

Environmentalism is no longer a cause just for the hard-political left but has moved to a more centrist view. Green tech is no longer a capitalistic stepchild; it's making money on Wall Street. As the *Wall Street Journal* reported: "Sustainable investing is already a \$12 trillion market in the U.S., according to the Forum for Sustainable and Responsible Investment; data from BloombergNEF show that global issuance of green bonds rose to \$600 billion last year."

This EV charging station is part of what Envision Solar says is "the easiest, fastest deployed and most scalable EV charging infrastructure solution available."



Capitalism, which fuels invention, may be the hero that saves the planet. But if the private sector can't drive it alone, governmental policy is needed to support it.

Also, per the *Wall Street Journal*: "Investors are more than willing to put up the capital to fund green tech provided they get clarity from Congress," says Jon Powers, president of financial technology company CleanCapital and former federal chief sustainability officer under President Obama."

In April, Wheatley's Envision Solar became a public company on the NASDAQ exchange, a sign that mainstream America is starting to understand that the threats of climate change are not just a pointless obsession of the Left Coast and New York City elitists.

Tireless work ethic

Wheatley's first business—while in his early 20s—was an attempt to clean up a World War II shipyard that was so beyond repair, it ended in an Environmental Protection Agency shutdown.

The young upstart, the son of a Scottish military man, had scads of verve, no college education and enough cheek to turn the world upside down. He landed on the shores of the United States at 16, a seaman working with the Scottish merchant marine. He toiled to keep ships' generators running at sea, and in harbor tore the steel monsters apart and put them back together again. Tugboats, cranes and a high mechanical aptitude served as his higher education.

It's men like this, people with incredibly deep work ethics, who sleep on the floors of their office only four hours a night to move mountains. He says about this time in his life: "I worked my arse off."

Wheatley's keen interest in how things work made him an infrastructure specialist who worked on some of the biggest technologies in wireless telecom, energy, drug enforcement and security systems. He always started at the bottom, always ended up running the show. His career adventures ranged from the United States to Europe, Asia and Africa, and hotbeds of innovation and building such as Dubai.

In 2010, Wheatley set his mind to purchase a waste-to-energy company and stumbled upon Envision, which was designing architecturally bespoke solar parking canopies. What started as a consultant project turned into a presidency, reverse merger and complete overhaul of a service company to a scalable product-centric energy solution outfit.

"It took a few years as the EV industry ramped up," he says with a shrug. "We were early, but we took the risk of building the first solar-powered EV chargers to support what we saw coming."

The Higgins Boat Factor

Impeccably dressed and lithe, Wheatley sits in his sparse and very functional office in a San Diego industrial park. A poster of Winston Churchill watches over the corner office with dirty windows.

He tells the story of an inventor named Higgins—"an American of Scottish descent," he laughs knowingly. "He was the inventor of what General 'Ike' Eisenhower referred to as 'the boat that won the war.'"

The mass-produced invention moved troops from ship to shore in a new way: arriving in an armada directly onto the shores of Normandy and the islands in the Pacific—without a harbor. They simply slid onto the sand and opened giant ramped doors, out of which spilled armed troops at the ready.

"Until we came along, EV charging was highly expensive and required disruptive infrastructure to build," he explains. "You have to spend an incredible amount of time and money on permitting, trenching, pulling wires and pouring concrete."

During a trip to Google headquarters around 2012, Wheatley hatched what he calls the "Higgins Boat of the war on pollution" in his head. "It had to be mass produced, rapidly deployed and very scalable." The City of New York takes an average of 24 months to install EV chargers, which are tied to the grid. Envision's products do the same thing in as little as four minutes and are charged by the sun.

"No one but us has the 'Higgins Boat of EV,' where you can just show up with a unit, deploy it and have it operating in four minutes." And, he adds

DESMOND WHEATLEY

Occupation: President, CEO, chairman of Envision Solar, International

Age: 53

Home: San Diego

Family: Wife, 2 children

Favorite invention:
Saturn V launch vehicle

Favorite books: "The Second World War," Winston Churchill; "Brideshead Revisited," Evelyn Waugh

Favorite movie:
"Local Hero"

Hobbies: Open water swimming, running



with a twinkle of his eye: “Unlike children’s toys at Christmas, our products show up with full batteries.”

Having Google as a first customer is the American dream tale. “They had invested in EV technology, but they needed infrastructure that would be rapidly deployed and scalable for their very mobile workforce,” he explains.

Google had a new product think tank, where it would take prototypes, use them and provide entrepreneurial feedback. Until that time, Envision was installing grid-tied infrastructure. One of its customers, the City of Boulder, Colorado, had just been quoted \$300,000 on trenching alone to install EV chargers, and as a result said no to the project.

Wheatley said to himself while sitting in that Menlo Park, California, meeting, “This is America, the land of innovation and ‘yes’—not thousand-year-old trenching techniques.” He then walked across the room to a white board and drew the standalone, solar-powered EV charging unit.

He calls it “The Mule,” (a prototype that doesn’t yet work). It was the first EV ARC and Wheatley still has the hand drawing, which served as the basic blueprint of the operational units. He rolls his eyes thinking about how long it took to get the drawing to be something completely functional, but Google bought the units and uses them to this day.

Our EV future

Envision’s value proposition is simple: Keep the fleet running with scalable products that don’t require construction or the grid. Wheatley continues about other uses for the EV ARC.

“This is America, the land of innovation and ‘yes’—not thousand-year-old trenching techniques.” —DESMOND WHEATLEY

“Grid-tied chargers are as useless as boat anchors when the power goes down. We provide a sun-powered source of energy for transport and emergency power for first responders. We know where the sun is going to be every morning for the next 5 billion years. If that’s not energy security, I don’t know what is.

“An EV ARC may not have saved a life yet—but it will,” he says with a smile.

Though the installation of Wheatley’s EV ARCs on the California U.S. Highway 101 (thanks to the foresight of the Monterey Bay Air Quality District and Caltrans) marks a page in history to enable the public to “Drive On Sunshine,” it’s not completely new.

Since early in the decade, Wheatley’s inventions have been heavily embraced by private sector corporations such as Google, Dell, McDonald’s, HGTV and General Motors. Ninety municipalities in 20 states and four nations are using them to power their vehicle fleets. The eighth-largest city in the world, New York City, uses Wheatley’s chargers for the first electric vehicles in its 36,000 municipal vehicle fleet, which dwarfs the total vehicle count in some countries. New York will electrify all of them.

“You just can’t keep saying that you want to drive your Porsche because you love them,” Wheatley says with a crinkle of his brow. “It’s just irresponsible and selfish.”

Among the oddities of oddities, Porsche is one of the automakers that is making an EV version—along with the most popular American vehicle of all time, the Ford F-150 pickup truck.

For those who have never driven an EV, it’s time to be educated and very surprised by what they can do.

This writer happens to be one of those Porsche fanatics who, the first time I rode in a Tesla, was gobsmacked by the giddy-up and speed of this car. Even more recently, I was thrilled to drive Wheatley’s Chevrolet Bolt. It was an experience that is making even this car aficionado think again and maybe pony up for that Porsche EV. 🚗

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



Wheatley (third from left) and Envision Solar board members (from left) Tony Posawatz, Bob Schweitzer and Peter W. Davidson celebrated the company’s going public on the NASDAQ exchange in April.



A 3-PRONGED SOLUTION

Here are excerpts from Desmond Wheatley's interview with Bloomberg International's Dave Gentry about Envision Solar on July 14. Responses are edited for clarity and brevity.

Dave Gentry (DG): First, talk to us about your products.

Desmond Wheatley (DW): We design, engineer, patent—actually invent first—and manufacture sets of solar-powered products for three market verticals. The first is the electrification of transportation. So while we're not in electric vehicle charging as such, we provide an infrastructure solution for electric vehicle charging. The second market vertical that we offer is outdoor media—again, solar-powered and sustainable products for the outdoor media industry. And then the third is energy security, by which we just mean a more reliable source of electricity than that which you get when you connect it to the utility grid, which is of course susceptible to blackouts and brownouts. Our products will continue to operate during those times.

DG: Talk to us some more about the infrastructure product—and of the three products that you just mentioned, where do you derive most of your revenue?

DW: I'll start with the second question first. Without a doubt, it's the electrification of transportation; it's that infrastructure solution. So what we have is the world's only transportable, solar-powered, electric vehicle charging infrastructure solution.

Our customers in general, who are deploying EV chargers to charge their electric vehicles, are faced with a choice. They can either go out and go through the 100-year-old model of connecting to the utility grid—which is a time-consuming, painful and often very expensive process that can take as much as 18 to 24 months to go through the planning and construction, digging trenches, pouring concrete, pulling wires ... or they can get in touch with us.

In a matter of a few minutes, we can deploy a transportable, solar-powered technology solution which replaces that 100-year-old model. It's much faster, much more scalable, lower total cost of ownership, and we continue to operate during blackouts and brownouts—which, of course, is vital when you're running an electric fleet. That's where most of our revenues come from. In fact, about 94 percent of our 2018 revenues came from the sale of that product, and a great majority of it from government installations.

DG: I'll note that your revenue was up in 2018 300 percent over the prior year ... what were the main drivers of that performance?

DW: 336 percent actually. ... I think there's a couple of factors playing here. First of all, obviously there's a lot more adoption of electric vehicles going on at the moment. The absolute numbers are still quite low, but the growth is really phenomenal with what we're looking at year after year.

If you chart the growth of our sales next to the growth of the sales of electric vehicles globally, what you'll see is two lines which are almost identical. We're in lockstep with that growth. And that's



helpful in terms of forecasting the future for us as well. As we look at the future, we just look at future sales of electric vehicles and it gives us a good indication of where we are going. ...

The second factor would be, we just haven't been recognized for what we're doing in the past. We haven't committed a lot of money to sales and marketing, because we've put all of those finite resources into engineering and product development. But now we're starting to get the message out, and we're winning great customers: the City of New York, State of California, Google and many others, and success breeds success.

DG: How big is the market opportunity?

DW: Well, it depends on who you talk to. Bloomberg's putting us at \$2.7 trillion over the next decade. There are 1.2 billion cars on the road today, moving to 2 billion in 2040. There'll all be electric. That's going to mean hundreds of millions of EV chargers required.

DG: Talk to us about your business model. How does Envision Solar make money?

DW: One of the things I love about this company is that it's a very simple company. It's easy to understand our value proposition, easy to understand the value that the products bring. It's also easy to understand how we make money. For the most part, today we sell our products ... it's about selling and leasing products.

DG: What type of intellectual property does Envision maintain?

DW: Again, very simple, easy to understand. We have multiple patents on our products. But I'm going to tell you, we're not a company that just goes around chasing patents so we can decorate our walls with them.

All of the patents that we have are out in the street making money for us. And we're very disciplined about how we spend money on intellectual property protection. It needs to be demonstrated that it's going to create a clear barrier to entry for competition. And when it is, we'll invest in that. ...

We also have a couple of patents which are patent pending. Same rules apply. We believe there are great opportunities in the market for these products.

Shark Wisdom

TV SHOW VETERANS SHARE THEIR INVENTIONS' ORIGINS, ENTREPRENEURIAL TIPS **BY HOWIE BUSCH**

RECENTLY attended an impromptu “Shark Tank” reunion in New York City, with about 50 of its entrepreneurial alumni in attendance.

If you’ve read my reports before, you know that I’m a big believer in finding your tribe or mastermind of peers where you can exchange ideas and support each other. We have just such a group that lives on Facebook.

It’s a private group called Shark Tank Pals—and to be in the group, you had to have stood on that carpet in front of the Sharks and your episode had to have aired. It happens to be one of those special groups where people selflessly provide emotional support, networking, contacts and advice on what’s working for them that can benefit the group.

I had met several members in person during these past couple of years, but there were still so many I had yet to meet. I jumped at that chance.

Meeting someone virtually is great if you can’t get together in person, but there’s a different kind of magic that can only happen from that in-person, live meeting. When you’re all part of the same “tribe” that has been through a major event—maybe not together but that same event—it makes for a powerful connection.

I was inspired by so many of their stories that I wanted to share them. First, I’ll share a few of their “Aha” moments, then some of their business tips.

Aha! moments

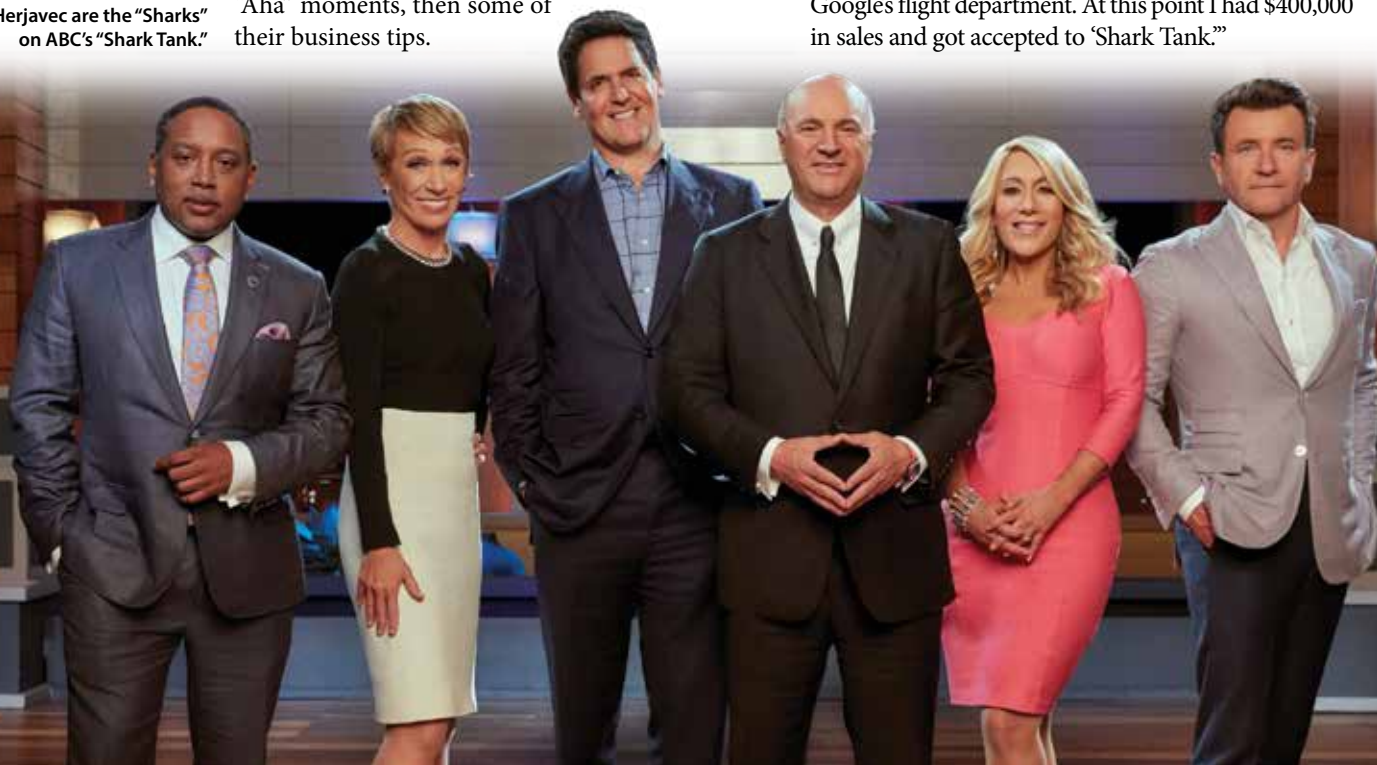
Safe Grabs, Cyndi Lee: “I kept burning my fingers grabbing a hot dish out of the microwave because I was too lazy to grab a towel or a mitt, and I finally decided to invent “Safe Grabs” (formally Micro Easy Grab) and plunge into the entrepreneur’s world.”

Grypmat, Tom Burden: “As an F-16 mechanic in the United States Air Force, I was sick of my tools sliding off the jet when doing maintenance. After seeing a non-slip mat on my mom’s dashboard of her car, I had a light bulb go off: I can make these larger for tools. After avoiding bankruptcy twice and prototyping in my basement for three years I finally created the “Grypmat”—a brightly colored, flexible, non-slip tool tray that gives mechanics a safe, close location to set tools. After having a successful trade show, I went all in, I sold my house to get more funding for more inventory and lived out of my car for several months. I managed to raise \$113,000 in pre-orders for new sizes and sold the current model to NASA and Google’s flight department. At this point I had \$400,000 in sales and got accepted to ‘Shark Tank.’”



Inset right: Tom Burden solid his Grypmat model to NASA and Google’s flight department.

Below: Daymond John, Barbara Corcoran, Mark Cuban, Kevin O’Leary, Lori Greiner and Robert Herjavec are the “Sharks” on ABC’s “Shark Tank.”



GoodHangups, Leslie Pierson: The idea for GoodHangups came from a desire to create order from chaos. Pierson had a young son who was super creative, and making art was his passion. Like any good mom, she hated the idea of throwing away his masterpieces but was growing frustrated with the mess they created on the refrigerator—and the damage that tape and tacks did to her walls. So she created her own solution. GoodHangups launched in 2015 with a very successful Kickstarter campaign before winning The Next Big Thing award on “Today” and appearing on “Shark Tank.”



BrandYourself, Patrick Ambron: “It started when my cofounder couldn’t get a job because he was being mistaken for a criminal in Google. In a world of revenge porn, cyberbullying, dark web breaches, incessant identity theft/spam and inadequate online privacy laws, we help put consumers back in control so they can use the web safely and securely. Basically, we help individuals clean up, protect and improve their online reputation and online privacy.”

Psi Bands, Romy Taormina:

Vomiting inspired Taormina to take the leap of faith into the entrepreneurial stratosphere. Suffering from debilitating morning sickness during both of her pregnancies, she found nausea relief through acupressure wrist bands but was dissatisfied with existing products on the market. So she set out to create a superior product to help those who suffer from nausea due to motion sickness, morning sickness, anesthesia, and chemotherapy.

Romy Taormina invented Psi Bands with the intention of providing superior nausea relief.

SeeRescue Streamer, Dr. Rob Yonover: “We were flying in a rented Cessna to an outer Hawaiian island to work on a volcano when the engine started to sputter. I looked down and saw the huge expanse of blue water (the Pacific Ocean) and realized that if we go down, they will never see us—and the flares, smoke and dyes we had on board would only last seconds. The plane didn’t go down, but I couldn’t stop thinking about that experience. And I realized that if I could only make colorful tails that floated and didn’t curl up, people could see me if I was lost at sea (or in the mountains/volcanoes). Once I figured out the patented spreader bards (it performs like a centipede—no twisting), SeeRescue Streamer was born.”

I find the business tips below to be incredibly valuable. Every one is like a golden nugget.

Feel free to drop a comment letting me know if you like hearing about these “Aha” moments. And feel free to share your moment. Maybe someone else will be inspired by you! 📌

Howie Busch is an inventor, entrepreneur and attorney who helps people get products to market through licensing, manufacturing or crowdfunding. Possibly the world’s least handy inventor, he has licensed many products, run a successful Kickstarter campaign and appeared on “Shark Tank.”



BUSINESS TIPS

- **Scrub Daddy, Aaron Krause:** “Don’t try to be the low-cost leader when starting your business. Focus on what makes you different and better than your competitors and charge appropriately for your product or service. You will need that extra margin to stay in business through the challenges confronting a young company!”
- **Grypmat, Tom Burden:** “Have your screensaver on your cell phone be a descriptive picture of your product/company. This is very effective during an elevator pitch or trade show.”
- **Extreme Sandbox, Randy Stenger:** “Fail quickly and often. Work to put yourself out of business daily (it’s what your competitors are doing!)”
- **BrandYourself, Patrick Ambron:** “Focus on solving a problem nobody else is solving.”
- **Psi Bands, Romy Taormina:** “Be effective, not right. No one likes the blame game. Cut to the chase and offer solutions.”
- **SeeRescue Streamer, Dr. Rob Yonover:** “At a trade show, don’t say “Can I help you?” to someone passing your booth. Instead, try saying “Have you seen this?” If they say no, you explain—and if they say yes, you show them your new version or feature.”
- **Buzzy Pain Relief, Amy Baxter:** “Never be too influenced by any one day.”
- **SwimZip Sun Safe Swimwear, Betsy Johnson:** “Dream big dreams and go put on your overalls.”

PART 2 OF 2

Putting LEDs to Work

PRACTICAL APPLICATIONS CAN INCLUDE TEACHING—
AND BUILDING PROTOTYPES **BY JEREMY LOSAW**

LEDS ARE AMAZING technology that are found in all sorts of electronic devices. They are also a great tool to teach kids about electronics.

LEDs are low voltage and safe to use; they come in different colors; and turning on or changing the color of one with circuitry or code provides satisfying visual feedback when the circuit is built correctly.

In May, I invited second-grade students from Corvian Community School in Charlotte to the Eventys Partners shop and taught them how to build Popsicle stick flashlights. In just a few minutes, each child was able to take a small lithium battery, a Popsicle stick, binder clip, some copper tape, and his or her choice of LED color—and turn it into a working flashlight. For many of them, it was their first electronic prototype and a fun application for LEDs.

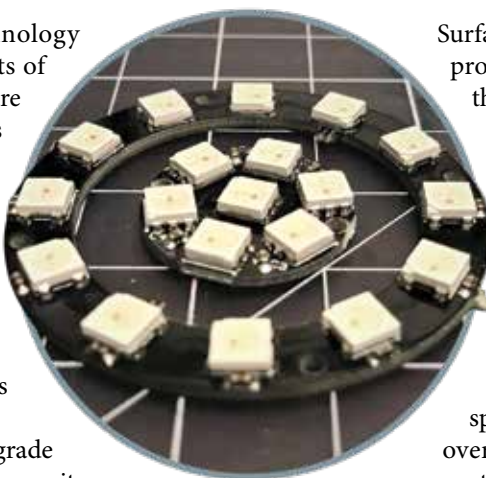
In last month's issue, I discussed the history and theory of LED technology and how it is used. In this second installment, as with the second-grade class and their flashlights, I will focus on practical applications of LEDs and how to make them work in your next prototype.

Packages

LEDs come in two main styles or packages—"through hole" and "surface mount." Through hole-type LEDs have two legs that stick out of the bottom of the LED element and lens. The longer leg is always the positive connection, the shorter the negative.

The lenses often have a flat molded into it, which is another way to denote the negative side of the LED after the legs are trimmed. The LEDs are installed by pushing the legs through holes in the circuit board and soldered into place, with the lens sitting flush or hovering slightly above the circuit board.

Above: These surface-mount LEDs are mounted to a flexible strip with adhesive backing for easy installation.



Surface-mount LEDs, much lower profile, are mounted directly to the face of the circuit board. On a single-color LED, the negative side is denoted by a notch or other asymmetry, but the datasheet should always be consulted before wiring. These can be hand soldered for prototyping but are typically placed on a circuit board with a robotic and baked in a special oven to melt the solder over the terminals to make the connections.

There are also many different configurations of multiple LEDs. The LED string is a flexible circuit of LEDs that are all wired together and can be coiled up into a roll. These often have an adhesive backing that makes mounting them very easy, with simple connectors to hook them up to power.

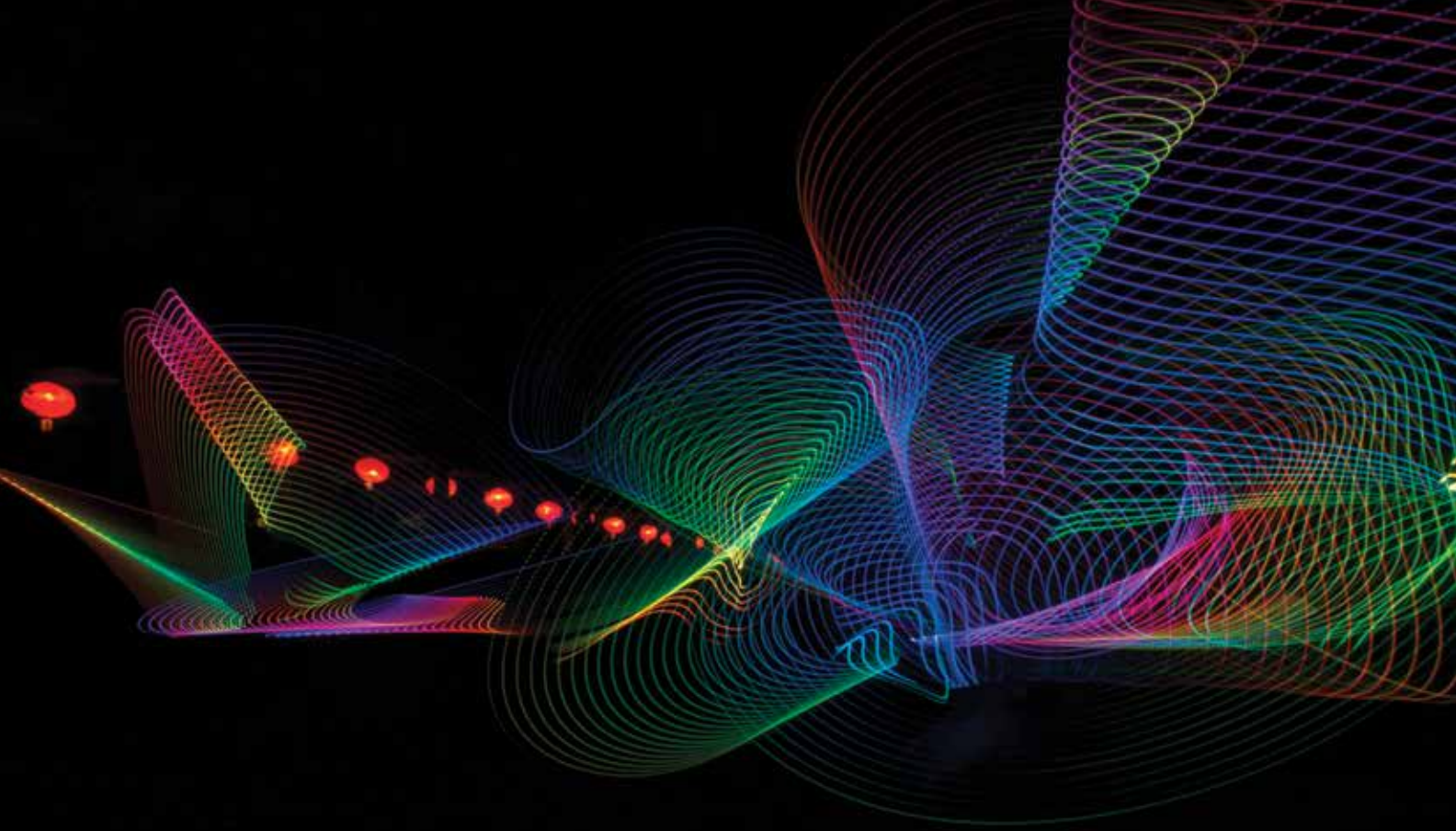
LEDs are also available in grid arrays or in rings. The grid arrays allow for the rendering of images, such as in large outdoor video screens or in smaller displays. The circular LEDs are an interesting form factor, useful for making gauges or to fit into circular product designs.

Types

There are many different types of LEDs, denoted primarily by their color traits.

Single-color LEDs are the most common and least expensive. They are available in many different colors such as red, green, blue and yellow. These are typically used for simple indication in a circuit, such as if a burner is active on an electric stove.

The next step up is the RGB LED. The RGB has three different LEDs within the same housing—a red, blue and green—hence, the RGB monicker. They typically have four connection points, a common positive and a negative connection that corresponds to each color. RGBs can be used discreetly to provide



RGB LEDs that are all wired up together only show the same color or brightness at the same time. Addressable LEDs solve this problem.

the red, green or blue light, or can be mixed to create interstitial colors.

Mixing can be done by providing different current levels to each of the three colors, or it can be done with a microcontroller such as an Arduino.

RGBs may seem like the ultimate LED style, but they have a major drawback in that all RGBs that are wired up together only show the same color or brightness at the same time.

Addressable LEDs solve this problem and make it possible to create some interesting effects. Addressables have a small circuit embedded inside the RGB LED that takes commands from a controller. Each LED in the string takes its command to display its color and brightness, and sends the next command down the line to the next LED. This makes it possible to do rainbow effects or to make a moving bar of color—such as the lights in the grille of KITT from the 1980s TV show “Knight Rider.”

Addressables have a slightly different pin layout in that they have positive, negative, data in, and data out. There are different styles of addressables, but most can be driven by Arduinos or other microcontrollers with simple code from libraries such as the Adafruit_NeoPixel library or the FastLED library.



Above: This long-exposure image was made with a string of addressable LEDs that were taped to a stick, then waved around while it was doing its rainbow pattern to create the effect.

Left: RGB LEDs can be turned on simultaneously to create intermediate colors. The writer of this story made a “color piano” with his youngest daughter, Ivy, in which each key would turn on one color component—in this case, turning on the red and the blue.

Pre-built LED strips and arrays are much easier to power.

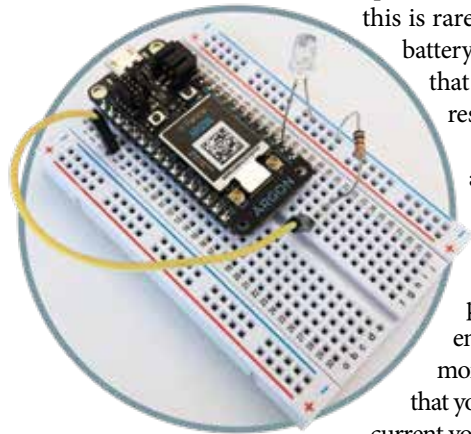
Powering an LED

Lighting up an LED is not hard, but it requires some care so that it is not inadvertently blown up.

Each LED has its own desired voltage level that it needs to function, as well as a maximum amount of current it can handle without burning out. You should always consult the datasheet of the LED being used to guide how it is powered, but generally red and yellow LEDs need about 2-2.5 volts; green, blue and white need 3.5. Garden-variety LEDs can handle about 30-50 milliamps of current.

If you have a power supply or battery that is tuned to the requisite voltage, you are good to go. However, this is rarely the case. More commonly, the battery or power supply has excess voltage that needs to be throttled down with a resistor to power it safely.

Pre-built LED strips and arrays are much easier to power. They are manufactured with the requisite resistors in place and need only to be wired up with a battery or power supply of the right voltage and enough current capacity. Note that the more LEDs you have in an array or strip that you want to run at one time, the more current your power supply must have.



Above: An LED is connected to a digital output pin on a Particle Argon microcontroller. Note that a resistor has been added to throttle current to it and keep it from burning up.

Right: LEDs come in many different colors to satisfy the needs of prototypers.

Choosing an LED

There are thousands of different options when choosing an LED for a specific application, so it is important to narrow the options with some key metrics. The main attributes and how to choose:

- **Color.** The primary requirement for many applications is the color. If standard primary colors are adequate, you can likely choose a low-cost, single color LED, but if you want color changing or interstitial colors, an RGB LED is a better choice.
- **Brightness.** Most cheap LEDs are very bright and adequate for most applications, but special high-output LEDs are available. Note that high brightness requires more power; you may also need to add cooling to support the increased output. Brightness is measured in millicandelas. Most LEDs are in the 1,000-10,000 mcd range, and high-output LEDs can be upwards of 100,000.

- **Viewing angle.** LEDs are brightest right above the semiconductor element. The brightness tapers off as you start to view it from the side. Narrow-viewing angle LEDs are good for creating directed points of light, or for maximum viewing distance. Larger-viewing angle LEDs have softer, more distributed light and decreased maximum viewing distance.
- **Luminous flux.** Lumen are the common unit for luminous flux. It is calculated from the brightness in millicandelas and the viewing angle of the LED. The brighter the LED and the larger the viewing angle, the larger the lumen output. Most LEDs fall into the 1-5 lumen range, but high-output varieties can output hundreds of lumens.
- **Electrical requirements.** It is important to choose LEDs that have a voltage and current draw that is available from the rest of the circuit. For example, it is not prudent to use a 12V LED string if you only have 5V available from your circuit.

There is literally a whole spectrum of LEDs available to help us light up our prototypes. The technology resident in each tiny LED is an immense technical achievement that has been refined over nearly a century and honed down into a package that is useful and inexpensive.

A huge percentage of electronic products have at least one LED for indication, or for the need of the light itself. They are quite easy to design into a circuit or to use off the shelf in pre-packaged strips or modules. As long as their current and voltage requirements are respected, they can help provide low-cost, low-power lumens for your next prototype. ☑



Making Products Customer Driven

VERIFY YOUR INVENTION'S PREMISE
BY PREPARING A QUESTIONNAIRE **BY DON DEBELAK**

INVENTORS frequently create a product that satisfies their needs without considering what target customers want. Even if you have one feature they want, be sure you aren't missing other features that customers also feel are essential.

Most inventors have a reason for their invention, which is typically correcting a problem—slipping gears on bikes, removing stains from shirts, etc. But the first question inventors should ask is, do customers agree with that premise?

The easiest way of learning this is to prepare a questionnaire that lists four or five potential problems with the type of product you are trying to improve, then ask people to rate which problem is most important to them.

First, give the questionnaires to a handful of people. Include an area on the questionnaire where people can write in their own problems with the product category, just in case you missed one.

Finalize your problem lists and then give the questionnaire to 15 to 20 people to see which problem area they feel is most important. You don't need every person to agree with your premise, but a good benchmark is that at least 35 percent of them should agree with it.

On all questionnaires, try to discover why people buy a particular brand of your product category. Ask these two open-ended questions at the end of the questionnaire (usually, it is best to list the five to eight leading competitors right before the questions):

1. Which improvements or changes would you like to see in this product category?
2. Of the above competitors, which one have you bought, and what was your reason for buying it?

Crucial features

List all important features of products people use to address the same issue that your product does. Do this even if your solution is dramatically different than the others.

Then ask people to rank all the features in order of which ones are most important to them. Leave a space so people can explain why these features are important.

Your goal in completing this feature analysis survey is threefold:

- To understand which features are important to people, and which are not. This helps you understand how people use the product.
- To help you know if you have forgotten an important feature in your development.
- To possibly delete benefits and cut costs if people think some features are unimportant.

Target one problem

A customer-driven product helps you develop a clever subject line that connects with users.

For example, if you have an earmuff, you might emphasize that your earmuffs are made of wool or fur, or you might concentrate on having a rechargeable earmuff warmer.

But you would have a totally different approach if you learn people don't like earmuffs because they don't like the way an earmuff gets tangled in their hair. So look at this as more than how to develop your product; it is also how to promote your product.

Embrace feedback

Many don't like doing market research. Some are convinced their idea is so strong that it cannot fail. Others are afraid of negative feedback.

Inventors all need feedback. I've worked for several companies that constantly introduced new products. I've never been on a new project where everything went right. We always had lots of fine tuning and made many adjustments based on customer feedback.

Look at feedback not as a negative but as information that will help you improve your product. 📌



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





Market Scorecard

CURRENT, FUTURE TRENDS SHOW A POSITIVE
BUT GUARDED OUTLOOK **BY LOUIS CARBONNEAU**

WITH THE THIRD QUARTER firmly behind us and end of year looming, it's time to look at some indicators that tend to explain current and future market trends.

When searching for influencers of the IP marketplace, I generally look for the following clues:

- Noticeable change in the supply and demand chain;
- New case law that may have long-lasting impact;
- Regulatory environment;
- Recent large damage awards against infringers;
- Stock performance of publicly traded IP companies (PIPCOs);
- Statistical trends regarding patent enforcement and validity.

All of the above are susceptible, especially when taken together, to shifting the market one way or another. So, let's look at those factors in the context of 2019 activity and whether they should push the market up or down.

Supply/demand: 2019 has seen a continuation of a trend that started last year, in which several large patent owners started divesting their own portfolios—not necessarily to leverage the privateer model through direct sales, but to prune vast portfolios of non-core, nonperforming assets through the brokered market.

In parallel, most large technology companies (that used to have a dedicate patent acquisition function) have paired those down and, in some instances, dismantled their team altogether—relying on a few defensive aggregators to act as a clearing house on their behalf. Most large patent holders, usually on the receiving end of patent litigation, do not value patents in the open market (i.e. pre-litigation) and appear to only show interest in having a discussion with patent holders once there is a lawsuit in place.

This behavior incentivizes such patent holders to file suit first before initiating a dialogue that could have been prevented in the first place. On the other hand, we have witnessed several new non-practicing entities (people or groups holding a patent for a product or process but with no intention of developing it) entering the market in 2019. Many are willing to pay cash for good portfolios.

Although new entrants are filling the vacuum left by operating companies that used to be active buyers,

it remains a buyer's market even if valuations have picked up a little. This does not mean good patents won't sell at a decent value, but it suggests that many patents will simply not sell as buyers can still afford to be extremely selective. **Net impact: Neutral**

Case law: This has been a busy 2019 on the judicial front; we discussed the most important decisions in previous columns. Some cases were favorable to patentees, others not so much.

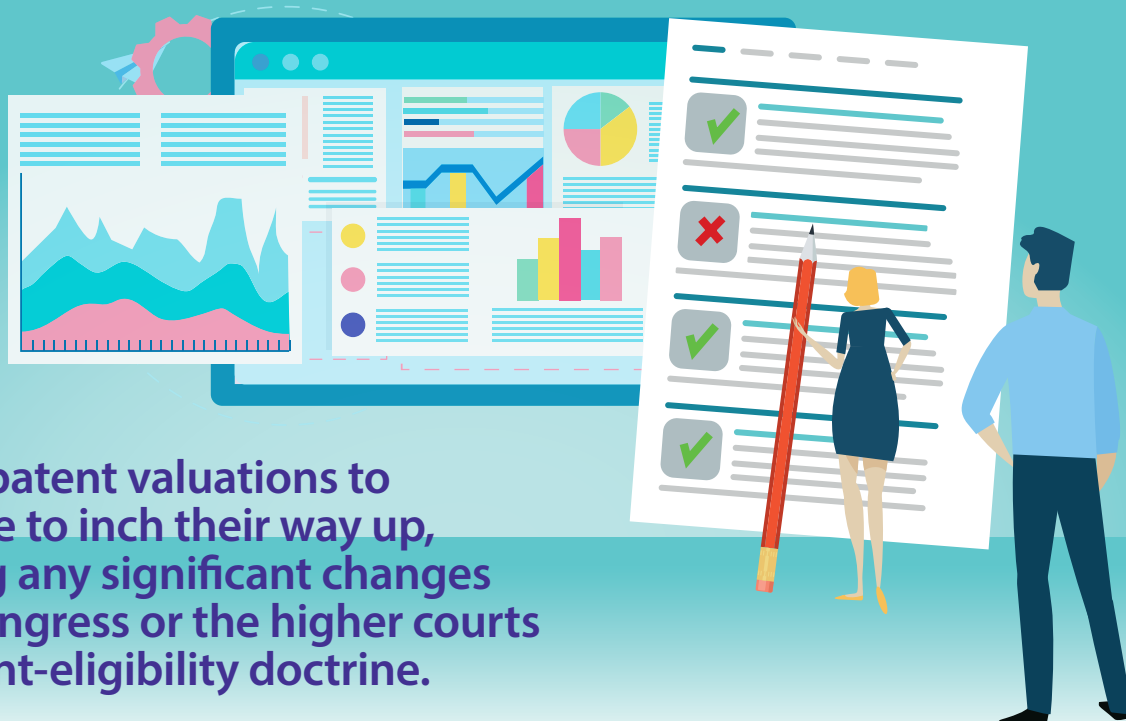
At the district court level, patent holders have rejoiced in the nomination of Justice Alan Albright in the Western District of Texas—quickly becoming the new forum of choice for plaintiffs. On the other hand, the United States Court of Appeals for the Federal Circuit is more split than ever. Your odds of winning a case vary wildly, depending on which panel of judges you get. As a result, case law is all over the place, especially on eligibility issues. Finally, the U.S. Supreme Court has made it clear that it loathes patent cases and does not want to provide any additional guidance on the patentable subject matter conundrum it created with its landmark *Mayo* and *Alice* decisions.

Overall, it remains a mixed bag. Conversely, we have seen decisions abroad supportive of patent rights, and China continues to be a forum where patent assertion activities are happening. **Net impact: Slight positive**

Regulatory environment: As we mentioned about a year ago, most bills that pertain to changing the current patent laws will likely never be adopted. However, they are a good barometer of the prevailing tone within the current administration and elected officials.

In this regard, the narrative has shifted from the 2018 “patent trolls are bad” to a refreshing 2019 “inventors are good.” This continues to be the growing movement, with a much more robust PR and advocacy agenda from organizations representing inventors.

Congress has finally caught on to the fact that the United States is rapidly killing its own innovation engine, and has started its slow march to curb some of the perceived abuses from the various patent reforms done through the America Invents Act. The two most likely pieces of legislation that have the slightest chance of becoming law (with bipartisan support) are the STRONGER Patent Act and the change to Section



Expect patent valuations to continue to inch their way up, pending any significant changes from Congress or the higher courts on patent-eligibility doctrine.

101 of the Patent Act to clarify what is proper patent subject matter. **Net impact: Positive**

Damage awards: Unlike 2018—which had few damages awards in excess of \$100 million, many of which were overturned—2019 has had a steadier flow of lower but still significant damages. There has been a smaller standard deviation between decisions, pointing to a more established approach in calculating actual damages.

This is a welcome improvement from past years, when it was very hard to predict damages amounts that could actually be recouped; the perennial “rule of thumb” for calculating a reasonable royalty on infringing devices was turned on its head. That said, most large infringers are still aggressive. **Net impact: Neutral**

PIPCOs: As we often say, public intellectual property companies are the canaries in the coal mine. They are the gladiators of patent litigation (though not by choice) and should normally have a better track record than most patent owners who resort to assertion.

The fact that no one seems to care about tracking PIPCOs as a group anymore is the direct result of many having decided to take themselves private. (Perhaps to avoid disclosing to their opponents how much cash they have on hand to fight, which is only a positive when you have a lot?) Or they have simply been delisted. A few—Finjan, InterDigital, UDC, etc.—are faring relatively well. The granddaddy of them all, Acacia Research, has recently announced that it has \$100 million on hand to assert patents, including up to \$30 million to acquire new assets. **Net impact: Slight positive**

Statistical data on invalidation: As everyone knows, one of the largest contributors to lower patent valuations has been the relative ease by which one can challenge the validity of a patent in the United States—namely via the Patent Trial and Appeal Board or by alleging in court that it does not cover patentable subject matter. This year we saw gradual progress at the United States Patent and Trademark Office and at the PTAB, where USPTO Director Andrei Iancu yields more direct influence over both examiners and PTAB judges.

Institution rates for inter partes review (challenging the validity of a patent) are lower than ever according to the most recent data, and several litigators have said that some large defendants are no longer using IPR challenges as automatically as before. **Net impact: Positive**

Summary: Many of the factors above have a direct impact on business decisions when confronted with a request to take a patent license. Many of the developments in 2019 should continue to make challenges to patents less certain and more expensive. Also, many plaintiffs are now finding it easier to secure litigation funding at more affordable conditions than a year ago.

In view of the above, expect patent valuations to continue to inch their way up pending any significant changes from Congress or the higher courts on patent-eligibility doctrine, in which case a favorable outcome could create an immediate surge. The most recent aggregated data regarding the brokered market, courtesy of Richardson Oliver Insights, reflect an asking price per patent that varies between \$150,000 and \$225,000 depending on the technology



I'LL SEE YOU IN COURT

There is another flurry of new cases about **Apple**. These guys sure know how to make friends.

One case, though—or more specifically the way it was reported by AppleInsider—shows how uninformed journalists can distort a narrative. “Patent troll using 2018 patent to sue Apple over 2014 Shortcuts technology,” said the article, insinuating that you have to be a complete moron to claim infringement for a technology that was available four years before the patent issued. Bad patent troll!!! However, it takes only a few seconds to see that said patent is a continuation of a previous parent filing that has a priority date of 2012—two years before Apple came up with the allegedly infringing feature. Please guys, try a little bit harder next time if you want to be taken seriously. ...

After winning big against Groupon last year, **IBM** is back in court and going after online real estate database company **Zillow** for infringing upon seven of its patents. ... It appears that the brotherly Korean feud between **LG Chem** and **SK** about employing poaching and trade secrets theft around EV battery technology will soon extend to patent infringement as well.

area. This is slightly greater than earlier in the year and tends to reflect increased sellers’ expectations than the recent past.

Richardson Oliver Insights did a great job last year when it published the first “Real Pricing Report”—which aggregated data from 360 actual transactions that buyers, sellers and one brokerage firm shared (that would be us, Tangible IP). Richard Oliver is now calling interested parties to share recent deal data so that the second version of the study, due later this year, is even more accurate.

More companies participating in the study benefits everyone in the market. It helps both buyers and sellers align their expectations around pricing and ultimately close more deals.

Buyers and sellers

Ottawa-based **WILAN** completed a semiconductor portfolio from Mediatek. ... Chinese switch and phone maker **Huawei** made its first acquisition post-U.S. ban, a small phone camera portfolio from a Silicon Valley inventor. This shows that it is still active on the U.S. market despite all of the turbulence surrounding it lately. Huawei also made headlines when it said that it was willing to license all of its 5G patent portfolio (along with underlying technology) to avoid such a ban from continuing.

Winners and losers

This has not been a good month for U.S. universities, which saw the federal circuit state in no uncertain terms that when it comes to patents, the universities’ sovereign immunity is only a shield but never a sword. It cannot be used to bypass the PTAB review system when

asserting patents. After the appeals court dealt a similar fate to native tribes who raised a similar argument, this approach appears to be dead on arrival and patent owners are going to have to rely on other approaches if they want to avoid the wrath of the PTAB. ...

Inventors remain on the receiving end of the courts regarding patent eligibility and USPTO Director Iancu recently renewing his call that the courts start adopting the new USPTO guidelines instead of prior extreme and inconsistent rulings. Iancu said the Administration “has tried to bring consistency and predictability” to Section 101 with its January 2019 guidance but added: “Courts are independent. They don’t have to follow our guidance. And so far, I have seen no evidence that they want to.” Meanwhile, inventors are voting with their feet: Software-related patents, the main victims of patent-eligibility rulings, are rapidly decreasing. ...

Canadian phone maker and licensing powerhouse **BlackBerry** is having a hard time enforcing its patents in California against **Snap** and **Facebook**. A local judge ruled in a tentative summary judgment order that two BlackBerry mobile messaging patents are ineligible for protection under Section 101 of the Patent Act, as they merely represent improved methods for deploying targeted advertising and are “dressing up the abstract concept of collecting and compiling information.”

On the legislative front

“The U.S. share of global venture capital fell from 66 percent in 2010 to 40 percent in 2018, while China’s share increased from 12 percent to 38 percent in the same time period. The STRONGER Patents Act would help reverse this alarming trend by taking critical steps to shore up our patent system.”

This was the call to action from **Innovation Alliance** recently, trying to pressure Congress to move the bill forward. Not everybody agrees, though; others see this as an excuse for the USPTO to continue issuing bad patents.

The recent Senate hearings reflected this divide between the two camps. Given that Congress is going to be very busy in the months to come with its oversight of the executive branch, it is fair to say that the odds of this bill passing in the foreseeable future have become quite long. 🍷

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.



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Going From Idea to Invention

DESCRIBE YOUR WORK IN STRUCTURAL AND MECHANICAL TERMS, NOT USE AND FUNCTIONALITY **BY GENE QUINN**

THE PATENT PROCESS actually starts well before you file a patent application or seek assistance from a patent attorney.

Every patent application starts with an invention, and every invention starts with an idea. Although ideas are not patentable, there will be a point when the idea you are working on comes so into focus with enough detail that it will cross the idea/invention boundary.

It is when an idea matures to the point of being concrete and tangible enough to be described to another that the idea has become an invention, at least in general terms.

Legally speaking, in order to have a protectable invention you have to be able to describe your invention with enough detail so that someone of skill in the relevant technical field or scientific area can understand how to both make and use the invention—having only read your description of the invention. This can and absolutely should be supplemented with as many high-quality patent drawings as possible.

The goal is to take your idea and transform it into something akin to an instruction manual on use and

mechanics. Those new to the patent space tend to be very good at describing the use but less good at describing the mechanics of the invention.

Unfortunately, while describing use and functionality of an invention is necessary, no amount of description of use and/or function will make up for an insufficient description of the technology from a structural and mechanical perspective.

“It slices! It dices!” Great, but what is “it”—and how exactly does it slice and dice?

Explain how, not what

Focusing on use and functionality is one of the biggest mistakes inventors and new patent practitioners make. They spend too much time talking about what the invention does and very little time explaining what the invention is and how it operates on a mechanical, structural and electrical level to deliver the functionality being described.

In other words, the copy is written as if it is for an infomercial, or perhaps for a business plan. Neither infomercial nor business plan writing is appropriate in a patent application.



“It slices! It dices!” Great, but what is “it”—and how exactly does it slice and dice?



What you need is technical writing, which is why patent drawings are so helpful. Those drawings provide disclosure in and of themselves, and if you are doing what you are supposed to do you will be describing what each drawing specifically shows and how the pieces and parts are connected and relate on a structural level.

When you are attempting to move from idea to invention, regardless of how or why you find yourself stuck in the idea phase, the first order of business is to get the ball rolling. You need momentum.

It's like that song: Put one foot in front of the other and soon you will be walking across the floor. Specifically identify the problem you want to solve and keep adding ideas and thoughts, layer by layer. Keep copious notes, because some things that seem like good ideas will eventually become bad, and things that were initially viewed as bad ideas will eventually become good.

The more thoughts and ideas you layer onto your solution, the more details you add. At some point you will cross that idea/invention boundary and be squarely on the invention side of the line.

Get your provisional

Once you cross the idea/invention boundary and are ready to file a patent application, the prevailing advice for many years was to first conduct a patent search. This was because doing a patent search is the only way to get a realistic idea about whether the invention is likely able to be protected.

Although inventors do need to search on their own to ensure they are not pursuing a dead-end path, since 2013 U.S. patent laws have become "first inventor to file," which must be interpreted as requiring inventors to file first, period. Therefore, current best practice is to file the most comprehensive provisional patent application possible.

Obviously, describing the invention completely, both in general terms and specific terms, is necessary in order to create a meaningful priority filing that can be relied upon later. Then, after a priority filing date has been obtained, have a professional patent search done and obtain an opinion from a patent practitioner before filing a nonprovisional patent application.

Happy inventing! 🍷

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.



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Circuit, Justice Go Haywire

REVERSAL OF CHRIMAR WIN IN INFRINGEMENT CASE
IS A HUGE THREAT TO SOCIETY **BY JOSH MALONE**

THE U.S. COURT of Appeals for the Federal Circuit has again breached a fundamental boundary of our American system of law.

This particular transgression has occurred only a handful of times, but each is more ominous than the last. If this is allowed to stand, we can no longer be considered a democratic republic but will have become a banana republic.

What is rapidly becoming routine to the patent litigation industry will create shock waves throughout the other 12 circuit courts, upend the rule of law, and damage our nation.

Undermining the judiciary

In a September 19 ruling in *Chrimar Systems, Inc. v. ALE USA, Inc.*, the federal circuit allowed the Patent Trial and Appeal Board to overrule an Article III court and jury. This wiped out a win by Michigan-based Chrimar in a 2016 jury verdict that said ALE infringed on its patent.

As a result: The executive branch of government directly and unequivocally overruled the judicial branch, including a jury.

Inventor John Austermann invented a technology to send power over ethernet cable in the late 1990s. At that time, sending power over the ethernet required dedicating one of the four twisted pairs in a CAT5 cable to carry the power, meaning it could not be used for data.

Austermann figured out how to send the power over the same line that was carrying data, so there was no need to sacrifice bandwidth—and no harm to the sensitive data circuits on either end of the line. His company, Chrimar, was awarded several patents, including U.S. patent No. 8,942,107 for A Piece of Ethernet Terminal Equipment.

A jury verdict entered on Oct. 7, 2016, found the patent valid and infringed by ALE. The federal circuit then affirmed the jury verdict with respect to validity on May 8, 2018. The patent was and is valid, according to the Article III court.

However, the case was remanded because the federal circuit identified an error in claim construction on a different patent. This is an all-too-frequent occurrence wherein multiple issues are re-litigated on appeal and the federal circuit forces the inventors to battle through multiple trials and appeals spanning most of a decade.

In my own case (involving patent infringement on the invention Bunch O' Balloons), I had to endure 14 appeals before the infringer finally surrendered.

Chrimar had to go back to the trial court, strike the patent found to have been wrongly construed, and obtain a second final judgment on the patent. Then ALE appealed, again.

Meanwhile, a different company persuaded the PTAB to determine that the patent was obvious. It was typical claim construction and hindsight nonsense that inventors suffer at the PTAB.

For example, it accused Austermann of claiming to have invented the technology that causes a 1930s-era telephone to ring, called “phantom power.” Of course, that was not his invention, and the examiner would never have awarded him a patent for such an outrageous claim.

The real judges and juries understood this, but PTAB technocrats are not bound by common sense.

Entering the upside down

Here, the merits are not relevant to the point of this article, which concerns a much, much bigger issue. There is still work to be done to demonstrate how the PTAB administrative patent judges are a far cry from the technical and legal experts they are advertised to be. But the threat to our society posed by the September 19 decision exists even when the PTAB is correct.

Setting aside the merits of the PTAB procedures and its decision to invalidate the patent, Chrimar had already won against ALE—an award of \$324,000 plus costs and interest. ALE refused to pay. It delayed and appealed. That was its entire strategy.



The executive branch of government directly and unequivocally overruled the judicial branch, including a jury.

ALE figured it could lose its case and still win. And it did.

ALE's counsel, Chris Cravey and Leisa Talbert Peschel of Jackson Walker, had this reaction to the verdict:

"We are pleased with the federal circuit's decision to vacate the judgment of the district court and dismiss the case. The decision is consistent with Supreme Court and federal circuit precedent.

"This case dates back to 2015 and required two appeals to the federal circuit. It's gratifying to end this long-running dispute with such a favorable result for our client."

The federal circuit issued a Rule 36 affirmance of the PTAB cancellation of the patent. Then the terrible, perilous, republic-rattling event occurred.

Immediately upon affirming the PTAB cancellation, the same federal circuit panel wiped out Chrimar's second final judgment against ALE.

Even though the decision was indisputably correct.

The federal circuit nullified it. The PTAB nullified it. The political special interest-infected court in the executive branch agency overturned an Article III judge, jury, and appellate court!

There was no error. There were years of litigation, hundreds of briefs, weeks of hearings, depositions, a week-long trial, tens of thousands of hours of legal work, judge, jury, and an appeal ending with a 100 percent correct judgment in favor of Chrimar.

The federal circuit identified no error by the judge or jury. Yet the PTAB unwound the verdict.

The federal circuit said it was as if the patent never existed. How? It was a real patent. It has a ribbon on it, and it is signed by former USPTO Director Michelle Lee. I saw it with my own eyes.

ALE said it wasn't a real patent under Section 282, and it lost. The judge said it was a real patent.

The jury said it was a real patent. The first federal circuit panel said it was a real patent. But suddenly it never existed?

A mockery and a threat

This stuff only happens in banana republics—societies that have no rule of law. We are supposed to have the seventh amendment and an independent judiciary. This decision makes a mockery of our legal system.

Worse, it is a huge threat to our society. This is not just about patents. This is fundamental. If the United States Patent and Trademark Office has this power to take away your property and overturn a court of law, then so do the IRS, EPA, DEA, FBI, ICE, FDA, SEC, and all the rest.

Whatever you think about those agencies, they must not be allowed to overturn a court of law that has upheld the rights of a citizen. In fact, this is completely upside down.

When an agency like the PTAB loses its way, we need courts and juries to vindicate our rights. This ruling is completely backward.

This must not be allowed to happen in America. We must fight for our rights. This decision must be overturned and the balance of powers and rule of law restored. Our heritage, our rights, our freedom and our prosperity are too precious to squander. 🇺🇸

Josh Malone is the inventor of Bunch O Balloons, a product that was ruled to be patent infringed by U.S. telemarketing firm Telebrands and its subsidiaries. His companies received \$31 million in the settlement but spent about \$20 million in legal fees. He is a Fellow with US Inventor, working to restore the patent system.





Absurd Attack

INSTITUTE'S CLAIM THAT U.S. PATENTS ARE TOO STRONG IS MISLEADING—AT BEST **BY GENE QUINN**

HERE WE GO AGAIN! Another day, another ridiculous attack on the U.S. patent system.

This time the attack comes from the R Street Institute, which claims that patents are too strong and are inhibiting American companies from achieving success in the race for leadership in the 5G marketplace—as well as continued leadership in artificial intelligence.

R Street was to hold a panel discussion on its wildly outlandish theory, for which it can't possibly have any factual support, on October 15. In the announcement, it claims that patents are inhibiting American companies because Chinese telecommunications company Huawei asserted more than 200 patents against Verizon Communications this year.

Therefore, patents are too strong and American companies are suffering.

There may be legitimate security concerns around Huawei's infrastructure, but to suggest that the company's patents are at the root of these threats is absurd.

Patents don't discriminate

There is one problem with this R Street concoction: American companies are allowed to apply for U.S. patents, too! And American companies are allowed to apply for Chinese patents just the same.

Patent systems are not protectionist with respect to which companies are allowed to file for protection.

All that is required for a patent to issue is an innovation to be present and appropriately disclosed, whatever those two things mean in the country granting the patent.

Moreover, U.S. dominance with respect to 5G technologies is not going to suffer because Verizon is getting sued.

This will come as a shock to those who watch TV in America, but Verizon is not the innovator of technologies that enable 5G telecommunications. Companies such as Qualcomm, Ericsson, Nokia, InterDigital, Huawei and others are the innovators. Although the omnipresent commercials for Verizon tout the company's investment in 5G technologies, companies such as Verizon and AT&T use 5G telecommunications innovations developed by pioneers in the industry, not the other way around.

The innovators do the research and development that provide the first 999 miles; the implementers (i.e., Verizon and AT&T) roll out the final mile to consumers. Without the innovators there would be no 5G, so for R Street to get all upset about an innovator suing an implementer and then claiming patents are too strong and American companies can't succeed is—well, misleading at best and fraudulent at worst.

If R Street wants to investigate a national security issue, as it claims, it should be investigating the abusive use of U.S. antitrust laws by the Federal Trade Commission against Qualcomm. The egregiously overbroad order by Judge Koh of the Northern District of California against Qualcomm threatens to knock out the only American 5G innovator in the race for the telecommunications system of the future. That is a national security and economic security issue—not that patents are too strong.

The China factor

For reasons I cannot explain, virtually no one in Congress is worried about the utter disintegration of the U.S. patent system and the associated rise of the Chinese patent system. Patents are strong in China, with patent owners prevailing more than 95 percent of the time.

In the United States, medical diagnostics are unpatentable, any invention relating to software falls to a motion to dismiss, and even garage door openers are considered abstract as if they don't exist. Pretty soon it will be the U.S. patent system that is abstract and doesn't exist!

Still, the narrative about what China is doing—and how it is filling the patent void left by the United States and venture capital for artificial intelligence leaving America in favor of Chinese firms—has made no difference in policy or direction.

But don't be surprised if Huawei suing a U.S. infringer doesn't kickstart the next wave of misguided, irrational, patent-hating nonsense. 🐕



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IoT Corner

Online mega-retailer and connected home giant Amazon revealed a new wireless network for IoT.

Dubbed **Sidewalk**, the new protocol boasts longer range than both Bluetooth and WiFi without the headache of costly cellular data usage. Sidewalk operates in the 900MHz frequency range—about half that of WiFi and Bluetooth—and is thus capable of transmission lengths of up to a mile.

The new protocol is set to take on other long-range IoT protocols such as LoRa and SigFox. Test devices are being deployed in Los Angeles to test the technology and build out a local network on the West Coast. The first commercially available device with technology is the Ring Fetch dog tracker that will hit the market next year.

—Jeremy Losaw



Wunderkinds

Ana Humphrey of Alexandria, Virginia, has been obsessed with the environment since age 10. Earlier this year as an 18-year-old, she was awarded the \$250,000 top prize at the Regeneron Science Talent Search in Washington, D.C.

She sought to confirm the existence and probable location of exoplanets—planets outside our solar system—missed by NASA's Kepler Space Telescope. She used mathematical modeling to determine up to 560 missing planets and 96 key areas to search. She earlier invented an app that can test for E. coli in water, and pioneered a calculator that estimates how much wetland is needed in areas at high risk of waterway issues.



What IS that?

The **Puff-N-Fluff** dog dryer is the result of a third-grade class invention project in which 9-year-old Marissa Streng came up with a solution for those times her dog was wet—after a bath or being caught in the rain. Getting the dog inside this contraption may be a problem, though. U.S. Patent No. 8,371,246!

\$13 million

The amount of money **Paul Brown** made by inventing what always seemed like a no-brainer: the upside-down ketchup bottle.

WHAT DO YOU KNOW?

1 When was the first commercial cranberry sauce canned?

- A) 1797 B) 1860
- C) 1912 D) 1946

2 **True or false:** Robert Cheesebrough, who invented petroleum jelly, ate a spoonful of it every day.

3 Which was invented first—bubble wrap, or the pop-top aluminum can?

4 **True or false:**

Mikhail Kalashnikov, who invented the AK-47 automatic rifle, was proud of its possible usefulness in war.

5 David Misell of Great Britain invented the flashlight in what year?

- A) 1851 B) 1899
- C) 1910 D) 1934



ANSWERS: 1.C. It was canned by attorney Marcus L. Urann, who also owned cranberry bogs. 2. True. Cheesebrough, who marketed petroleum jelly as Vaseline, said it had health benefits. He lived to age 96. 3. U.S. engineers Alfred Fielding and Marc Chavannes invented bubble wrap in 1957. Ermal Frazee invented the pull-tab aluminum can opener in 1959. 4. False. Kalashnikov greatly regretted it and wished he would have invented something to help farmers with their work. 5. B.

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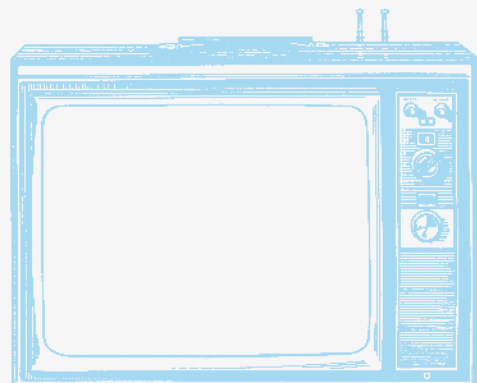
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