

Inventors

MAY 2020 Volume 36 Issue 05

DIGEST

Action, Not Panic

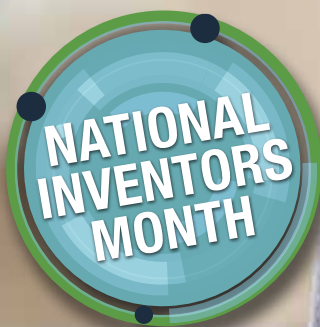
COVID-19 INNOVATING
BRINGS OUT OUR BEST

Past Virus Vaccines

A CENTURY OF EFFORTS
SHOWS MIXED RESULTS

Pandemic Lessons

IT'S TIME TO STRENGTHEN
U.S. INNOVATION POLICY



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No Blame, Just Help and Hope

Maybe we should change National Inventors Month to World Inventors Month.

Suffice it to say that the annual celebration, cofounded by *Inventors Digest* in 1998, takes a backseat this year. As mentioned in this space last month, the coronavirus phenomenon has spotlighted the need for invention and innovation throughout the world—and in this instance, as fast as humanly possible.

Our gotta-have-it-yesterday world of Monday morning quarterbacks and political opportunists is in its glory, pointing fingers of blame because a successful COVID-19 vaccine is not already here. Even President Trump, a key blame target, has turned around and blamed the World Health Organization for getting "every aspect" of the pandemic wrong.

Blame can be constructive when it produces change, but much of what's going around now seems purely to attack. And it overlooks the larger context of our country's history with virus vaccines.

As noted in the story on Page 10 of this issue, the United States has had mixed results with vaccine solutions in the past 100 years. Because of the unique characteristics of each virus, the process is often painstakingly slow and expensive.

Yes, we need to commit more energies, resources and dollars to support innovation in this field. But while we plan those possible impacts and wait for medical science to deliver a solution, we often overlook an important resource for minimizing all the fatalities, suffering and economic calamity.

It's called human kindness.

The day-to-day despair of this new world has, understandably, left a lot of people feeling helpless. But this month's special section shows there are ways to be a positive influence even amid a worldwide scourge that some have likened to a plague.

Help and hope can be contagious. We hope you are inspired by just a few stories that show what the human spirit can accomplish.

—Reid
(reid.creager@inventorsdigest.com)

PATENT DEADLINES EXTENDED

The United States Patent and Trademark Office announced extensions to the time allowed to file certain patent and trademark-related documents and to pay certain required fees. The actions, announced March 31, are an exercise of temporary authority provided to the USPTO by the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) signed by President Trump on March 27.

In-person meetings, such as hearings and examiner interviews, are being conducted virtually by phone and video until further notice. *Details: uspto.gov*

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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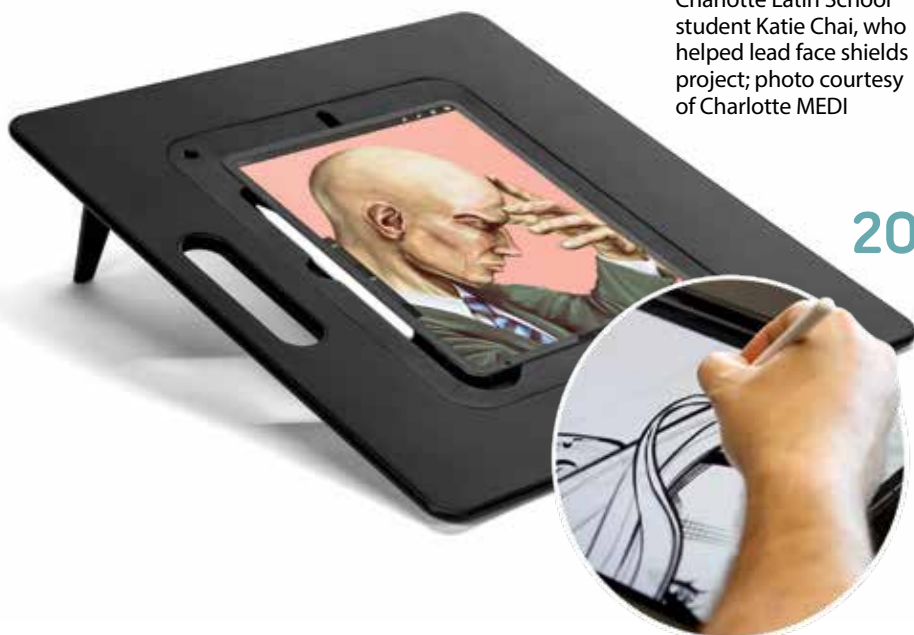


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Charlotte Latin School student Katie Chai, who helped lead face shields project; photo courtesy of Charlotte MEDI

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CORRESPONDENCE

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):

"Laser Cutting Tricks" (September 2019):

It's cool that multidimensional parts can be made if you put a tongue and groove on the edges, because that means the possibilities are nearly endless!

I want to build my daughter a model dinosaur out of wood. Do you think it would be possible to do that with a laser cutter? I'm sure I could make it like one of those kits you find at the store.

—RITA SANDERS

From story author and monthly Inventors Digest contributor Jeremy Losaw, engineering director at Enventys Partners: Yes, that would be a great use of the tongue-and-groove technique to make a 3D part with a laser cutter. You may even be able to find some reference designs on the web.

"Inspiration Reinvented" (March 2020):

Nice article! "Everyday Edisons" is a great way for Inventors to answer many of their inventing questions and get a peek of the processes of taking a product from conception to store shelves!

—ELIZABETH CROUCH,
INVENTOR OF THE CUPCAKE
RACK (INVENTORS DIGEST MARCH 2019 COVER STORY)



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Via inventorsdigest.com, comment below the Leave a Reply notation at the bottom of stories. Or, send emails or other inquiries to info@inventorsdigest.com.

LOOKS LIKE HE MADE IT: 2-YEAR LAWSUIT ENDS



Payne, who claims to be the sole U.S. copyright owner for the Garland show, also sued the Judy Garland Heirs' Trust, Liza Minnelli, and Lorna Luft for trying to terminate Payne's copyrights in the videos.

The suit was settled in March; no one involved admitted wrongdoing.

Although some terms of the deal are confidential, it was revealed that the Judy Garland Heirs Trust disclaimed any ownership or copyright interest in "The Judy Garland Show." Also, Payne agreed to grant Manilow a license to use a clip from the show

in which Garland sings "Zing Goes the Strings of My Heart" for use in his concert performances.

Payne and Manilow expressed mutual admiration for each other in the entertainment field and expressed good wishes. That was a far cry from the original language in the suit, which claimed "blatant, intentional and purposeful infringement" on Payne's copyright.

This isn't Manilow's first experience with legal issues connected to his music. In 1994, he sued Los Angeles radio station KBIG-FM for an estimated \$28 million, alleging the station disparaged him in a promotional spot and used his name unlawfully.

KBIG officials said the promo sought to distinguish the station from soft-rock competitor KOST-FM by noting that KBIG played songs by hard-rock artists such as Rod Stewart and Genesis, while KOST played songs by softer acts such as Manilow and the Carpenters. A KBIG official said the station was unaware it needed permission to use Manilow's name.

The suit was dropped after KBIG agreed to withdraw the promo.

Meanwhile, radio host Robert W. Morgan at Los Angeles station KRTH-FM said he planned to offer \$5,000 to any listener willing to sit through an entire Manilow song.

Morgan told the *Los Angeles Times*: "I didn't want to be sued by Barry, so I decided I'd better play a Barry Manilow record."

A copyright lawsuit brought against entertainer **Barry Manilow** was recently settled, and in an unusually amicable way.

Music producer Darryl Payne sued the "Mandy" crooner for infringement in April 2018. At issue was Manilow's use of video from "The Judy Garland Show," the late singing star's variety show on CBS television in 1963-64, during Manilow's concerts in 2015 and 2016.

BRIGHT IDEAS

GREEN DISC

BIKE CHAIN LUBRICANT

drivt.bike

GREEN DISC is a small, refillable smart tool for the basic care of your bike chain. Just hold the wheel on the bike chain and crank the pedal backward.

The freely rotating lubricator wheel is both an applicator and lubricant reservoir. The interchangeable and biodegradable wheel applies the right amount of lubricant for the chain while absorbing fine metal abrasion.

Once filled, the product can lube your bike chain up to 10 times.

GREEN DISC will retail for about \$22, or \$29.50 with one bottle of bio chain lube. Shipping for Rewards backers is set for May.



Pico

PLANT-GROWING SYSTEM

kickstarter.com

Pico promotes optimal plant growing without having to worry about too much or too little water or light.

The smart pot has a self-watering system that waters for up to 10 days. It has built-in LED grow lights, often used in indoor farms, to compensate for lack of direct sunlight. The lights sit on the bottom of a telescopic hand that directs light on top of the plant.

Pico comes with multiple mounts (magnetic, Velcro, wall hanging, and tabletop), so you can keep it on any surface.

One set will retail for \$45. Shipping for crowd-funding Rewards backers is scheduled for May.

Square Off Neo & Swap

SMART AUTOMATED BOARD GAMES

squareoffnow.com

Square Off's games are powered by robotics and artificial intelligence. The smart automated boards include a built-in coach.

Neo is an automated, state-of-the-art chess board. The built-in AI auto-adjusts to your skill level with 30 difficulty levels, giving you a challenge at every move. The integrated mobile app connects you to players across the world and to 30 million-plus users on chess.com.

Swap's magnetic sensor surface lets you switch between games within moments. It offers a choice of four games to begin with: chess, Chinese checkers, draughts and Connect 4.

Neo will retail for \$199, Swap for \$249. Shipping starts in November.



POSSIBLE DELAYS

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



"Be alone. That is the secret of invention; be alone. That is when ideas are born."

—NIKOLA TESLA

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CalfPRO will retail for \$129 and ship to Rewards backers in August.

Vexing Virus Vaccines

OBSTACLES DATING BACK 100 YEARS ILLUMINATE THE CHALLENGES INVOLVING COVID-19 **BY REID CREAGER**

THE COLLECTIVE, plaintive cry has echoed throughout the world as the deadly coronavirus rampages along: Where is the vaccine?

We heard the question before, 100 years ago, amid the 1918-19 influenza pandemic that infected an estimated 500 million people and killed 50 million. But modern medicine, technology and innovation had not advanced enough to produce a solution—leading us to hope against hope that history doesn't repeat itself.

When and if the vaccine arrives, it won't be soon enough to save Hilda Churchill. The charismatic British woman, days short of her 109th birthday, died of mild symptoms of COVID-19 on March 29. She survived the 1918-19 pandemic, which killed her 1-year-old sister.

Striking comparisons

The century-ago pandemic (some say it continued through 1920, though this story will use the timeline provided by the National Vaccine Information Center) was caused by “an H1N1 virus with genes of avian origin,” per the U.S. Centers for Disease Control

and Prevention. It was particularly distinguished by a high number of deaths in the 20-40-year age group.

This was a flu pandemic. COVID-19 is not the flu. But this passage from the CDC sounds eerily familiar:

“While the 1918 H1N1 virus has been synthesized and evaluated, the properties that made it so devastating are not well understood. With no vaccine to protect against influenza infection and no antibiotics to treat secondary bacterial infections that can be associated with influenza infections, control efforts worldwide were limited to non-pharmaceutical interventions such as isolation, quarantine, good personal hygiene, use of disinfectants, and limitations of public gatherings, which were applied unevenly.”

That pandemic—often called the Spanish flu by the U.S. mass media, although it did not originate in Spain and was not contained to Spain—begat more research on the virus. The National Vaccine Information Center (NVIC) reports that in 1933, Influenza Type A was isolated in ferrets; three years later, Type B was isolated and an Australian scientist discovered that the virus could be grown in embryonic hen eggs.

Enter Jonas Salk and Thomas Francis, University of Michigan researchers who created the world's first modern flu vaccine in 1938 by using fertilized chicken eggs and an inactivated strain of the Influenza A virus.

The heralded vaccine was given to U.S. soldiers during World War II. But its effectiveness was limited: A 1944 study of the vaccine revealed that it helped reduce illness in people with a temperature above 99 degrees Fahrenheit, although a 1947 evaluation “found no difference in health outcomes between those who were vaccinated and those who were not vaccinated,” according to the NVIC.

(Salk's mixed success with this vaccine preceded another groundbreaking discovery of far more impact: his vaccine for polio. In the years after that vaccine was released in the United States in 1955, polio cases reduced in America from 18 to fewer than two cases for every 100,000 people.)

Below: On April 12, 1955, Dr. Thomas Francis (left) announced that the polio vaccine developed by Dr. Jonas Salk (right) was up to 90 percent effective in preventing paralytic polio.

Below right: President Gerald Ford receives a swine flu inoculation from his White House physician, Dr. William Lukash, on Oct. 14, 1976.



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The CDC reports that efforts to limit the 1918-19 H1N1 virus “were limited to non-pharmaceutical interventions such as isolation, quarantine, good personal hygiene, use of disinfectants, and limitations of public gatherings, which were applied unevenly.”



Inconsistent history

Inventions and innovations aimed at eradicating viruses have met with mixed results during the past century.

- In February 1957, a new H2N2 flu virus emerging in East Asia began another pandemic that resulted in about 1.1 million deaths worldwide (116,000 in the United States). A vaccine was available on a limited basis by August.
- In 1966, the U.S. Food and Drug Administration licensed a new viral medication, amantadine, as preventive medicine against Influenza A. But two years later, a new H3N2 virus (an Influenza A subtype) emerged in Hong Kong that resulted in 1 million deaths worldwide and about 100,000 in the United States. Most of these fatalities were in people 65 and over. (Some suspected the virus evolved from the strain of influenza that caused the 1957 pandemic.) By the time a vaccine was available, the pandemic had peaked in many countries.
- In 1976, an outbreak of the swine flu (Influenza A virus subtype H1N1) at Fort Dix, New Jersey, killed one person and hospitalized 13. This triggered a mass immunization program. Within 10 months, about 48 million Americans (one-fourth of the population) had been vaccinated. However, cases of the neurological condition Guillain-Barre Syndrome were more than expected among vaccine recipients, so the program was stopped.
- The 2002–2004 SARS (severe acute respiratory syndrome) epidemic was caused by a coronavirus. First identified in Foshan, Guangdong, China in November 2002, it affected more than 8,000 people from 29 different countries and territories. Almost 800 people died worldwide. Of course, no successful vaccine has been developed against the coronavirus.
- The 2009-10 swine flu pandemic was the second involving the H1N1 influenza virus, the first coming in 1918-19. In 2013, scientists estimated that the later pandemic caused more than 200,000 deaths worldwide. Vaccines were delivered by November 2009.

Although human innovation and technology have landed a man on the moon, developing prompt and effective vaccines for viruses could be an ongoing challenge.

No one institution can develop a vaccine on its own, and the stages of the process are longer than many people can fathom—starting with understanding the virus’s characteristics and behavior, then developing an animal model.

After that, scientists must develop a vaccine that will trigger the right parts of the body’s immunity without doing damage. There is pre-clinical testing, clinical testing, cooperation among various agencies, and regulatory approval—all of which takes hundreds of millions of dollars.

“What would make a great vaccine for coronavirus is one that you can make quickly and one that would provide long-lasting and effective immunity,” Dr. Kathryn Stephenson, who runs the clinical trial unit at Beth Israel Deaconess Medical Center’s Center for Virology and Vaccine Research, told the *Los Angeles Times*. “Those are not always the same thing.”

It’s a challenge that is much older than Hilda Churchill was. 📌

INVENTOR ARCHIVES: MAY

May 25, 1948: Andrew Moyer was granted a patent for a method to mass-produce penicillin.

Discovered by Scottish bacteriologist Alexander Fleming in 1928, penicillin has been effective in treating serious bacterial diseases.

Moyer was working at the United States Department of Agriculture’s Northern Research Laboratory when he found he could increase yields tenfold if a penicillin mold was cultured in a broth of corn steep liquor and lactose. He was posthumously inducted into the National Inventors Hall of Fame in 1987, the first government researcher so honored.



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The 7 Pitfalls

WHEN INVENTING ON PURPOSE, BE SURE YOU ARE CLEAR OF THESE OBSTACLES TO SUCCESS **BY JACK LANDER**

TWO MONTHS AGO, my column emphasized the risk of investing in a “spontaneous invention.” Such an invention usually arises from a eureka moment and yields a product that is likely to flop.

Now I’ll cover inventing on purpose—that is, intentionally searching in a stable or hot market for a gap that is not filled, and inventing a product to fill it. But finding such a need, and succeeding in inventing a product that will satisfy it, also has pitfalls.

Check out these seven considerations that can save you a lot of time—and maybe a small fortune:

1 The invention came too early.

Many inventors are blessed with creativity and the ability to see into the future.

For example, we know that industrial robots are prevalent in manufacturing businesses. The three essential components of a robot: arms and hands that can be moved freely; motors that can be stopped at any degree of rotation; and a programmable controller that directs the motions.

Each of these items has been available for many years. But the cost of the complete assembly had been high, and business owners were skeptical early on.

Like many newfangled inventions, it may take a generation to form the new normal and create not just grudging acceptance but the necessity of using the device in order to compete.

The point is that if your futuristic invention requires overcoming market resistance, your venture may be doomed even though you are convinced of its practical necessity.

That doesn’t mean it won’t eventually succeed. It means that it belongs in the hands of a relatively large company that can wait out and fund the time it will take to create a profitable market.

“Well,” you say, “then I’ll patent it and license it to the big company.”

Yes, that may work. But finding a champion who will immediately understand the future potential of your invention is not easy. You’ll run into a lot of excuses about why companies aren’t interested in your great idea. Mostly, they don’t have the imagination or the guts to gamble on an untested concept.

That may sound like I have an unfounded prejudice against large companies. I hope not. I’m basing my judgment on the feedback I’ve received from many of the inventors I’ve helped over the past quarter century.

The difficulty is not only the faults of the large companies. The inventor’s obligations include knowing how to reach the receptive individual, usually the director of marketing; having a well-designed sell-sheet, and persisting when rejected.

And by persistence, I don’t mean pestering. I mean going on to the next prospect when you’ve become convinced that you’ve lost the battle. In general, strive for inventions that you feel are currently needed.

2 There’s no attractive profit.

An inventor once asked me to help him find a market for his invention. It leveled those annoying restaurant tables that teeter from one position to another, causing spilled coffee.

The product was a well-designed pair of wedges that interlocked in a variety of positions. The problem was that these two very small pieces of plastic looked as though they should sell for less than 50 cents. Even in a package of 10, they couldn’t command a price that was high enough to interest the restaurant suppliers.

3 It’s already on the market.

Searching for competing and complementary products in retail stores used to be one of the inventor’s ways to judge whether there was a market opportunity for their invention. Not so much anymore.

Many retail stores have gone out of business due to the competition from Amazon. But some stores are still useful because customers want to see and touch the item they intend to buy. Dick’s Sporting Goods is a good example of a chain (850 stores) that apparently has been thriving.

Hardware stores are another example, although many have closed due to customer preference for The Home Depot and Lowe’s.

For many items that we call standard, or off the shelf, Amazon often has the major share of the

market and is the place to begin your search for those items.

Ideally, your invention will have the “Goldilocks” range of competition: not too few, and not too many similar or complementary items.

If there are none or only one, you may be up against a lack of consumer interest. In other words, either your potential customer has a better way of purchasing the item, or the item does not have enough demand to establish itself in the market.

At the other extreme, you may find so many entries that your item will be lost in the crowd. Still, if your product has beneficial features that set it apart from the crowd, it may attract buyers even though there are a distracting number of competing brands. But convincing a prospective licensee may be difficult.

4 It's patented, with the patent still in force.

Obviously, you aren't going to license or produce a product that is patented. If the patent is about to expire, which means it is nearly 20 years old, you may find that the market has been superseded by a better product, and licensing will not be a productive option.

5 It appeals to a costly niche market.

An inventor I know developed an armrest for cars that had their regular armrests too low for comfort. He failed to find a way to market his invention.

Demand didn't exist at the market level because potential users didn't know such an item was available. Advertising was impractical because of its cost and small return. Direct mail, which would have cost nearly a dollar for each sell-sheet, envelope and stamp, had to yield at least a 50 percent return to make a meager profit.

Of course, his return would have been more like a single digit than 50 percent. And he wasn't able to find a list of VW Jetta owners, who would have been his main market.

Some products just aren't practical to produce and market, unless they are part of a large offering of complementary products that are sold to the same customers.

6 It appeals to an imaginary market.

The armrest in the example above never made it to the market. But suppose the inventor produced a small quantity and tested any of the possible ways to sell it. He almost certainly would have failed.

If your futuristic invention requires overcoming market resistance, your venture may be doomed even though you are convinced of its practical necessity.



Again, if Amazon doesn't already sell it, the market may not exist in any practical sense. Ford Motor Co.'s 1958 Edsel is the prime example of such a product.

7 It cannot be produced at a cost with a favorable consumer 'value vs. price.'

Let's examine the armrest again. It was designed with two layers of resilient foam—the top layer soft, the bottom layer firm. Foam is expensive unless purchased from a distributor source, which would have fulfilled a large production quantity. Economic ordering quantities are only practical when demand is known and justifies inventorying materials.

The same problem occurs with the upholstery material. A small quantity produced for a market test is all that is justified, but that means losing money on each sale.

Niche markets are attractive for inventors, because the "big guys" aren't interested in products that don't produce significant profits. But small production-run costs are usually high and force a selling price that makes the product difficult to sell.

Conclusion: Intentional inventing seems like the ideal approach to creating a successful invention. And it can be. But we should never assume that just

because we have discovered a seeming gap in an active market—and we believe that we have solved it with a novel invention—it is so.

All of the tests that we need for the spontaneous invention are the same ones we must apply to the intentional invention. The main difference is that we have thoughtfully chosen a market that we know is active, and that does give us an advantage.

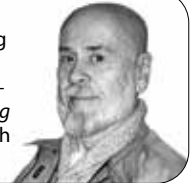
There is a reverse side to this coin, however. An immense number of product developers are at work in that market, and they have already cherry-picked the products that generate fortunes.

Still, there is fallout from the main products wherein we can search, and we may find possibilities that could provide an inventor with a profitable venture.

One great example is the cell phone holder that is attached to a fake cup. The cup fits securely in your car's cup-holder. It's selling very well on TV.

Why didn't I think of that one? 🤖

Jack Lander, a near legend in the inventing community, has been writing for *Inventors Digest* for 24 years. His latest book is *Marketing Your Invention—A Complete Guide to Licensing, Producing and Selling Your Invention*. You can reach him at jack@inventor-mentor.com.



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Social Media, Social Distancing

HOW TO MARKET YOUR INVENTION DURING
THE CORONAVIRUS CRISIS **BY ELIZABETH BREEDLOVE**

WHO COULD have been prepared for what has become a sudden and intense societal shutdown?

The coronavirus crisis has forced us to figure out a new normal in our personal lives and in our work. Meanwhile, we have had to juggle the stress and anxiety of caring for sick loved ones, family and friends; navigate a changing business landscape and potential layoffs; and much more.

This likely requires a pivot in your approach to inventing and marketing your invention. Here are some tips for using social media to market your invention while social distancing.

Go live. You may not be able to interact with your customers or target audience in person, but you can still do so online.

Consider going live on Facebook or Instagram once a week. Pick a topic of discussion—anything from what you're working on to how people can use your invention—and then start promoting the livestream a few days ahead of time through posts, email blasts or stories.

When you go live, you'll be able to have real-time conversations with those who tune in as they ask questions and leave comments in response to what you're saying. This is a great way to provide an up-close-and-personal, behind-the-scenes look at the way you create products and grow your business.

Host a virtual event. Social media platforms make it easier than ever to host a virtual event, or to promote one hosted elsewhere. For example, consider hosting a webinar about a certain aspect of inventing—such as

prototyping, licensing or working with a specific material—then use your social channels to promote the webinar and encourage people to sign up and tune in.

If you'd like a different, more interactive approach to a virtual event, try coordinating a longer-lasting or ongoing event and then create a Facebook group for participants.

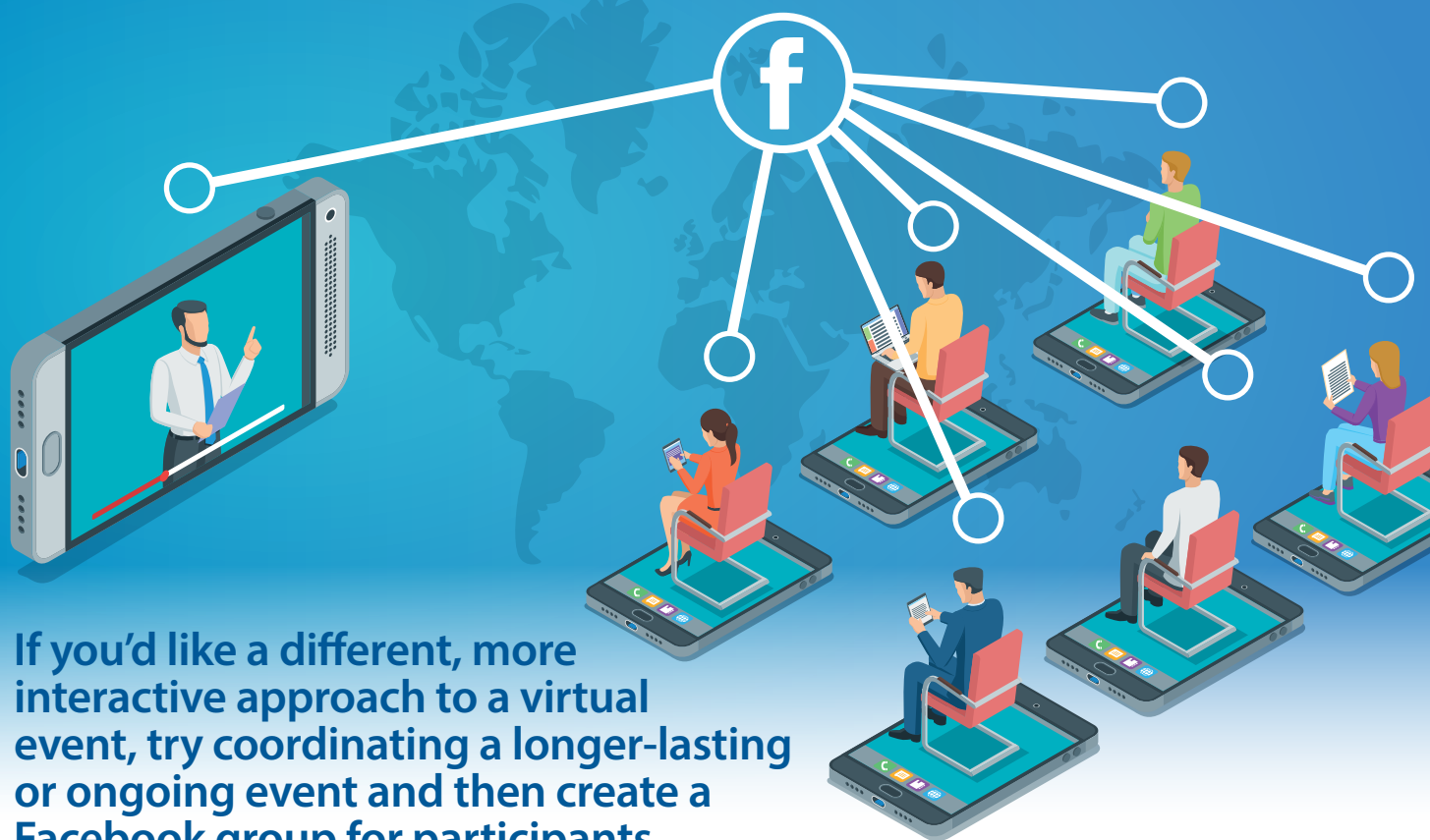
For example, if you created a new, easier way to mop floors, you could host a seven-day house cleaning challenge, then create a Facebook group for everyone participating. You should market the challenge and the Facebook group in advance, and encourage people taking on the challenge to invite their friends to participate and join the group as well.

Once the challenge begins, you could publish a post each day telling members what spot in their house to clean and asking for tips to make that specific chore better and easier. This would boost engagement and give you an opportunity to interact with those participating.

Start a conversation with hashtags. Using hashtags is a great option if you have a large audience on Twitter or Instagram.

Consider the housecleaning challenge above. You could encourage people who participate to post about it on their own channels using the hashtag #QuarantineHouseCleaning, then use the hashtag to find those who are participating and interact with them. This could ultimately grow your relationship with your customers and target audience.

You can also look at what other hashtags are trending during this time, and jump on them to create new content and expand your reach.



If you'd like a different, more interactive approach to a virtual event, try coordinating a longer-lasting or ongoing event and then create a Facebook group for participants.

Offer to do a video call. If you need to have a meeting with a customer, client or partner but would rather do it face-to-face, remember that Facebook offers video calls!

You could also use other options such as Zoom, Facetime, Google Hangouts or Skype if you feel more comfortable with those platforms. Regardless, if you're looking for a way to connect with people to grow your business, video calls are a great way to meet with someone while maintaining social distance.

Be aware that everyone non-essential should be at home. Keep the current social climate in mind as you craft posts or ads.

Suppose you invented a new game. Rather than posting about the best snacks to serve at a game night, you could post tips for hosting a virtual game night using Zoom.

Or, suppose you invented a product that helps you grill the perfect steak. Don't use a picture in your posts that shows a large group of people on a patio or deck or around a grill. Instead, use a photo focused on just the product or on one person grilling steaks.

Make sure you're thinking carefully about what content you are posting and whether it makes sense to post at this time.

If you're having trouble finding images to post, depending on your invention and the context it's designed for, this may be a great time to find and utilize user-generated content.

For example, if you've invented a product for the home, now is a great time to ask people to post pictures of themselves using your invention with a specific hashtag for a chance to be featured by your account.

If you're posting content on Instagram Stories and it's related to being at home, consider using the "Stay Home" sticker to encourage others to stay home and hopefully even extend your reach and get your content seen by new users.

Tell your audience how you're staying home. Have you thought about using your social media profiles to connect more deeply with your audience and encourage them to maintain social distancing?

This is a great time to show your customers and target audience that you're just like them, which makes your brand more relatable. One way to do this would be to give a virtual tour of your home office and talk about how you're social distancing while trying to manage a business and invent new products.

Don't forget to ask your audience how they're staying home as well. This will increase engagement and help you keep building connections! 📞

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.



No Dumbbells? **Smart**

CLINICAL PRODUCT DESIGNER'S WEIGHT-TRAINING DEVICE IMPROVES BLOOD FLOW RESTRICTION TRAINING **BY JEREMY LOSAW**

FEW PEOPLE would say they were fortunate to develop golfer's elbow, but Nick Colosi could make that claim.

While studying to become a doctor of chiropractic early last decade, the North Royalton, Ohio, native noticed the injury and tried manual therapy to no avail. Then an intern at the student clinic treated him with a technique called Instrument Assisted Soft Tissue Mobilisation, and Colosi's condition resolved within a week.

He wanted to learn more about IASTM but found he would have to pay close to \$3,000 for the education and tool combination. He sought a more affordable solution.

Colosi turned to his father and uncle, who had a combined 60 years' experience in the steel industry. Together, they designed what became a line of stainless steel IASTM products—high quality and about one-third the cost of other solutions.

The products were a success. In 2014 they launched a company, Smart Tools, in Strongsville, Ohio, to manufacture and produce the IASTM tool designs.

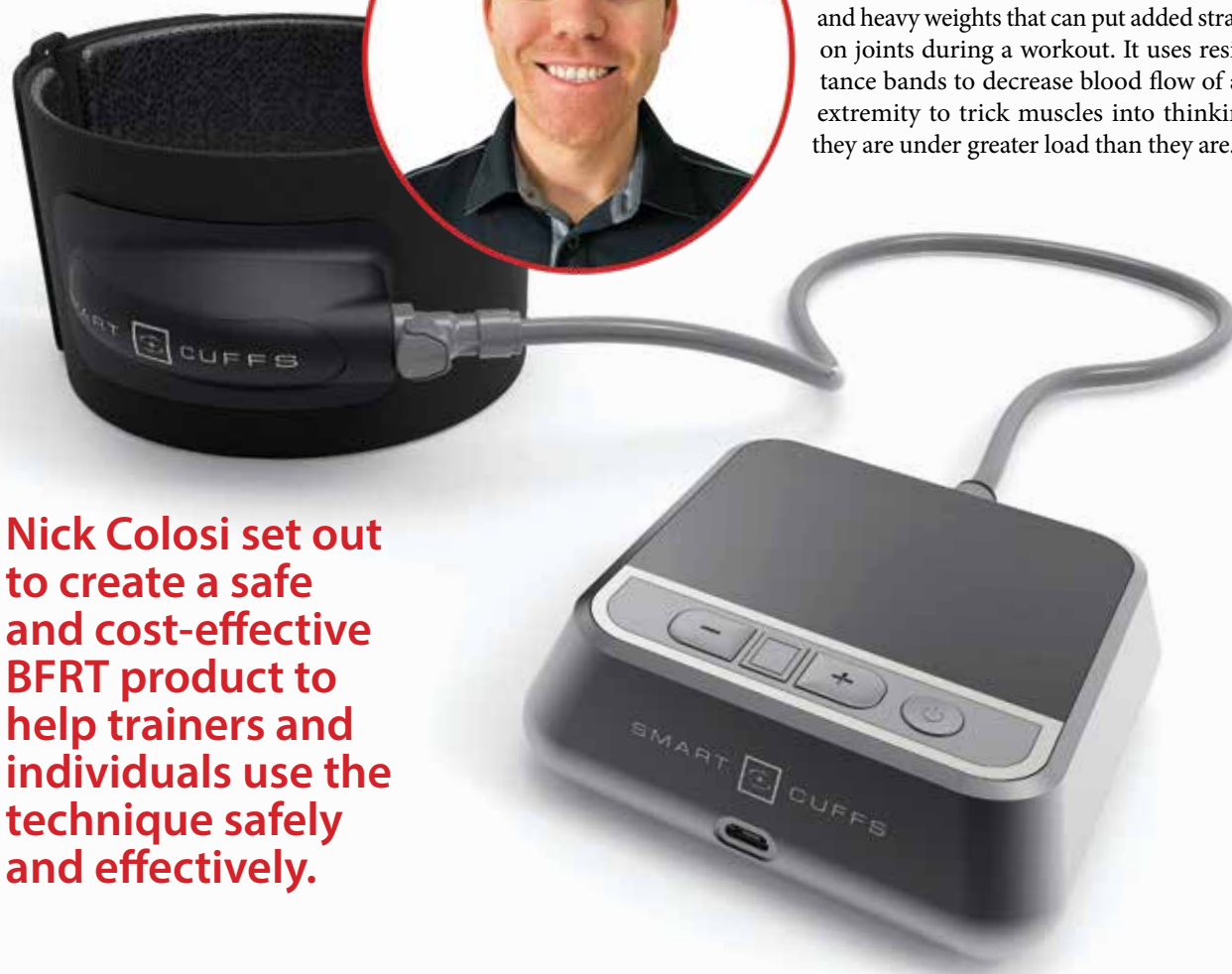
Colosi's professional path changed forever. He left the chiropractic field and pursued his real passion of building clinical products.

Improving **BFRT**

Always interested in health and exercise, Colosi noticed the increasing popularity of a technique called blood flow restriction training.

BFRT is an alternative to cumbersome and heavy weights that can put added strain on joints during a workout. It uses resistance bands to decrease blood flow of an extremity to trick muscles into thinking they are under greater load than they are.

Smart Cuffs uses inflatable bands to provide a measured and accurate amount of blood flow occlusion.



Nick Colosi set out to create a safe and cost-effective BFRT product to help trainers and individuals use the technique safely and effectively.

“With fad products, it usually goes viral—then science catches up and debunks the theories,” Colosi told *Forbes* in a February interview. “So far, we have found (BFRT) is the opposite: The science came first. ...

“There are always things we are learning, but what we know is it does improve muscle size and load.”

The technique has proven effective, but it can be difficult to do safely because there is risk of restricting the blood flow too much and causing unintended damage to muscles by starving them of oxygen. Colosi also cautions that everyone should consult a physician before starting resistance training, and that pregnant women or people with a history of blood clots should not try it.

He found BFRT products were available in the market but cost thousands of dollars, making them largely inaccessible to the masses. So Colosi set out to create a safe and cost-effective BFRT product. He created Smart Cuffs in 2018 to help trainers and individuals use the technique safely and effectively.

Smart Cuffs uses inflatable bands to provide a measured and accurate amount of blood flow occlusion. The first versions of the product were manual devices, using a sphygmomanometer to provide air occlusion and pressure feedback. Sets also included a vascular doppler for monitoring heart rate.

Colosi wanted to make the product smarter and easier to use, so he started work on an automatic model. “This is sorely needed in the marketplace—to have an automated unit to automatically measure LOP but to maintain affordability,” he says.

The Generation 3 device, strapped to the upper arm or thigh, features an electric pump and integral doppler system that monitors and sets the desired limb occlusion pressure (LOP). The system monitors conditions during a workout in real time and has a smart valve that opens to relieve pressure if LOP gets to unsafe levels. It’s also more durable and able to withstand the rigors of use in a home or gym setting.

The target market ranges from physical therapists working with clients to trainers for professional athletes.

The Generation 3 model will be released in July. The consumer version will cost \$299-\$399 and the professional version \$995-\$1,500, depending on the chosen options.

Creating space with IP

Colosi found an Ohio-based engineering team to help with the development and prototyping. He was able to keep the production of the product entirely in the United States, with manufacturers from the Pacific Northwest and Colorado providing components that are assembled in Ohio.

The technology behind Smart Cuffs is patent pending, but developing IP is a small part of the overall business strategy.

Colosi says he is more concerned with creating great products and that intellectual property is a natural byproduct of that activity. He says the IP is less about corporate valuation and more about giving him the legal space to sell his products.

The Gen 3 Smart Cuffs set was officially launched at the annual Consumer Electronics Show this past January. It was as well received there as it has been by the general public; Colosi says Smart Tools has gone from selling about 20,000 cuffs last year to twice that many.

“As the fitness industry continues to grow rapidly, so does the demand for new and innovative training tools,” he said at CES. “We see tremendous value in introducing these consumer-friendly cuffs to the public and are excited to expand the reach of BFR beyond clinical and educate the fitness community on the safety and benefits of this technique.”

Colosi demonstrated his prototype at the show and will have a more formal launch at the National Athletic Trainers Association show in June with production units.

The product is available for pre-sale on the company website. Colosi is already starting design work on Generation 4. 📱

Details: smarttoolsplus.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/.



Drawn to Comfort

PROFESSIONAL ARTISTS DEVELOP IPAD STAND, HOLDER FOR ADDED STABILITY AND EASE OF USE **BY JEREMY LOSAW**



Bill Galvan's shoulder pain led to the development of Sketchboard Pro (below) for artists.

A PAIN in Bill Galvan's shoulder ultimately led to some innovative relief for artists.

Galvan, who has worked on iconic comic characters ranging from Bart Simpson to Archie, is one of the lead artists at a Lindon, Utah-based studio called Braintreehouse. Founded by award-winning designer and artist JJ Harrison, the studio develops physical and digital games. It

exclusively uses the iPad Pro line of tablet computers for work.

After a while, Galvan noticed that "when I started drawing on the iPad, I had this shoulder pain. I realized it was because I kept having to lift up my arm to make up the distance between the surface of the iPad and the surface it was on.

"I thought, 'How can I fix this?'"

Like drawing on paper

For years, tablet computers have solved artists' longstanding challenges with working on paper—including the fact that there is no way to undo a misstroke. But these computers have their own problems. Users can be fatigued by holding them for long periods, and there is no place to rest the heel of the hand when you draw at the edge of the screen.

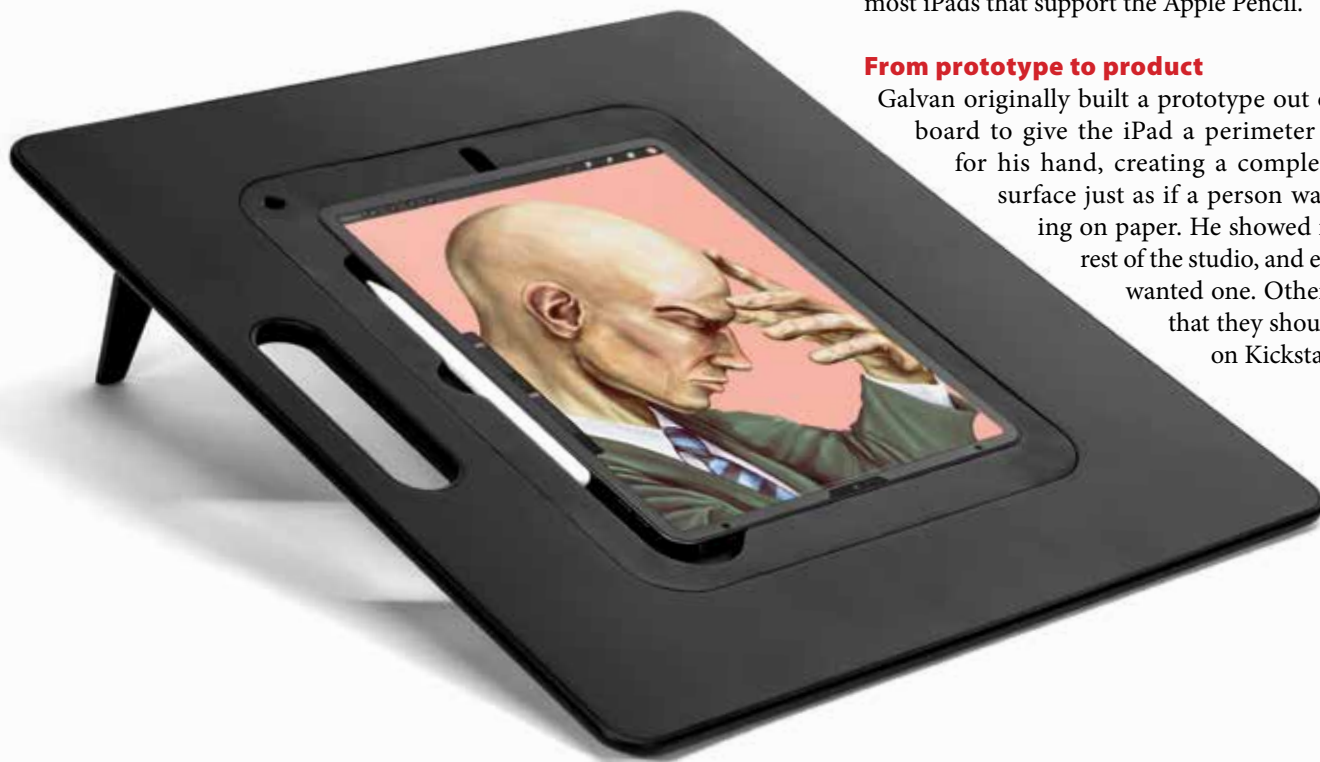
Frustrated by the physical fatigue of the medium, Harrison and Galvan developed a product called Sketchboard Pro to help.

Sketchboard Pro is an iPad stand for artists meant to provide a better physical experience for the illustrator. The board has a recess for the iPad to lay into and provides a perimeter around the screen. This puts the iPad screen level with the surface of the board and gives artists a complete workspace, as if they were at a drafting desk.

The product also features pop-out legs for an inclined workspace that can be used in either portrait or landscape orientation. The device uses magnetic plates to lock the iPad in place. It is compatible with most iPads that support the Apple Pencil.

From prototype to product

Galvan originally built a prototype out of cardboard to give the iPad a perimeter surface for his hand, creating a completely flat surface just as if a person was drawing on paper. He showed it to the rest of the studio, and everyone wanted one. Others joked that they should put it on Kickstarter.



We gave a Sketchboard Pro to Chad Hardin, DC Comics illustrator known for the character Harley Quinn, for a test run. “He had it for a month and we were like, ‘Hey, can we get those back?’” — JJ HARRISON

The cardboard prototypes were great to prove the concept, but Galvan and Harrison needed some engineering help to turn the idea into a product.

A design firm in nearby Provo, Utah, called Rocketship, was able to help. Designers gave it a style to make it look more like an artist’s palette, and the engineers helped make it structurally sound.

3D prints of the device were used in the Braintreehouse office for testing. Harrison gave one to Chad Hardin, DC Comics illustrator known for the character Harley Quinn, for a test run.

“He had it for a month and we were like, ‘Hey, can we get those back?’” Harrison recalls.

Feedback from Hardin and other artists was overwhelmingly positive. Nearly everyone they showed the prototypes to wanted one.

IP, crowdfunding efforts

Utility and design patents have been filed for the Sketchboard Pro. Harrison and Galvan have seen their work bootlegged, resulting in lost revenues from the unlicensed use of their art, and wanted to have protection for their device.

Though it has been good for the brand to have pending IP, the duo feel it is only a matter of time before they see knockoffs on the market. They are working on building a strong brand and a quality product so they are the market leaders in the space.

The initial conversations about bringing Sketchboard Pro to Kickstarter never died, so Harrison and Galvan decided to use it as their launch point. They had experience with crowdfunding their card game “FMK: Twists of Fate” on Kickstarter and understood the platform; they even told Hardin that he could keep the prototype if he let them use his testimonial in the campaign.

Sketchboard Pro, launched at the end of 2019, finished with \$112,406 from 1,477 backers before moving to Indiegogo InDemand for additional pre-orders. After this success, they took the product to the renowned Consumer Electronics Show in January.



The product developed by JJ Harrison (above) and Bill Galvan received rave reviews from DC Comics illustrator Chad Hardin (inset, working).

They attended pre-show launch events and exhibited in Eureka Park, the area of the show for start-ups, and received great media attention as well as fielding visitors from Amazon and Apple.

Finding a factory

Harrison and Galvan looked into stateside manufacturing options but in the end decided to go with an Asian factory for production. U.S. factories were expensive to the point that the program would have to be canceled if that were the only option. They then looked to Alibaba to find factories overseas but had limited success finding a suitable factory to build it with the high quality they desired at a good price.

“This helps us in our studio to create great work, and we want all artists to be able to benefit from it,” Galvan says.

Eventually their design firm, Rocketship, was able to give them leads for trusted manufacturing partners. This led them to an ideally sized factory that is able to make the Sketchboard Pro economically and at the high quality they want.

The pair are working hard to fulfill their Kickstarter orders and build the business. Despite delays due to the coronavirus, at last word they were pushing to deliver pre-orders in the second quarter this year and expected to be in retail outlets this summer.

Artists at heart, Harrison and Galvan are desperate to put more energy back into their studio work. They are working to build a team to support Sketchboard Pro so they can get back to using the product to develop more games and digital products. 📱

Details: [Sketchboardpro.com](https://sketchboardpro.com)



Can't-Lose Proposition

COUPLE'S INVENTION HELPS ENSURE THAT SOCKS DON'T FALL OFF THE ACTIVE FEET OF LITTLE ONES **BY EDITH G. TOLCHIN**

I'VE ALWAYS wondered what happened to my children's socks, missing in action many years ago when they were babies and toddlers. Little ones have a knack for losing socks.

So rather than taking your house apart and finding things like PB&J-coated toys buried under the sofa, here's an alternative to finding those socks when your child's about to leave for college: Squid Socks®—the socks that safely stay on little feet!

Edith G. Tolchin (EGT): How did this product come about, and what are your and your husband's roles in this company?

Jessica Miller (JM): As newlyweds in 2014, we kicked off our honeymoon with a trip to London. While there, we visited my husband Gabe's cousin and his wife, along with their sweet baby boy who was 5 months old. During our stay, their son's socks kept falling off and his dad made a frustrating reference as to the need to fix this problem.

Our hamsters immediately started sprinting on their wheels, and that very night we could hardly sleep as we thought of all the different ways we could address this issue. At that time, we didn't yet have children of our own, so we started our research, asking friends, family, neighbors and acquaintances if this was a need not yet addressed in the market. We were surprised how many people gave us a very enthusiastic "Yes!" Since then, through the birth of our son and daughter, we've proven to ourselves that

indeed, those little socks just don't want to say on.

I am the "Alpha Squid," and this is my full-time job. Gabe is the "Beta Squid" who works a day job to support the family while Squid Socks grows. Every day, we spend many hours working side by side to do whatever it takes. We are dependent on each other to make this work. We each have our strengths and weaknesses. Together we are the ultimate Squid Squad.

EGT: How are Squid Socks different from other children's socks that are supposed to stay on little feet?

JM: Squid Socks use patent-pending, 100 percent silicone "squiddy dots" on the inside cuff to hold socks on. We also feature unique squid character designs that are applied with dye sublimation—a printing process using specially formulated inks, intense heat and pressure that dyes the fibers of the fabric.

The dyes in the inks become chemically bonded with the fibers of the fabric. This means the graphics can't be scratched, scraped or washed away. The result is a high-fidelity crisp image that is unlike anything seen in other baby socks. We also developed our own custom sizing to best fit babies' feet.

EGT: Please share your prototyping experience.

JM: At first, we tried to prototype silicone applied by hand, which resulted in a goopy mess! Our early prototypes also had sewn-in images that made them look blocky and low fidelity, like the original Mario Brothers video game.



We knew we finally had the perfect design when our friends raved about the color, crispness and detail of the images. We knew we had the perfect silicone type and application when one night, we did a pull test on both of our kids while they were sitting on our couch.

We both crouched down and repeatedly pulled on their socks ... they stayed on! Gabe and I looked at each other in amazement. We knew we wanted the socks to hold on, but even we were surprised how well they worked.

EGT: How has your patent process progressed?

JM: We have a utility patent on our silicone “squiddy dots” that hold socks on. We hired a professional patent attorney to help us through this process. This professional was surprisingly affordable, much better than many of the intimidating price tags we had heard for this type of help in the past.

With his help and knowledge, it was extremely simple for us. We described our idea to him and provided some images and drawings for the patent application. He took care of the rest!

EGT: Please share your experience with getting the product certified to the regulations of the Consumer Product Safety Improvement Act.

JM: We submitted samples of our product to a lab and they completed all appropriate testing. We did not have to make any changes to be compliant.

EGT: Are you manufacturing in the United States, or overseas?

JM: Our blank socks come from India and China. Our packaging is made in Oregon. Each character is individually aligned by hand, then dye-sublimated in small batches in Oregon. Collections are then assembled and attached to packaging by hand in Oregon. Fulfillment and shipping are out of Everett, Washington.

EGT: Have you had any problems in product development or in manufacturing?

JM: We have had a series of challenges. We started working on this idea five years ago, and for three years we worked with different manufacturers to try and create the product you see today. There were numerous failures, re-starts and days filled with serious frustration and hair pulling. Finally, we were able to find a manufacturer that could create our product.

While their initial production run was good, their second run was fraught with quality defects. We had to reject the entire lot. They were unwilling to tackle the quality issues, forcing us to look for a new partner.

We found another manufacturer, yet in their first run we found ourselves facing quality issues. Roughly 40 percent of our product had

Squid Socks use patent-pending, 100 percent silicone “squiddy dots” on the inside cuff to hold socks on.

“We knew we had the perfect silicone type and application when one night, we did a pull test on both of our kids while they were sitting on our couch.” —JESSICA MILLER



to be rejected due to defects in the dye sublimation printing. Maintaining product of the highest quality is a constant focus for our business.

EGT: Tell us about your "ocean mission."

JM: We donate 10 percent of our profits to coral reef preservation.

EGT: Are you going to add to your product line?

JM: Yes! Our heads are filled with additional products and line extensions. We love listening to the outpouring of customer ideas; these will be instrumental in where we can take this company.

EGT: What would be your best advice to share with inventors seeking to develop their products?

JM: To truly be successful, you must step back and realize you can drown in opportunity. The easy part is coming up with new ideas and products. The hard part is forcing yourself to throttle back the excitement of those new ideas.

Focus your time and energy and perfect your current offering(s) before jumping into the next.

Learn when and how to say "No." Time is your most valuable resource, and you cannot do it all. Lead time is always far longer than what someone quotes you, so build in significant cushion to account for this and think ahead a good six months out.

The best ideas are those that solve a pain point for people. When you hear people describe things that frustrate them, those are your best opportunities. In the early product development stage, seek critique and feedback from people who will tell you what you need to hear, not what you want to hear. ☎

Details: sales@squidsocks.ink

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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10 QUESTIONS WITH CHUCK SWOBODA

Opportunity in a Crisis

HOW COVID-19 CAN HELP BRING OUT
THE BEST OF THE INNOVATIVE SPIRIT

THE CORONAVIRUS pandemic has created unprecedented disruptions, challenges and suffering around the world. But Chuck Swoboda, a co-inventor on more than 25 patents covering LEDs and lighting technology, says it's also creating opportunities for innovation.

The author of "The Innovator's Spirit: Discover the Mindset to Pursue the Impossible" says that a crisis enables people to eliminate distractions and push toward a common goal in a way that makes failure not an option.

Inventors Digest Editor-in-Chief Reid Creager asked Swoboda—currently innovator-in-residence at Marquette University, president of Cape Point Advisors and retired chairman and CEO of Cree, Inc.—10 questions about this unconventional and optimistic premise.

What is the biggest crisis you ever had as an innovator/entrepreneur, and how did you address it?

When you are developing new technology and disrupting 100-year-old companies in large established industries, it often feels like you are moving from one crisis to the next. Eventually, you get used to it and learn to enjoy the constant flow of new challenges to work on. And when you're in the innovation business, you also realize that with each crisis comes an opportunity to disrupt the status quo.

That said, the biggest crisis in my career came from the one place that I wasn't paying attention to—my body. During my 16th year of running a public company, I was coming back from lunch and walking up the stairs to my third-floor office when I started to feel light-headed. I quickly became out of breath and noticed that my heart was racing.

I was taken to the hospital and diagnosed with AFib (or atrial fibrillation) that would eventually require surgery. I could handle the treatment, but what I struggled with was the root cause: the cumulative stress of 25 years building a company and chasing the next problem.

I had to choose between my health and my passion. I chose my health and discovered—like any crisis—that this, too, presented an opportunity. I've since found numerous other somewhat less stressful ways to pursue my passion for innovation.

Where does an inventor/innovator begin in coming up with a solution to a problem?

Innovation starts with identifying a problem that is worth solving. Unfortunately, most entrepreneurs begin this process by asking customers what they want. However, this doesn't work because customers can't describe something that they don't know is possible. Instead, you have to ignore what the customer thinks they want and instead identify a problem they need solved.

Chuck Swoboda, author of "The Innovator's Spirit: Discover the Mindset to Pursue the Impossible," says that a crisis enables people to eliminate distractions and push toward a common goal.

For example, when long-lasting, energy-saving LED lighting was first introduced to customers, they weren't very interested. They didn't see saving energy or replacing light bulbs as a real problem; they were happy with the lights they had.

But when we realized that they did care about saving money, we were able to identify the right problem to solve and articulate the benefits we could deliver to consumers.

In a team situation, how do we address the different innovative energies of individuals and the varying willingness to have a singular, positive focus?

In my experience, most teams inside large organizations struggle with innovation. They make incremental progress but rarely are able to truly innovate.

Successful teams need to have the right people, a common focus, and proper motivation. But these ingredients also need to exist in a culture that is biased toward finding a better way, even if it comes at a cost to what is working today.

This cultural aspect is what most large organizations struggle with, as they prefer predictable outcomes and limited volatility—which is the antithesis of innovation.

To innovate, your team should be focused on a common goal, unafraid of failure. Most important, they need to be unsatisfied with how things are *currently*.

Look on the edges of the organization for these people and avoid those that thrive in what makes you successful today. Each person on the innovation team needs to be equally motivated to get to the goal, which ideally starts by making all of their jobs literally depend on it.



CHUCK SWOBODA

Occupation: Innovator-in-residence at Marquette University, author, speaker, podcast host.

Residence: Cary, North Carolina; Milwaukee.

Resume: Chairman and CEO of Cree, Inc., for 16 years. His team led the LED lighting revolution; company went from a little over \$6 million in annual revenue in 1993 to more than \$1.6 billion.

Education: Engineering degree, Marquette University (1989).

Hobbies: Boating and fishing.

Inventing and innovation usually come at a great financial cost. What would you say to skeptics who say that the right mindset in a crisis is not enough?

In my experience, you have almost no chance to succeed at innovation without the right mindset. What a crisis does is create an environment where people are much more open to change.

Is the right mindset enough? It depends on how you think about mindset. To me, it starts with recognizing that innovation is fundamentally about leadership, not management. You're taking on a challenge without knowing how it is going to turn out but believing that you will figure it out along the way.

It requires significant risk because the size of the reward is directly proportional to the risk you are willing to take. But risk does not guarantee success; it only creates the possibility for it.

You have to become unafraid of failure yet unwilling to fail. And you have to embrace the learning that comes along with failure, because the solution to the problem may very well look different than what you initially thought.

Tell us about the importance of frank self-assessment, as opposed to unrealistic expectations.

Innovation is hard enough when you have all the facts. But it's virtually impossible when you deal in speculation, bad ideas and corporate double-talk.

The problem? Too many organizations lack the cultural values that support the necessary behaviors to innovate. They prioritize collegiality over constructiveness and harmony over harsh reality. In meetings, for instance, people often promote ideas that everyone else knows won't work.

Does anyone call them out? Probably not, but they should.

In a culture of innovation, people have the confidence to openly critique others' ideas and the courage to have their own ideas put under the microscope. This makes a lot of people uncomfortable, but that very discomfort is critical to the kind of creativity that leads to innovation.

You say that rules, structures and management processes can kill an innovative mindset. But isn't some level of organization needed for a cohesive plan?

Management is fundamentally designed to get people to follow known processes or procedures to deliver a predictable outcome. By definition, that approach isn't going to lead to something that's never been done before.

You need a goal and a starting point, but when you're pursuing something genuinely innovative, you are going to learn new information each step of the way and have to adjust and adapt as you go.

“When it comes to innovation, you’re not trying to think outside the box; you need to start with the assumption that there is no box.” — CHUCK SWOBODA

The time you spend developing a cohesive plan will not only be wasted, but the plan itself creates boundary conditions that limit your ability to see what’s really possible.

When it comes to innovation, you’re not trying to think outside the box; you need to start with the assumption that there is no box.

You have cited three innovation accelerators to maximize in a crisis. What are they?

The three innovation accelerators are:

- A crisis helps people realize that they have nothing to lose and everything to gain.
- A crisis enables people to eliminate distractions and push toward a common goal in a way that makes failure not an option.
- A crisis gives leaders the opportunity to step up and a license to ignore the status quo in the pursuit of something better.

The relevance for entrepreneurs is to recognize that moments of crisis present incredible opportunities as people become more open to change and new problems arise in need of creative solutions. In addition, it often reduces the typical structural market barriers to new competition.

Why are not all inventions necessarily innovations?

Invention and innovation are two different things

An invention is something new, and there are literally millions of them on record in the U.S. patent office that will never solve a problem. An innovation is something new that *also* solves a customer problem and creates value.

Although most entrepreneurs focus on new, that part is relatively easy. It’s solving a problem and creating value that’s the hard part and what makes something truly innovative. What you do to invent something is often quite different than what it takes to produce an innovation.

In fact, many of the great innovators didn’t invent the underlying technology that made their innovation possible. Instead, their contribution was turning an idea into something tangible that we value in one form or another.

In your book, a timely example for a new focus during a crisis is the shift in college courses to all online. Tell us more.

Online courses have been a growing trend over the last decade, but the majority of college students still primarily attend classes in person. At least they did until in mid-March, when universities across the country started telling their students to stay home and began shifting all their courses online.

Until now, the pace of progress toward online has been steady but relatively slow. It has been limited by several issues—not the least of which are the risk of failure, the fear of the unknown, and many competing priorities.

This transition has been a significant undertaking—one that was filled with risk—and admittedly, some things haven’t gone as smoothly as expected. But because the only alternative was canceling classes altogether, which would be the equivalent of temporarily going out of business, the universities and their customers (the students) are figuring out how to make it work.

In the end, they will likely make more progress over the next two months than they have in the last 10 years. I predict that this will end up being the most innovative period in higher education, and the business model will be forever transformed for the better.

How is innovating during a crisis different now than in past generations? How will this evolve in the future?

In the most basic terms, it’s no different. Innovation is a mindset that sees opportunity in crisis, reward in risk, and learning in failure. This mindset has been adopted across generations and geographies.

What is different is the speed at which we can implement change due to the availability of technology—to both communicate the need and help implement the solutions. The use of technology has enabled changes in hours and days that a generation ago would have taken weeks or longer. And in the future, the time to change will likely only decrease even further. ☺

Details: chuckswoboda.com



A Lesson FOR ALL



CHARLOTTE MAKERS RESPOND TO SHORTAGE
OF MEDICAL PROTECTIVE GEAR BY MAKING
FACE SHIELDS, RAISING FUNDS **BY REID CREAGER**

THE COVID-19 PANDEMIC is no day at the beach for anyone. But that's where a Charlotte family got an idea to better protect health care workers involved with the virus.

Charlotte Latin School junior Katie Chai said her father—S. Jean Chai, M.D., a physician at Atrium Health—read an article about 3D-printed respirators in Italy. His wife, Janie Chai, is a physician at Novant Health. Both expressed concern about the nationwide shortage of medical protective gear.

“He asked me if it would be possible to replicate the idea at my school's engineering lab” for face shields, Katie said. “I told him it was and contacted my teacher, Mr. Dubick, that night. Mr. Dubick called me back right away, and we started working out the details!”

She had called the right person. Tom Dubick, Charlotte Latin's engineering lab director, is the innovation and design chairman at the school.

The face shields were designed by a group of engineers led by Dubick and Terence Fagan, PhD at UNC Charlotte. Alex Cabral, director of fabrication for the School of Architecture at UNCC, told WCCB-TV that the shortage of face shields “hit pretty close to home and we just figured we just needed to start doing whatever we could.”

A collection of engineers, architects, designers and makers who volunteered their time and expertise quickly led to the formation of Charlotte MEDI (Medical Emergency Device Innovation). It consists of more than 100 professionals and academics, over 400 volunteers in the Charlotte area, and a dozen partners who have donated materials and services.

After a few days of minor modification, the group prototyped the first few dozen face shields for use by doctors and nurses at nearby hospitals.

The team created a clear plastic shield that extends an inch or two in front of the nose, leaving the user room to wear a surgical mask underneath.

The design met the standards outlined in the Centers for Disease Control and Prevention's “Strategies for Optimizing the Supply of Face Masks.”

Immediate generosity

Based on real-time clinical feedback, the engineers decided to make reusable, durable face shields that featured a thick piece of clear PETG. Inspired by the #MillionMaskChallenge, a GoFundMe campaign followed.

The results were more than gratifying: more than \$100,000 raised in the first 2 1/2 weeks, enabling the delivery of more than 76,640 face shields.

Once Charlotte MEDI discovered the need was so great, it revised its original goal of 10,000 face shields to 100,000 in order to protect as many health care workers as possible, as quickly as possible. The 100,000 goal enabled Charlotte MEDI to distribute face shields to other cities in North Carolina, as well as cities including New York, Los Angeles, San Francisco, Washington, D.C., Atlanta, Boston, Baton Rouge and more.

The GoFundMe then became the way to pursue injection molding and manufacture thousands of face shields per day.

“In a few hours, we met our initial goal and after the weekend was over we had raised over \$20,000,”

Health care worker Kelly Prince shows off the face shields, which became part of a much larger effort.

PHOTOS COURTESY OF CHARLOTTE MEDI



said Katie, who has been taking engineering classes and learning about 3D printing since the seventh grade. “It’s so humbling to see the amount of money we raised in such a short time.”

Katie’s role in the project was mainly as a volunteer and documenter. After contacting her teacher, she began assembling the face shields with her family and gathering elastic. She also created instruction documents outlining the assembly steps for the face shields so other people can get involved in the project.

She said her biggest satisfaction was “seeing the pictures of the doctors and nurses using the face shields! It’s very fulfilling to see actual people being helped by our efforts.”

Life lessons

Katie said she has learned a lot applying the engineering design method in a real-life scenario.

She has drawn inspiration from her aunt, Anna Chai, who devoted a lot of energy to the project. “I think she is the reason this project has grown so large. She is a great female role model.”

When asked about her plans, Katie sounded like a future inventor. She wants to study engineering in college.

“This experience has given me an extensive look into the prototyping and manufacturing aspects of engineering. I was very excited to see a simple idea grow into thousands of real-life products. I also love seeing the impact an invention can have on people.” 📌

The campaign resulted in more than \$100,000 raised in the first 2 1/2 weeks, enabling the delivery of more than 76,640 face shields.

Charlotte Latin student Katie Chai and her family came up with an idea to better protect health care workers. Her parents are doctors.



Enventys Partners Answers the Challenge

3 PROJECTS LINKED TO PRODUCT DEVELOPMENT FIRM ADDRESS URGENT NEEDS FROM PANDEMIC **BY JEREMY LOSAW**

INNOVATION is always up for a challenge. The COVID-19 pandemic has thrown up an interesting one for the development team at Enventys Partners, a Charlotte-based product and development company.

Job One was to ensure the health and viability of our team. So like most of the rest of the world, we have shifted to working remotely.

Fortunately, since most of our projects are physically the size of a loaf of bread or smaller, we were able to divvy up prototype parts and equipment to various people on the team while being able to effectively advance the development for most of our projects.

It has been amazing to see the response from the creative and development communities to innovate and use the tools we have to help save the lives of those infected with the virus and their caregivers. Here are three projects where the product development community has been on the front lines:

A team from the Dominican Republic developed an automated ventilation system that provides emergency care for hospital patients. The team leader attended a bootcamp conducted by Enventys Partners engineering director Jeremy Losaw.

Makeshift ventilator

Because the virus attacks the respiratory system, ventilators have been at the forefront of the COVID-19 fight. This has caused an acute shortage of the devices.

Some people infected develop pneumonia or respiratory inflammation that render the lungs ineffective. In patients with these symptoms, ventilators can take over the job of breathing and provide heavily oxygenated air to keep them alive.

One interesting way to help with the ventilator shortage is to use one ventilator for multiple patients. This is accomplished by splitting the output air from the ventilator into two streams. It can be done with a simple part called a Y-splitter that looks like a plumbing fitting.

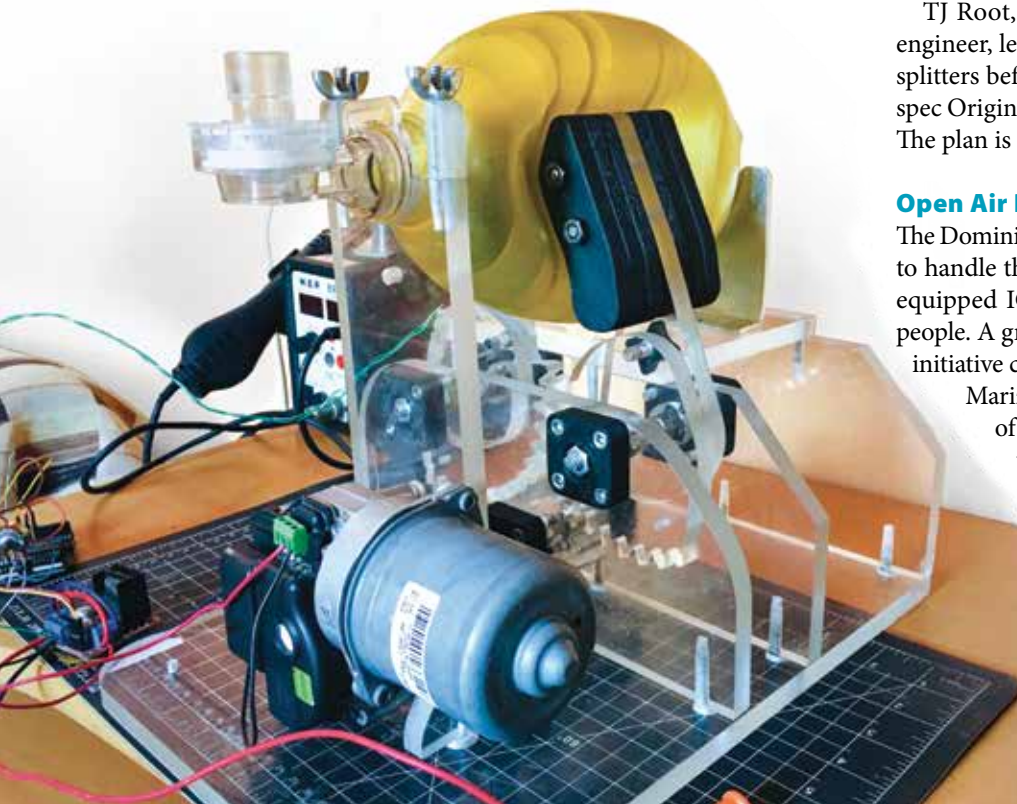
Charlotte-based Atrium Health wanted to deploy this strategy in its hospitals throughout the Southeast but did not have the resources to build them. Atrium Health contacted Enventys Partners, which was able to quickly finish the design and produce the needed parts.

TJ Root, Enventys Partners' senior mechanical engineer, led the initiative and created CAD for the splitters before building them on a new production spec Origin 3D printer from medical grade material. The plan is to build hundreds of these units.

Open Air Project

The Dominican Republic is extremely underequipped to handle the pandemic, with about 400 ventilator-equipped ICUs for a country of about 10 million people. A group of talented engineers has created an initiative called the Open Air Project to help.

Marizeth Beato leads the team. She is a student of an innovation bootcamp I helped lead in the DR in February. The team designed an automated ventilation system that



uses a set of gear-driven arms to collapse a hand pump-style ventilator bulb and create the breath pulse. Though not meant to be a long-term treatment, the device provides emergency care to patients and keeps hospital staff from having to manually attend to compressing the bulbs.

The open-source design, inspired by an MIT project from a decade ago, has been updated to use low-cost parts and fabrication techniques that can be easily duplicated in the DR and other Latin American countries.

The Open Air team tested its first prototype at a hospital in Santo Domingo before deploying one at a hospital in San Francisco de Macoris, a city two hours north. Based on the positive results from that test, Open Air DR has been given the green light to build and deploy more of these devices.

Beato says that attending the innovation bootcamp gave her the methodologies to take on the challenge. It also introduced her to the hardware from IoT company Particle, which she has been using in the machines. Particle is donating cellular-enabled Boron devices to help the program.

Improved face shields

Protective equipment is a frontline need for health care professionals and staff. Scott Tarcy, Charlotte-based designer and owner of design firm CAD Design Help, has led the charge to help since a local doctor sought assistance.

The doctor was familiar with the now-ubiquitous, open-source design of the low-cost 3D printed face

shields. However, she wanted one that would wrap further around her face to behind her ears instead of stopping just behind the eyes.

Tarcy quickly modified the design and built a set of prototypes.

He took the program a step further by creating a GoFundMe crowdfunding page and used the proceeds to buy the materials for making about 75 masks for donation to Charlotte hospitals and clinics.

Enventys Partners was inspired by his actions. One of its engineers, Casey Povelones, helped him fabricate the masks by cutting the face shields on Enventys Partners' waterjet cutter.

Tarcy is also working on a no-touch device that allows users to interact with their environment without having to touch potential virus-infected areas, such as door handles and bathroom fixtures. 🧰



A Y-splitter enables the use of one ventilator for multiple patients.

Charlotte-based designer Scott Tarcy developed a face shield to wrap further around the face and behind the ears, instead of stopping just behind the eyes.



Experts to the Rescue

TECH GIANT DYSON DESIGNS VENTILATORS TO HELP COVID-19 PATIENTS IN UNITED KINGDOM



THERE WAS no time to lose, and Dyson didn't waste it.

When UK hospitals struggled to meet the need for ventilators in the fight against the coronavirus, the world-renowned technology innovator better known for vacuums and hair dryers responded dramatically and quickly. The result was CoVent, designed by Dyson and The Technology Partnership.

Ventilators are often used for coronavirus patients who are in an advanced stage of danger. The UK government ordered 10,000 of the Dyson ventilators, which meet clinician-led specifications, to be donated by the company.

Portable proficiency

"Hospitals are the frontline in the war against COVID-19, where heroic doctors, nurses, and care workers are battling to save lives and help people recover from this terrible virus," said Dyson founder and CEO Sir James Dyson.

"As with any battle, there are many challenges to overcome, not least the availability of essential equipment which in this case means ventilators. A ventilator supports a patient who is no longer able to maintain their own airways but sadly there is currently a significant shortage, both in the UK and other countries around the world."

The government ordered 10,000 of the Dyson ventilators, which meet clinician-led specifications.



CoVent was designed by Dyson and The Technology Partnership.

He added that CoVent can be manufactured quickly, efficiently and at volume—designed to address the specific clinical needs of Covid-19 patients and at a variety of clinical settings.

The device is bed mounted and portable, operating on batteries. This enables it to be used in different care settings including field hospitals, and when patients are transported. The user interface is safe for, and familiar to use by, health care providers.

CoVent is powered by the Dyson digital motor, which has been specially re-engineered by Dyson to meet the requirements of the ventilator. The fan units are available in very high volume. It conserves oxygen using a rebreathe circuit and uses Dyson's air purifier expertise which delivers high-quality filtration in high-volume products.

"The Dyson digital motor sits at the heart of the new device and the motor's design is optimised to have a very high level of intrinsic safety, making it particularly well-suited for industrial, high-volume production," Sir James Dyson said. "The device is designed to achieve a high-quality air supply to ensure its safety and effectiveness, drawing on our air purifier expertise which delivers high-quality filtration in high-volume products."

Expanding the reach

Dyson also planned to donate 5,000 CoVent devices to help international COVID-19 patients. Twenty percent of those were to stay in the UK.

"I am proud of what Dyson engineers and our partners at TTP have achieved," Sir James Dyson said. "This is clearly a time of grave international crisis." 🙏

A World of Helping

"Please leave the room, close the door and start a disinfection," a robot says in a mock-hospital ward in Denmark. The **robot** then crisscrosses the room and zaps microbes with beams of ultraviolet light.

The *Shropshire Star* reports that Blue Ocean Robotics, the company that makes the devices, claims the robots can kill 99.99 percent of all germs in a hospital ward in 10 minutes. Demand has surged since the outbreak of COVID-19.

The pandemic has led to autonomous disinfection becoming a rapidly emerging trend in health care. Denmark's UVD Robots shipped hundreds of the robots to China in February, hundreds more throughout Europe in March, and several hundred more were headed to the United States. ...

Wyn Griffiths' wife went to a hospital recently and realized that even though she frequently washed her hands, there was no way to avoid touching door handles. So Griffiths, from Wales, UK, designed a **hands-free door handle** that allows people to open doors using only their arms.

The design can be easily attached to any existing door handle. The file for printing this device is available online and can be downloaded for free at grabcad.com/library/coronavirus-covid-19-hands-free-forearm-door-pull-1

Griffith said he hopes people with access to a 3D printer can help hospitals or any public sites by making and distributing these. ...

A Minnesota man invented a device to ease the process of picking a golf ball out of a cup. Now his invention has been modified as the **Covid Cup**.

Falcon golf founder Evan Johnson's invented the device. After sinking a putt, the golfer takes the putter, sets the shaft below the clip, and raises the flagstick attachment using the putter to about waist height. There is no need for human contact with the flagstick.



Crash Course

BOOTCAMP IN DOMINICAN REPUBLIC PROVIDED STUDENTS IMPACTFUL INNOVATION TRAINING **BY JEREMY LOSAW**



Boot camp participants and facilitators gather in the Alcazar Plaza.

MOTOR VEHICLE accidents caused about 38,000 deaths last year in the United States, according to the National Safety Council. But when put in the context of a country's size, that's nothing compared to the Dominican Republic.

The most recently published World Health Organization report on road safety reported that America had 14.2 road fatalities per 100,000 motor vehicles. The DR's rate? 94.9 deaths.

Last year, I was awarded a grant from the U.S. Embassy in the Dominican Republic to conduct an innovation training bootcamp in Santo Domingo. I had done a similar program there in 2018, where other professionals and I challenged students to make it easier to grow plants at home.

It was a fun challenge—and as a plant lover, close to my heart. However, this time I wanted to take on a challenge that would be more impactful. Given the issues of road safety on the island, that was an obvious choice.

A premise with promise

The bootcamp was held in Santo Domingo, February 18-21 at the Centro Cultural de las Telecomunicaciones (Telecommunications Museum and Cultural Center). It was the perfect venue and conveniently located in the heart of the Colonial Zone, a popular tourist area of the city.

I was joined by Eric Gorman and Julia Jackson of Wily Design in Charlotte, and Emil Rodriguez, CEO of Xolutronic, an electronics design firm in

Santo Domingo. Together we led 50 students through the activities of the four-day event that included university students, industry professionals from companies such as Eaton, and a group of high school seniors from Instituto Técnico Salesiano, a tech high school in the area.

The bootcamp's goal was to use hands-on workshops to teach fundamentals of innovation through the concept of design sprint methodology; to teach practical applications of IoT; and have students build awesome prototypes for user feedback. To address the issue of motor vehicle fatalities, we presented

the students with the challenge of how to reduce car accidents caused by drunken or sleepy drivers.

By the end of the week, each of the 10 teams had developed an interesting solution to the problem and built great first prototypes.

The backbone of our innovation training program is design sprint methodology. The idea is to quickly innovate around a challenge question, develop a solution, and build a prototype to elicit feedback in just one week.

It can take years and a huge budget to develop a product or service, but it is important to know that what is being developed will resonate with consumers or end users. Design sprints push you to build a prototype with a "Goldilocks Quality" in that it should be "just right."

The prototype should have just enough fidelity to seem real but without the time spent to refine every detail. The "Goldilocks" prototype is then used to gain feedback to see which features are working and which are not, so that you are not designing in a bubble.

The challenge begins

Eric and Julia led the start of the bootcamp and introduced the challenge question. They helped participants define and map the challenge to deepen participants' understanding and identify opportunities.

Students were encouraged to view the problem from two years in the future to see what success would look like. They were also asked to consider factors that might cause them to fail, and reframe

them into opportunity statements to guide them in their development of solutions.

Participants learned how to sketch potential solutions through a series of idea generation activities, developing early concepts, rapidly exploring variations, and ultimately developing more detailed sketches. Once teams voted and selected concepts, they were guided through storyflow and storyboard activities that helped each team illustrate their solutions in more detail. These would later be used to guide the development of their prototypes.

The concepts were interesting and varied, and the prototypes came to life rapidly over the next two days. A few teams created devices that would recognize drivers falling asleep and use LEDs or vibration in the steering wheel to keep them focused.

One team used an alcohol sensor that would keep the car from starting unless the driver is sober; another team added a device to a seatbelt to provide an alert for a sleepy driver.

In the spirit of the design sprint, the teams used materials and techniques that were easy to manipulate. The physical parts were made from foam and cardboard or 3D-printed parts, and one student even brought in a sewing machine to help.

IoT hardware company Particle donated 50 of its Photon WiFi development boards to the program, and we instructors provided a kit of sensors and actuators that helped the teams with the electronic aspects of their prototypes. The result was a great set of prototypes that had enough fidelity to show to potential users.

Feedback time

On Day 3 of the program, teams stopped building and set out to get feedback on their devices. Eric and Julia helped the students prepare an interview

script and gave them pointers on how to elicit meaningful feedback from interviewees.

Fortunately, the venue was very close to a busy tourist area, so students were able to show their concepts to people from all over the world without having to walk more than a few steps from the front door. Using that feedback, teams spent the final day refining their prototypes. I presented information about crowdfunding and how best to run a campaign.

To finish the bootcamp, the teams all developed a three-minute presentation that was used to show the rest of the class—as well as representatives from the U.S. Embassy—how their device worked and how it addressed the problem of reducing accidents from drunken or sleepy drivers.

It was fun to learn more about the Dominican culture—the challenges in general (an issue with national elections while I was there prompted protests around the city and country) and in innovating on the island. ☺

Below: Storyboarding was part of the design sprint process.

Inset: Two students work on an electronic prototype powered by the Particle Photon.

By the end of the week, each of the 10 teams had developed an interesting solution for motor vehicle accidents and built great first prototypes.





The COVID-19 Factor

MAJOR CHALLENGES PERSIST, THOUGH OPPORTUNITIES REMAIN FOR MONETIZING INNOVATORS' PORTFOLIOS **BY LOUIS CARBONNEAU**

FIRST AND FOREMOST, I hope all of you and your respective families are staying healthy and practicing proper social distancing in order to reduce the propagation of COVID-19 worldwide. We are in a unique situation where the simple act of staying home is a crucial piece of the solution to this global problem.

To our readers in the most affected regions; we truly feel for you (our team is based in Seattle and we know what this means firsthand). To those living in countries that have recently been able to “flatten their curve,” we hope it will stay that way; your success is a ray of hope to the rest of the world and highlights that proper measures, discipline and resolve can combine in vanquishing this terrible enemy. Don't let your guard down.

Tangible IP is attempting to operate business as usual, though everyone here is working remotely. We are also fortunate to be part of an industry that can still function for the most part virtually.

As such, we recently were able to successfully close the sale of one of our portfolios and had four more in closing.

Interestingly, we concluded that sale after having previously closed four distinct licensing agreements on the same portfolio. This brought, in aggregate, almost half a million dollars to our client for what is a single U.S. patent portfolio. We also expect much more will come as a result of the new owner's licensing program starting shortly.

So despite what is still a challenging environment, there are creative ways to bring value to innovators by monetizing their portfolios without resorting to any threat or litigation.

Positive 2019 numbers

In this regard, we also just received the 2019 patent market report from Richardson Oliver Insights (ROI), a respected leader in patent market data, with these main highlights:

- The average asking price of a U.S. patent was \$280,000, up from 2018. This reflects a more positive environment.

- Roughly half of all transacted deals in 2019 were brought by non-practicing entities or NPEs—a person or company holding a patent for a product or process but with no intention of developing it.
- \$300 million worth of brokered deals closed in 2019 (down from \$353 million in 2018). (Note: This number does not include licensing revenues)

Recession fears

Not surprisingly, in these challenging times, a lot of people have asked me how a recession might affect the patent market as a whole. There is no easy answer to this question; we live in unprecedented times and things are extremely fluid.

However, if recent history can be trusted to make predictions, I remind everyone that the patent market has historically been somewhat dissociated from the rest of the economy.

To my point, the “golden age” of patent valuations took place in the 2008-2012 period, as the United States and most of the world were going through the “Great Recession.” In the same vein, patent prices started plummeting in 2013 when the economy was rebounding, as inter partes reviews and the 2014 *Alice* software decision introduced significant headwinds. And those prices remained mostly flat for most of the sustained economic growth period we enjoyed.

Recently though (in the past year), we have witnessed some improvement as a result of a change of direction at the United States Patent and Trademark Office. Consequently, there is a more balanced narrative favoring patent owners (though *Alice* is still doing substantial damage).

Possible scenarios

If you are an investor, you might be tempted to conclude that patents work a bit like a hedge fund and have a curve that operates in reverse to most other asset classes. I wish it was that simple; the reality is that the same forces that drove down valuations for years and allowed them to gain some momentum in the past year are tightly intertwined with the



The patent market has historically been somewhat dissociated from the rest of the economy.

legal environment and other factors that have little bearing on the day-to-day economy or how the stock market behaves.

I encourage you to read my January 23 report at tangibleip.biz/ (March *Inventors Digest*) to refresh your memory on the factors that influence the patent market.

One scenario to consider is that a bad economy may force companies to look for alternative sources of revenues as their sales dwindle. Patent monetization may be viewed as a low-hanging fruit for many IP-rich companies looking to pick up the slack.

More patent assertion naturally leads to increased litigation, which in turn may put an upward pressure on patent values as we have historically seen. Remember, the cost to defend a patent assertion is incredibly expensive—and this expense is often a good reason to look at settling cases by either acquiring the assets or taking a license.

Finally, jurors do not really care whether large Fortune 500 company A or B had a bad quarter when

deciding to punish it for patent infringement. And as Americans see bailouts to the largest corporations, sympathies for the infringer may be a tough sell to a jury of our peers.

We will continue to keep a close eye on the marketplace and update you on how this truly global and unprecedented situation might affect this part of the world. Meanwhile, at Tangible IP we continue doing what we do best—assisting our clients by providing them a conduit to monetize their innovations and making sure they are fairly compensated for their contributions. ☎

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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Whether your concern is how to get started, what to do next, sources for services, or whom to trust, I will guide you. I have helped thousands of inventors with my written advice, including more than nineteen years as a columnist for *Inventors Digest* magazine. And now I will work directly with you by phone, e-mail, or regular mail. No big up-front fees. My signed confidentiality agreement is a standard part of our working relationship. For details, see my web page:

www.Inventor-mentor.com

Best wishes, Jack Lander

Basics of a Licensing Deal

KEYS CONSIDERATIONS AND STEPS FOR BUILDING VALUE,
ALWAYS WITH A PROFESSIONAL'S HELP **BY LAWRENCE J. UDELL**

DURING THE past half-century, thousands of inventors have asked me about licensing their invention instead of investing lots of money in a new business.

There are no real secrets to successfully licensing a new product or technology, but it does require patience and research time. Here is how to determine whether licensing is right for you.

As codified in the 1952 Patent Act, patents are rights granted to the inventors of new processes, machines, and/or products. The numbers of patent applications and awards have risen greatly over the nation's history. In 1791, 33 utility patents were awarded; in 2019, 354,507 were awarded.

What to license?

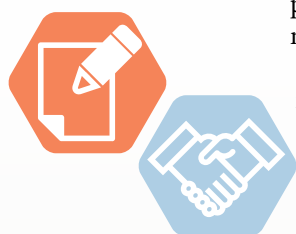
Almost anything with a protected property right can be licensed. Most common are industrial processes, patents, trademarks, copyrights, trade secrets, methods, formulas, customer lists and manuals.

In each case there is a form of legal right, such as the property right granted to an inventor by the U.S. government via the issuance of the patent. The technology covered by the issued patent becomes a valued property for 20 years from the date of filing the patent application, and the patentee has an exclusive right to do whatever he or she desires with it.

Why license?

Licensing can provide an inventor with income for a long time, with much less financial risk and commitment than it takes to establish and own a company that produces and sells the product. However, the licensor usually receives a small percentage of the profit from the sales of a licensed product or technology, because it is the licensee who must make the required investment to produce the finished product and get it to the buyer or end user.

A license is a contractual business relationship between a seller





(licensor) who authorizes a buyer (licensee) to use his or her patent, trademark, copyright, and/or any form of intellectual property in exchange for compensation (royalty).

In addition to the benefits of royalties in licensing, in many cases the licensor can receive equity in a new business venture, especially if it is being created for the purpose of marketing the product that is the result of the license. The percentage often depends upon the level of commitment and benefits to the venture that the licensor brings.

Licensing to an established corporation provides numerous advantages to the inventor, including access to the corporation's:

- Existing ability to manufacture the new product;
- Means of distribution;
- Established customer base;
- Advertising experience, immediate penetration of domestic and possibly foreign markets;
- Name recognition of the company.

This becomes an almost “no-risk” position for the licensor—providing the license is properly drafted, with minimum guaranteed royalties, and benchmark performance criteria defined.

How to license

Efforts at licensing should not be attempted without expert legal assistance. There is no standard licensing agreement that can be used as a universal guide.

License negotiations and the document drafting should be custom designed to fit the specific business situation or the technology. The licensing process is a business function.

After all parties have agreed on the details, the final written record of the activity forms a legal document called a “license agreement.” In simple terms, it serves as a special kind of contract that has mutual benefit for both parties.

Licensing will grant to the licensee generally limited rights to the property for a fixed period, frequently for a specified use or market. You can only sell a possession once, but you can license a possession of knowledge or value hundreds of times—and in many cases, simultaneously.

Important advice (if you don't remember anything else, remember this): Never do your own negotiating unless you have previous experience that resulted in a successful conclusion.

Potential licensors with no experience in negotiating business agreements should not represent

themselves. I have seen many inventors destroy real opportunities for success because they either got greedy or wanted to do everything themselves. Million-dollar ideas have died because of the ego of their creators.

Recognize your limitations and don't attempt to approach a licensee or be involved in the negotiation, except as a technical expert. It is better to have legal advice on your side from the very beginning rather than seek it when you are desperate. The inexperienced inventor should hire a patent attorney or firm that knows the process and has enough experience to gain the confidence of potential licensees.

When to license

An idea that can be protected by a patent increases in value as the following events take place (however, this does not apply in all cases):

- A raw idea is formed—very low, if any, value.
- A U.S. patent application is filed to cover the idea.
- A working model or demonstration of the viability of the idea is made.
- Foreign counterpart patents are filed (providing funds are available).
- The U.S. patent issues. Now there is moderate value.
- The idea/invention is commercially marketed. It is ready to be used, and recognized experts support the technology. The value is now increased.
- A license is arranged with an established, financially sound corporation. High value.
- Additional licenses for either other uses or geographic parameters is now instituted. The original idea now has very high value.

The value of an invention is determined by what someone is willing to pay for it. The true value of a licensable technology, idea, patent, or whatever must be based upon the perceived value to the licensee.

If the product fits into the licensee's business, would increase sales and profits, and perhaps enable him or her to diversify into other areas or new markets, the result will be a mutually beneficial and rewarding relationship. ☞

Lawrence J. Uddell is executive director of the California Invention Center and founder of the Licensing Executive Society, Silicon Valley Chapter. He is a teacher, lecturer and consultant who has created more than 35 corporations. He consults to Fortune 500 firms and smaller businesses.





Lessons from COVID-19

WE MUST CORRECT U.S. INNOVATION POLICY
TO ENSURE WE ARE READY FOR THE NEXT PANDEMIC

BY GENE QUINN

"THE COVID-19 CRISIS has once more highlighted the need for incentivizing investment and innovation—and thus, for patent laws that duly ‘promote’ and protect such ‘progress,’ precisely as our Founders envisioned,” wrote Chief Judge Paul Michel, now retired from the U.S. Court of Appeals for the Federal Circuit.

As he so often is, Judge Michel is correct.

Many are asking why testing for the coronavirus that causes COVID-19 has been slow to roll out, and why tests in many countries are inaccurate. Those familiar with U.S. patent laws understand the problem.

There has been a de-emphasis on medical diagnostics in America as the result of a series of Supreme Court and federal circuit rulings, coupled with Congressional inaction.

It is hardly a shock that research and development into medical diagnostics has stalled.

The interesting thing about intellectual property and innovation policy is that it works. Much like the case with the tax code, society gets what society incentivizes. It is impossible to protect medical diagnostics in the United States because little research and development is done with respect to it.

A perfect storm

Because medical diagnostics are no longer patentable in the United States, investors are uninterested. This causes a series of unfortunate cascading effects.

Unable to receive funding—the true lifeblood of research and development—many leading research entities have abandoned medical diagnostics altogether. Witness the Cleveland Clinic and St. Jude electing to pursue other avenues of innovation.

When courts and Congress do not value medical diagnostics and continue to view them as laws of nature or natural phenomena, is it any wonder that we don't have more medical diagnostics? In addition to poorly considered patent policy disincentivizing diagnostic innovations, add the fact that payors of health care services refuse to compensate

for diagnostics and you have a perfect storm that explains why testing is lacking.

Without diagnostics, it is impossible to know who has what. With respect to the COVID-19 pandemic, this led to a series of policy decisions by lawmakers that have effectively shut down the economy in hopes of preventing transmission of the coronavirus.

As we watch many of our friends and colleagues get sick and hear reports of mounting deaths, we are also seeing the real economic pain and tragedy of workforce dislocation. And though policymakers have been trying to save as many lives as possible, there has to be real compassion for the vast majority of the world that lives paycheck to paycheck. This pandemic has and will continue to affect many lives, directly and indirectly.

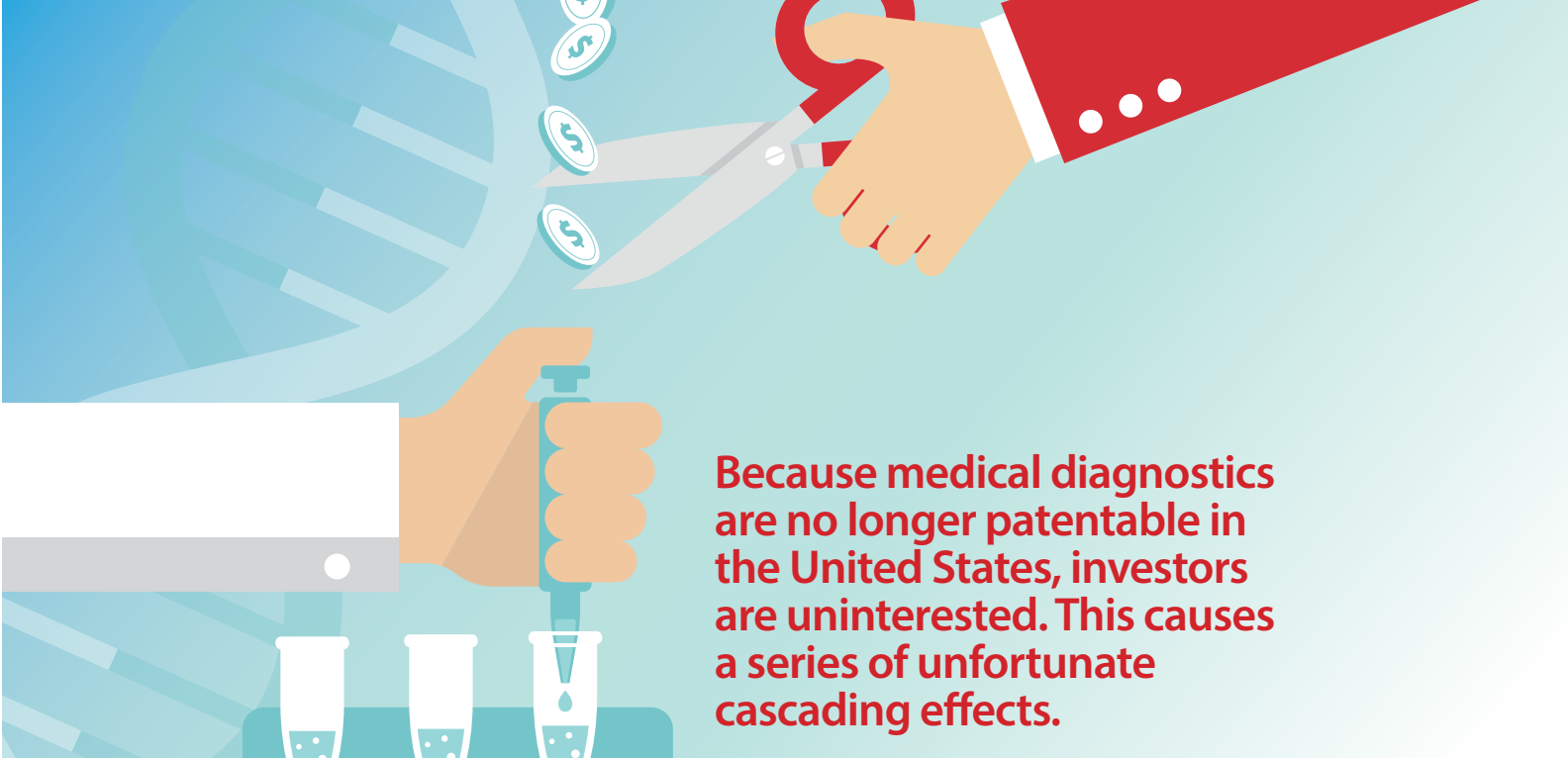
Shifting focus

Of course, innovation policy that recognizes the importance of medical diagnostics and actually encourages appropriate levels of investment in research and development would not have stopped the coronavirus or COVID-19. We are, however, suffering the consequences of the best and brightest minds within the scientific community being incentivized to focus their mental energies elsewhere.

A silver lining is that the innovation community is coming together to respond to this unprecedented crisis. Universities, big tech, biopharma are all working together, but working to address a problem that has already surfaced is backward looking. Innovation policy cannot be reactive; it must be proactive.

Innovation policy should not artificially pick winners and losers, which is precisely what the U.S. Supreme Court and the federal circuit have been doing with every patent eligibility ruling that prohibits the patenting of groundbreaking life sciences innovations.

We have heard the most ridiculous excuses and explanations—“yes, this is a revolutionary innovation, but it simply isn't the type of thing that can be



Because medical diagnostics are no longer patentable in the United States, investors are uninterested. This causes a series of unfortunate cascading effects.

patented in America.” Utterly ridiculous gobbledygook, particularly in light of what has transpired over the past several months.

Sometimes those who analyze the stock market say that when the American economy catches a cold the rest of the world economy catches the flu—a testament to how resilient the U.S. economy is, generally speaking. With respect to life sciences research and development, the United States has been the global leader since the early 1980s, when the United States Supreme Court decided *Diamond v. Chakrabarty*.

Since the Supreme Court fundamentally undercut its reasoning in *Chakrabarty* when it decided *Mayo v. Prometheus*, less and less has been protectible in the United States. This means less and less has been investible in the United States. Although there is great research happening all over the world, commercialization research and development does not happen if the U.S. marketplace does not allow for the exploitation of solutions to problems.

Stand up, save lives

So, here we are. Congress has allowed the Supreme Court to fundamentally rewrite U.S. innovation policy, and now the public wants answers. The question is whether Congress will stand up and prevent unelected judicial activists to continue to throttle U.S. innovation policy, or will Congress stand up and say “Enough is enough.”

In our constitutional form of government, the actions of the Supreme Court have been anything but constitutional. We are seeing firsthand how unprepared the nation is to handle a pandemic.

The good news is that universities and biopharma companies are working at breakneck speed to

develop accurate testing, identify drug cocktails that may save lives, and race to create vaccines. The bad news is, this level of cooperation cannot be a long-term strategy for the poor policy decisions that have unilaterally dismantled America’s engine of innovation.

The COVID-19 pandemic needs to be viewed as a shot across the bow. It is time to get serious about correcting the unforced errors of the past decade and opening America to innovation of all types—without any discrimination based on technological content.

We are lucky this pandemic is not even worse, and with a higher mortality rate. We might not be so lucky the next time. 🐾

NEW DATES FOR IPWATCHDOG CON2020

This premier discussion and networking event, originally scheduled for March 15-18 in Dallas at the Renaissance Richardson hotel but postponed due to COVID-19 precautions, is now set for September 13-15. More than 90 invitation-only speakers are planned for the event.

Details: con2020.ipwatchdog.com

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.





Patent Rights at Risk?

IN RUSH TO SOLVE COVID-19 CRISIS, WORLD GOVERNMENTS
ASK SOME TO HAND OVER IP RIGHTS **BY STEVE BRACHMANN**

SINCE CHINA announced the first case on November 17 of a virus about which little was known at the time, coronavirus and the disease it causes, COVID-19, have grown to pandemic proportions.

This new strain of the severe acute respiratory syndrome-related (SARS) coronavirus had killed more than 120,000 people worldwide as of mid-April, shuttered social gatherings, precipitated a mandatory work-from-home revolution and decimated large parts of the world's economy.

Now comes the rush to find treatments and save lives, even at the possible expense of patent rights.

Early U.S. applications

By late March, a couple of U.S. companies had announced that their COVID-19 research led to the filing of patent applications covering methods of treating patients infected with the coronavirus.

On March 20, Houston-based Molculin Biotech issued a press release about a patent application covering the use of the inhibitor compound WP1122 to limit coronavirus replication in patients. WP1122 is a compound in Molculin's cancer drug portfolio

developed to target highly glycolytic tumors that are difficult to treat, including brain tumors and pancreatic cancer.

WP1122 disrupts the metabolism of glucose—which, along with depriving cancer cells of energy, could also do the same for cells hosting COVID-19 and possibly improve immune system response.

On March 23, Jackson Center, Pennsylvania-based Premier Biomedical announced it would have exclusive rights to practice a method of treating COVID-19 infection being patented by a company executive.

The method involves the use of antibodies targeting COVID-19 replication pathways, allowing the coronavirus to be removed through an extracorporeal blood treatment performed at a clinic.

The treatment leverages Premier Biomedical's previous technological developments designed to remove blood-borne antigens from patients. It also reduces the risk of the development of cytokine storms, a form of autoimmune disorder involving activated white blood cells which can cause respiratory inflammation when COVID-19 enters the lungs.

The patent system can spur research and development in a health crisis, but public health advocates may see patents as barriers to better patient health outcomes.



Compulsory licensing

Although some firms have been filing for patents to protect their coronavirus treatment innovations, others have faced ultimatums by government to hand over their IP rights during this time of global crisis.

By March 19, Israeli's Ministry of Justice announced that a generic version of AbbVie's HIV treatment Kaletra has been approved for importation into that country—despite the fact that AbbVie's patent protection for Kaletra in Israel doesn't expire until 2024. According to reports, this is the first time that the Israeli government has exercised the section of the country's 1967 patent law that allows the approval of generic versions of patent-protected medicines.

In an official company statement, AbbVie announced its intention to dedicate its Kaletra IP to the public in response to the COVID-19 health crisis.

Around the same time, *The Jerusalem Post* published an article discussing an uptick in patent filing activity from Israeli firms developing diagnostic tools and treatments designed to help the world get a handle on the COVID-19 pandemic.

The situation highlights a unique tension in the patent system, which can spur research and development in response to a health crisis and also draw

the ire of public health advocates who see patents as barriers to better patient health outcomes.

Israel may not be the only country exercising means for subverting patent rights as a responsive measure to the COVID-19 pandemic.

By mid-March, Ecuador's National Assembly approved a proposed resolution that would enable that country's government to establish a compulsory licensing framework for patents covering medical technologies related to COVID-19. In the United States, the Senate passed a \$2.2 trillion economic package to deal with the coronavirus crisis, including more than \$1 billion earmarked for federal medical research projects.

The world's response to patent rights in the face of such a health crisis gives a strong indication that such rights could be trampled underfoot on the path toward ridding the globe of COVID-19. 🌐

Steve Brachmann is a freelance writer located in Buffalo, N.Y., and is a consistent contributor to the intellectual property law blog IPWatchdog. He has also covered local government in the Western New York region for *The Buffalo News* and *The Hamburg Sun*.



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TRADE SHOWS MAY 2020

Editor's note: The following event was moved from a site location to a digital event because of COVID-19. Many May events that appeared in our 2020 trade show calendar in January have been moved to later in the year or canceled.

May 5-6: IBM Think 2020

Technology

Morning sessions, 11 a.m.-3 p.m.

Evening sessions, 7 p.m.-11 p.m.

888-426-4409; ibm.com/events/think

IoT Corner

A team of researchers at University of Massachusetts Amherst developed an IoT-enabled tool to help identify flu symptoms in a crowd.

FluSense, a Raspberry Pi-enabled device, has an array of microphones and other sensors to track the density of people in a given space and listen for coughing and sneezing that are an indication of flu-like symptoms. An on-board neural engine provides edge computing capability to figure out how many individuals are experiencing symptoms at a given time, with results sent wirelessly to a data center.

Testing has been ongoing since 2018, with trials at UMass's University Health Services clinic. FluSense is due to be trialed in large public spaces before pushing the technology toward a commercially viable form factor. —Jeremy Losaw



Wunderkinds

Quinn Callander, a 12-year-old Boy Scout from Maple Ridge, British Columbia, built hundreds of ear guards for health care workers by using a 3D printer he received for his birthday last year. Quinn's mother, Heather Roney, said she and her husband saw a Facebook

post in which a Royal Columbian Hospital nurse sought volunteers to make the guards. They attach to ear loops of masks to give more of a custom fit, relieving ear pressure and pain for health care workers who are wearing the masks all day. She said Quinn and her father went onto a website for 3D print projects, ran some tests, and Quinn began printing "non-stop."



What IS that?

The **Bacon-Scented Mustache**, by Archie McPhee, is a carded, 4-inch-wide mustache with adhesive backing. The 'stache is made of synthetic hair and smells like bacon. Its makers call it the "perfect thing to wear while woodworking, fishing or internalizing your emotions." Bad sign: The list price of \$10.70 on Amazon has been shaved to \$3.02.

\$40 billion

The amount of money expected to be at risk in 2022 in prescription drug sales worldwide due to patents expiring, per statista.com. After patent protection expires, other companies can make cheaper generics of the originally branded drug.



WHAT DO YOU KNOW?

1 In what year was the first successful vaccine developed?

- A) 1796 B) 1829
- C) 1869 D) 1901

2 **True or false:** In 1790, the first year under the U.S. Patent Act, only 33 patents were issued.

3 Which was invented first—the transistor radio or the hairdryer?

4 Why did Earle Dickson invent the Band-Aid, in 1921?

- A) His son frequently skinned his knees
- B) Dickson had a persistent sore on his forehead
- C) His wife often cut herself in the kitchen
- D) He wanted to use it as a diaper fastener

5 **True or false:** Eminem trademarked the phrase, "That's a clown question, Bro."

ANSWERS: 1.A. Edward Jenner developed the vaccine for smallpox. 2.False. Three were issued. 3. The transistor radio was invented in 1947 at Bell Laboratories by John Bardeen and Walter Brattain. The hairdryer was invented by Alexander Godefrey in France in 1890. 4.C. 5. False. The trademark belongs to Philadelphia Phillies outfielder Bryce Harper, who made that comment to a reporter when asked if he was going out for a drink in Toronto when he was 19.

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Whether you just came up with a great idea or are trying to get your invention to market, **Inventors Digest** is for you. Each month we cover the topics that take the mystery out of the invention process. From ideation to prototyping, and patent claims to product licensing, you'll find articles that pertain to your situation. Plus, **Inventors Digest** features inventor pros and novices, covering their stories of success and disappointment. Fill out the subscription form below to join the inventor community.



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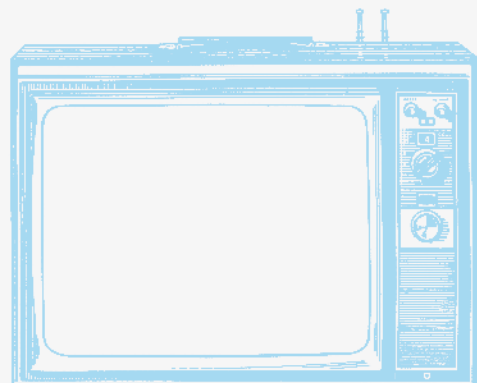
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