

INVENTOR'S WORKSHOP

How to Develop and
Market your Inventions



BOB SCHMIDT

Inventor's Workshop-How to Develop and Market your Inventions

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Why Take Advice from me? My background

I decided to put together an ebook to outline what I have learned in over 25 years as an engineer and inventor to help other inventors make money from their inventions. I am an engineer but you don't have to be an engineer to be a great inventor. My inventions are very simple and did not require advanced skills to design, prototype and market. Most inventions are simple solutions to everyday problems.

Now for some history of my education and work experience to give you some background on how this ties into the inventing process. I went to Lawrence Technological University in Southfield, MI for three years for my Bachelor of Science in Mechanical Engineering (BSME) in the early 80's. I ran out of money after my third year and hired into a fuel system company (Walbro) as a technician. They had a tuition reimbursement program so I finished my BSME degree in two and a half years and was promoted to engineer.

This actually worked to my advantage because the US was in a recession in the mid 80's and if I would have completed my engineering degree in 4 years, there weren't many companies hiring engineers. You had to have an excellent GPA (believe it or not I graduated with a GPA of 2.6) or co-op work experience. I had neither, so getting into a good company like Walbro at a lower level was actually a blessing. Walbro was also within a 30 minute drive from my home so I didn't have to move. And once I got my degree I was promoted to engineer.

While at Walbro, I worked on automotive programs including throttle bodies with integrated mass air flow sensor, plastic intake manifolds, and fuel pumps. As a technician I worked in the automotive development group, and my responsibility was air flow testing throttle bodies with integrated mass air flow sensors. This experience helped me understand the process of making prototypes and testing impact of design changes. It also showed me how to record data and write test reports.

After I completed my BSME and was promoted to engineer, I transferred to their fuel pump division and worked on new fuel pump development programs. I was lucky to work with one of the biggest inventors at Walbro. A man who had over 100 patents on fuel system products and he didn't even have an engineering degree! He just had lots of practical knowledge on how things worked. While working in the fuel pump group I helped launch a new fuel pump which gave me experience on validating a new product and working with suppliers to get components produced. It also gave me experience working in a cross functional team (quality, manufacturing, engineering, and purchasing) to insure a great product went out the door.

During my career working on fuel pumps, I continued my education at Central Michigan University and obtained a Master of Science in Administration (MSA). My goal was to be a

career engineer and eventually become an engineering manager. I was at Walbro for 11 years and was an engineering manager. I even did a short stint as an expatriate at Walbro's joint venture facility in France.

My experience at Walbro (now owned by TI Automotive) helped me to understand the design, development, validation and production of high volume automotive components. I also learned the patent process, because for my final project for my MSA degree, I completed a patent application for an automatic fire extinguisher invention. More info on this invention will be covered later in this book. I completed the paperwork and was granted a patent on this invention by the US Patent and Trademark office. I had received two patents for products I helped develop at Walbro but the automatic fire extinguisher patent was my first patent that I owned (not the company I worked for). I did this without an attorney (which I don't recommend) and was granted a patent.

I later left Walbro for greener pastures to go work at VDO (now Continental AG) to help them set up a fuel systems engineering group in the Detroit area. They were just starting to get some German transplant business in the US and were also going after some US automotive manufacturing business for their fuel delivery modules. I helped them select a facility and helped them win a 1.2 million vehicle fuel delivery module order. I was there for 3 years and at the time I left I had 15 engineers and designers working for me. My experience with VDO helped me learn how to set up a new facility, hire people and gave me more experience in the sales and marketing aspect of this market.

After VDO I did a short stint back at Walbro (now TI Automotive) and after 6 months I took a job with Orbital Australia Pty Ltd as their US head of business development. They were marketing a unique gasoline direct injection system in the US and they needed someone in the Detroit area to help manage their US business. We were doing lots of automotive work so they wanted someone based in MI to support this new business.

I had to be a jack of all trades with Orbital and gained more experience in sales and marketing. All engineering was being done at their headquarters in Australia. This gave me more customer contact and sales experience. They are also a public company so I had to deal with shareholder calls and gained additional product experience outside of automotive because their fuel system was used on recreational products to reduce emissions on 2-strokes. These included outboards, PWC, snowmobile, ATV, and even defense products.

I started working for Orbital in 2000 and I still support Orbital today but I do this through my own manufacturer's representative business, Schmidt Products, LLC. In 2007 I went from employee to contractor with Orbital and at the same time I started representing Hirth Motors out of Germany. I now represent four companies (three from Germany and one from Australia) and am focused mainly on selling products into the defense industry for unmanned aerial vehicles

(drones). These include propulsion systems (Orbital and Hirth), servos (Volz) and rescue/recovery parachutes (Skygraphics).

My work experience over the last 25+ years helps me when I have a new idea for a new invention of my own. I used to be very introverted but now have no problem striking up a conversation with someone at a trade show or even cold calling someone to try to sell my products or solutions. I started my career doing more engineering type work (design, testing, validating, launching, producing and supporting production) but over the last 10+ years I have done more sales and marketing which is sometimes the more difficult aspect of getting your inventions on the shelf.

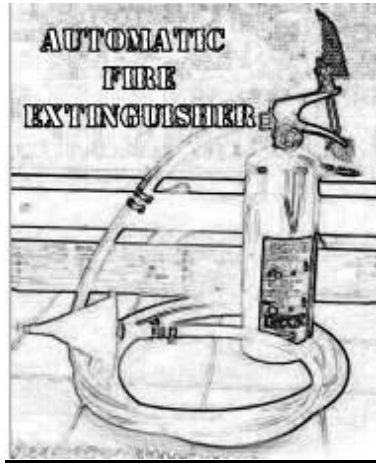
The quote “build a better mousetrap and they will beat down your doors to get it” isn’t necessarily true. You still need to convince companies of the benefits of your product and it can be difficult because some companies have the “not invented here” syndrome and don’t like licensing new products. The good news is there are several companies that are looking for new products and companies are leaner than they were in the past and their engineering organizations can’t think of everything. For these companies to continuously launch new products and be competitive in their market means they need to look outside the organization sometimes to get new products. This is good news for inventors.

My Inventions

Before I get into the details on how to develop and market your inventions, I wanted to give you some more info on some of my inventions. I am detailing four inventions in this summary. My automatic fire extinguisher which was originally developed to extinguish a Christmas tree if it catches fire in your home. Hitch 'N Plow[®] is a three point hitch adapter for trucks and SUV's that allows you to plow or grade your driveway. Spot 'N Hitch[®] is a trailer hitch alignment device that makes it easy to align your trailer to your vehicle and PolarPint[®] is a pint glass that keeps your beverage cold without diluting with ice. These are all simple inventions that could have been developed by anyone.

Lots of people have ideas for new products, but you have to take action to transfer these ideas into working prototypes that you can protect (through patents/trademarks) and either sell on your own or license with a manufacturer. I have used my education, work experience and inventing experience to make my ideas into saleable products. I am detailing these inventions to highlight some of the things I have learned during this process that I can pass on to fellow inventors. There are some things I have done right and some that I have not. So I can pass along the good, the bad and the ugly so you don't make the same mistakes. More details on these inventions are shown on the next page. Don't skip this section, because there are lessons learned even within my invention summary.

Automatic Fire Extinguisher



I grew up in Michigan and in 1987 for the first Christmas being married, my wife and I decided to purchase a real Christmas tree. We went to a nursery, cut down the tree and decorated it Thanksgiving weekend. My family had always purchased fresh Christmas trees, so I didn't think much about it. We watered it and I think it was just after New Year's Day when I took the tree to the burn pile. We were renting an old farm house at the time, so it was pretty common to have an area to burn brush. Anyway, I balled up some paper and lit it under the tree and the tree went up in flames like I had poured gasoline on it (which I didn't). It was then that I thought, "Why isn't there a low cost way to protect your home in case your live tree catches on fire?"

It is amazing that we still put these flammable trees in our homes. (We have since switched to artificial trees). So I thought, there has to be an inexpensive way (say <\$100) to develop some solution that homeowners would want to put on their tree. There are already automatic fire extinguishers that go off when a certain temperature is exceeded, but these typically use a sprinkler head configuration like you would see in a commercial or industrial property (glass bulb that heats up and breaks). These were several hundred dollars and were also used on cooking hoods, in engine compartments, on boats and even in race cars.

I thought, "Why not use a low cost portable fire extinguisher (something you could purchase for \$30) and install a mechanism that would mechanically depress the lever when it exceeded a certain temperature?" I found a "heat releasable" fusible link that is used on fire doors to release/close when the link separates. These were inexpensive (<\$5) and you could get them in different "separation" temperatures. I found one that separated at 130F. I combined this with a spring so that when the link separated, it depressed the lever. I added a rubber hose and simple plastic funnel that would direct the contents over the tree. The funnel would be at the top

of the tree (small end up) and the contents would blow into the funnel and be re-directed to coat the tree.

I built up and tested a prototype and it worked. At the same time I was going to Central Michigan University for my Master of Science degree in Administration, and as part of completing my degree, I had to submit a final project. I always wanted to learn more about the patent process, so my project was to complete a utility patent application for the design. I did lots of research on the patent process, but the best resource was a book by David Pressman "Patent it Yourself: Your Step-by-Step Guide to Filing at the U.S. Patent Office".

I ended up completing my own patent drawings and formal utility patent application without a lawyer (not recommended but it can be done). I submitted my application as a single entity. When the United States Patent and Trademark Office (USPTO) Patent Examiner contacted me about my original patent claims, he did not allow them as written. As a single entity, you can ask the Patent Examiner to draft an acceptable claim for your invention. Again, not the best way to go because you should hire a Patent Attorney because they will write broad claims that are going to give you better coverage. In the end, the Patent Examiner did write a claim that I accepted and a patent was granted.

I didn't want to produce this on my own because I was concerned about liability insurance (what if it didn't go off and the house burned down anyway?). I decided to license so I contacted companies that were in the portable fire extinguisher market. I got rejection letters, so decided to put this on the shelf and not pursue. At that time was when I started my new job at VDO, so I was very busy and didn't have much extra time to devote to marketing this invention.

The funny thing is, during the first season of American Inventor, the winner was a fireman that developed "The Guardian Angel" which was a Christmas Tree fire extinguisher. This was in 2007 and my patent was granted in 1998. I am sure he did not use the same method as mine or infringe on my patent, but the company that sponsored him was a fire extinguisher company that I had submitted my product for consideration almost 10 years earlier. It just goes to show, you never know what companies are looking for when you submit your invention for consideration. I haven't seen "The Guardian Angel" on the market yet, but it did at least lend some credibility to my original goal of developing a product to solve this problem.

As noted above, I am not pursuing this invention any further, but I did learn a lot about inventing by developing this product, especially about the patent process. I think there will be challenges developing a cost effective consumer solution that guarantees it would always fully extinguish the tree. I think the liability concerns are probably the reason the other solution isn't on the market yet.

Note: This is an example of inventing a product and after assessment of the marketability of the product, deciding to abandon. Giving up on an invention is not a bad thing to do. Some people are getting a second mortgage on their home because they are in love with their invention and later find out it isn't marketable. Learn to give up on bad ideas.

Hitch 'N Plow®



My next invention was something I developed again to try to solve a problem I was having while living in Michigan. We lived out in the country on 10 acres with a long driveway (close to a quarter mile). The driveway had an S-curve shape to it, so whenever we got lots of snow, I would call the neighbor to plow me out. I wanted to come up with a way to plow this on my own using my SUV, which at that time was a Ford Expedition.

I didn't want to purchase a \$5000 front end snow plow, because of the cost, of course, but also because I didn't want to have a snow plow on the front of my vehicle. These are also very hard on your vehicle and I was concerned about damage since my Expedition was leased. I had a compact tractor (Ford 3000) with a rear blade, but it was horrible in the snow because it was 2WD, and it didn't have chains or brine in the wheels to keep them from spinning.

I thought, "What if there was a way to attach a category 1 farm blade to a truck or SUV to take advantage of the 4WD (as well as the heated cabin)? I developed a 3-point hitch adapter that slide into a standard 2" hitch receiver and allowed the attachment of a standard farm blade. It had an electric winch that would allow the operator to raise or lower the blade. My goal was to try to have a solution that would be <\$600 and I met that goal. Hitch 'N Plow® with the winch was retailing for \$250 and you could add a blade for about \$350, so this was a low cost solution for anyone that wanted to plow or grade their driveway on their own.

Most people these days have a truck or SUV, so there was no need to purchase a compact tractor to plow your driveway. It also worked great. You had to drive through the snow but as long as you could drive through it, you could plow it. I plowed up to 10" of snow without any issues. I could install it on my vehicle, plow the driveway, and remove within about 20 minutes.

Because of my experience I learned with the Portable Automatic Fire Extinguisher on patenting inventions, I decided to do my own utility patent application on Hitch "N Plow. I obtained a patent and then focused on trying to find someone to license this great product.

I ended up making a few on my own with a local welder and then licensed it with a company that was in the lawn & garden business. They produced lawn mowers, log splitters and had lots of outdoor products they sold to Tractor Supply, Sears, Northern Tool, etc. It was a good match, but they weren't marketing this product very well and were later purchased by another company that wanted to focus their business on their small lawn & garden products.

They cancelled the license and I found a manufacturer in Michigan to produce the frames for me and I sold the adapters w/o winch on my website and e-Bay while I was trying to find a new licensee. I did this for 2 years and got lots of sales through website traffic from my YouTube® video. I have currently over 210,000 hits on YouTube® and this helped show people how it works and how they can purchase. YouTube® is a great way to create buzz for your invention and if you are producing them on your own, it is a great way to drive traffic to your website to get sales.

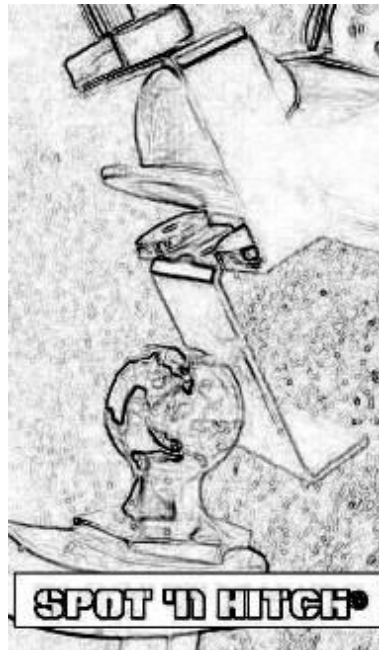
As part of my original development, I thought it would be a good idea to have a wheel/hitch kit so you could use this with an ATV/UTV or lawn tractor. You had to have the wheel kit to help take the weight because if you didn't have this, the weight of the blade would cause the front of the vehicle to go off the ground when raised. I prototyped this and tested it with ATV's and it worked great, but I have not yet started to sell this solution. I tried to patent this feature on my own and should have used a patent attorney, because I was not granted a patent. I think I could have received a patent if I would have had a patent attorney do a proper application to refute any existing prior art.

I did file for a Trademark (using a Trademark attorney) and was granted a Trademark on Hitch 'N Plow®. Think about developing a unique name for your product because the name can be as valuable as the patent. This can extend royalties beyond the patent life for use of the Trademarked name (usually at a lower royalty rate).

In 2013, I found a new licensee that has added this product to their line of agricultural products. They actually make farm implements, so it is a great match to help them sell more implements. I have only recently entered into this agreement, but I am optimistic it is going to be good to get more customers for this product. If you want to find out more about this invention, go to www.hitch-n-plow.com.

Note: This is an example of inventing a product and then licensing it to a manufacturer to produce, market and distribute. It also had a short period where I manufactured and supplied product while I was trying to find a licensee. This helps build some history and credibility for the product.

Spot 'N Hitch®



Spot 'N Hitch® is another product I invented to solve a problem I was having when trying to align a trailer to my truck. I would occasionally pull a boat, and since I didn't try to align a trailer very often, I would usually have to get out of the vehicle a couple times to get the hitch in the right position for attachment or have someone try to direct me towards the hitch. I know there are a number of products on the market, but again I was looking for something simple, low cost and easy to stow in a vehicle.

The first configuration I developed was just a rod with a magnet on the bottom and a foam arm that pointed toward the vehicle. The foam arm was cut so that when the back of the vehicle contacted it, the vehicle ball should be aligned below the hitch (assuming you centered the vertical rod with the back of the vehicle). I thought I was on to something, so I did some patent research as well as product research to see if there was something similar on the market. I ended up finding a patent for the same product that I had invented. This is common when you are inventing new products. Other people have similar ideas and end up patenting them.

At that stage when you see that your invention is already patented, you can either give up or try to find another method that doesn't infringe on that patent or some other existing patent. The other option if you like the product and you want to produce, is check to see when the patent expires. If it hasn't expired and the inventor isn't producing, you can check to see if they would be interested in licensing this to you to produce. If the patent has expired, you could still

produce this on your own and would not be infringing on the other patent. The challenge is since you won't own any intellectual property, it would be difficult to get a company interested in licensing something that isn't patented.

I decided to look at trying to develop a new unique method. I came up with the configuration that I am using today. Because of the bad experience I had trying to patent the Hitch 'N Plow[®] wheel and hitch kit on my own without success, I decided to hire a patent agent. I paid to have a patent search and utility patent application submitted for my invention. Unfortunately, the patent agent didn't have any luck getting a patent granted because the patent examiner was claiming there was prior art that was similar.

I will cover this later in the book but if you want to hire someone to file a patent on your behalf you have two options, either a patent attorney or patent agent. A patent attorney is a lawyer, engineer and has passed the patent bar exam. A patent agent is not a lawyer and therefore cannot represent you if you ever had a need to go to court (like to fight infringement) but they have an engineering degree and have passed the patent bar exam. Patent agents are less expensive because they are not lawyers, but I feel in my case maybe I would have been able to get a patent granted if I either had a better patent agent or hired a patent attorney. I guess in hindsight it is hard to tell whether I would have still won a patent, but it's something to keep in mind if you need to hire someone to file a patent application.

I decided to protect the design with a design patent which just covers the design of the product, not the function. These are usually easier for people to get around, but they are easier to obtain and this allows you to note the product is patent pending during the application process. I also obtained a trademark on Spot 'N Hitch[®]. I have been trying to find a licensee, but am also producing and selling these on my own. It is very simple to produce. I utilize a manufacturer in Michigan that laser cuts the frames, bends them to the proper configuration, plates and sends these in bulk to me. I purchase the magnets, packaging and the magnetic mast with the ball. I put these together and sell on my website and Ebay. You can find out more info on this product at www.spotnhitch.com.

Note: This is an example of a product that I was not able to obtain a utility patent, so I decided to provide some minor protection via a design patent and obtained a trademark on the name. I am currently producing and selling these on my own but again ultimately I would prefer to license. Licensing typically gives you access to a larger manufacturing and distribution solution.

PolarPint®



This is a fun product that solves a major problem that all beer lovers experience when drinking their favorite beverage outside when it is hot. The beer gets warm very quickly. I wanted something that actually cooled the beverage instead of just insulating (like Koozies or insulated beverage containers). Also, I wanted something that you could use all day long. Those mugs with gel between the walls allow you to freeze it only once and usually after the first beer, the mug needs to be returned to the freezer.

I thought, “Why not develop a mug with a reservoir where you add ice water to keep your beverage cool?” I made my first prototype using a quarter sized round plastic storage container, and cut a hole in the end so I could silicone an 18oz plastic glass. This allowed me to unscrew the cap of the storage container and add ice water that surrounded the glass. This allowed the ice water to keep the beverage cold without diluting with ice.

Believe it or not, I developed this in January in Michigan when it was freezing outside. What was my motivation? We had a trip planned to Cozumel, Mexico at the end of the month with friends at an all-inclusive resort. I didn’t want my Corona® to get warm. Talk about motivation! Anyway, I made four prototypes for the adults to enjoy beverages at the pool and beach. It worked great and I got lots of interest from others at the bar.

When I returned home, I ended up hiring a designer to develop a version that could be injection molded. My first version was more of a mug design with handle where the ice water surrounded the beverage. I liked this configuration, but thought for use in a bar or resort it would be good to be able to see the beer (i.e. cool from the inside instead of from the outside). People

like to visually see their beer, so I went back to my designer to design the latest configuration shown in the picture at the start of this section.

I did use a designer, but I made the designer sign a contractors' agreement which basically said they were being paid to design something, and anything they developed would be owned by me. I basically directed the designer what I wanted the beverage container to look like and he made 3D and 2D CAD models & drawings for me. You need to have an agreement, though, so that you own the intellectual property developed under this contractor relationship. This is very common, and most companies have the same agreements when they contract designers to support their business (and even for the engineers they hire).

For this design, I did pay for a patent search to see if I wanted to pay for a utility patent. The opinion I received from this patent search was that there were several patents and products out there, and it would be difficult to obtain a utility patent. I decided not to spend the money on a utility patent based on this opinion, but like Spot 'N Hitch® I did file for a design patent and obtained a trademark on PolarPint®. I am still contemplating whether I want to produce these on my own or find a licensee. I have approached several polycarbonate drinkware manufacturers but don't have a license in place yet. I would like to minimize my investment and therefore, that is why I am reluctant to produce on my own because I would need to launch expensive plastic injection mold tooling.

I still am contemplating some design changes before I make a decision on whether I am going to produce, or go back on the road to find a licensee. My goal is to have this on the market in 2014. Hopefully I can make that happen. It is a unique product that can be sold to households as well as businesses (such as bars, hotels, resorts, etc.).

Note: This is an example of a product that I was not able to obtain a utility patent, so I decided to provide some minor protection via a design patent and obtained a trademark on the name. I am still doing some tweaks on the design (gone back to the drawing board) to improve my ability to find a licensee.