What Every Inventor Should Know (in less than 50 pages)

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About the Author

To better understand this booklet, allow me to introduce myself. I'm Michael Stevens, President of Assembled Products, Inc., international headquartered in Collierville, Tennessee.

I've lost money and made money with inventions and innovations since 1972. In that time, I've gained much experience that comes from making a lot of mistakes. Assembled Products, Inc. is a Research and Development, prototype and contract start-up production service company. I see all types of inventions, ideas, and dreams. Some are good, some not. Commonly, people coming through my door have no idea of what they're getting into. After having read this booklet, you will NOT be one of those who strike out uninformed, doomed to commit many of the same costly mistakes I've already made, and probably give up before realizing their dream.

These are some of the cold hard facts you will need to know about the hard work that is ahead. You will surely believe that inventing is the easy part on your way to a place in history. Making an invention pay is hard work, so let's get started.

Introduction

Many of the people coming to me for help with their new invention have no idea what to expect on the way to getting their product to market. These few pages are an attempt to answer most of your questions before you know even what to ask. I have kept it short because I know how excited you are at finding the American dream of a money making product and the life of luxury that comes with it. Most dreams die of inaction caused by apathy or the fear of the unknown.

True story. I designed a controller for those portable road construction “arrow lights” on speculation for a company in South Memphis. They decided not to pursue that venture, and I was left with nothing but the knowledge not to do speculative work. Still the design had potential. Living 25 miles north of Memphis, I tried to run over the rural route mailman every afternoon on my way home. The road is hilly, has a high speed limit, and he barely pulled to the edge of the road. It was an accident waiting to happen. Spock like logic told me that a flashing light or arrow would make him much more visible, if not safer. Hence was born the “Arrowlight. ”

Mistakes. First, I didn’t do a market study, I was trying to find a use for eight months of labor. Second, I was not experienced to realize that the proj-

ect had to be economical to manufacture. Third, I knew nothing about bringing a project to market.

I took my business plan to my local bank's small business loan department. They rejected it without even opening it. That took the wind out of my sail. I told my personal banker of my need and that I figured to make at least 4% on my investment. A Junior Achievement study guide had stated that all successful businesses made between 3% and 6% on their investment. My personal banker made me a great offer, put my money in a passbook savings account at his bank, and he would give me 4.5% return. That was the first time I realized how stupid the JA manual was.

With the help of an advertising guru (Jerry), I was introduced to money people. An SBIC (Small Business Investment Corporation). I got what I thought were all my ducks in a row with "Jerry" giving the marketing plan. They explained how they wanted 80% of the stock and that the company would be expected to buy it all back in five years at four times the purchase price. A nice return on their money. I got up and gave my presentation to blank stares, asking for a mere $50K. "Jerry" got up naming what trade show we would appear in, what magazines would be most beneficial, then asked for $3.2 MILLION! ! $3.2 Million for advertising! The investor thought he was great. I could have crawled under the carpeting. The project was not funded.

Learning from my mistakes have gotten other projects funded and prevent you from making the same mistakes that I did. Ask for a million dollars, it's the same paperwork as a smaller amount.

PRODUCT DEVELOPMENT

Developing a new product is difficult, time consuming, and very costly. Persons who have never been involved with the process are astounded by the time and money required to bring a new product to market. Successful products are usually not just invented, they evolve through countless hours. of research, design studies, engineering, and prototyping efforts. The final product must be tested, modified, and re-tested before a design is marketed.

Today, few products are the result of a single person's efforts. Most projects require the skills of marketers, industrial designers, mechanical and electronic engineers, manufacturing engineers, tool-makers, packing designers, graphic artists, just to name a few of the primary professional needed. As a rule, the cost of development is a factor of the number of people involved and the time required to bring the concept to a fully refined product. For the sake of argument, engineers are paid on average $70K per year plus benefits. You will not just be "renting" these individuals, but will also be paying their overhead and staff persons. Be prepared to do a lot of the work yourself or pay for what you need done. Rarely can an idea be brought to the "production ready" stage in less than a year, and some projects can take up to five years.

While we are on the subject of costs (you may want to sit down to figure this), here is a summarized cost ratio formula. Say "X" is a realistic value of conception; example $1000. Then your feasibility will be 1OX or $1OK. Product development will be 20 times the feasibility or $200K. First production run will be 20 times the cost of the development or $lM. Full production will cost even more. Okay, if you have that kind of money laying around, you don't need this book. Carefully review the risks and benefits of your project before investing in it. For additional information on this formula, read "Developing and Managing New Products" by Eugene F. Finkin.

New product ideas usually come from perceived problem solution and always from a perceived market opportunity. There are two types of market opportunities: 1) the "market-pull", where the market creates a demand for the product. An example: A few years ago children were being kidnapped from shopping malls, the public demanded a method for keeping track of the kids. A number of companies were pulled into this market; and 2) "Technology push", where the product is invented and then a market is created. The computer industry started as a "push" but has changed to a "pull" as the market has found more uses. In either case, it is manufacturing's responsibility to estimate the cost, and it is that estimation that is used to project the selling price and the estimated profits. DO NOT make the mistake of setting the selling price and profits, then trying to make the manufacturing cost fit the idea.

You have seen the “problem.” You have a concept of how to solve it. Now comes a systematic method of development. Many new inventors try to skip a step only to find they have lost time and money. It is important to follow the logical steps, in order, to a profitable end to your project.

Product Development Process

Concept Development
System-Level Design
Detailed Design
Testing & Refinement
Short-Run Production

Concept Development

During this stage the market is identified, current products are reviewed, product specifications are defined and an economic analysis is done. This is the foundation for the entire development process.

As part of the concept development, it is important to identify the customer’s needs That bears repeating, “CUSTOMERS NEEDS.” This is done by interviewing potential customers, focus groups and by observing who buys similar products. Try to suppress your own preconceived ideas and listen to the market. Your research will develop the needed information about service life, size, weight and any

other specifications your customers will want. Look beyond the consumer for hidden features like: appearance, ease of maintenance, human interfacing, manufacturing costs, and communications. Such information is used to establish target specifications, a wish list. Engineering will temper it with technical and cost restraints. The engineering's challenge is to reduce the technical risks as the project matures.

System-Level Design

This section of the project is where the concept is divided into major groups. Prior to this, we have focused on the overall project and its overview to the marketplace. As a simple example, you want to sell canned peas. The major groups are peas, container, labeling, and marketing. Each choice would lead to different options. What kind of pea would help determine if the container is metal, glass or plastic. Marketing will have some input in that choice also. The marketing group is also going to want to make their job easier by assisting the graphic artist design the label. Dividing the system into major groups allows multiple professionals to work on the different major groups at one time and thus completing the project sooner. As is becoming obvious, each major group is important to the overall system- level design and your product is more complicated than a simple can of peas!

Detailed Design

This is also called “design for manufacturing.” All the necessary engineering is done in this phase: the tolerances, materials, finishes, components, and so on. Everything is documented, drawn, filed and cross-referenced. A good data base computer program will help in this area.

Test and Refinement

The final level of prototypes are built during this phase. These are even placed in the field for testing in the “real” world. The prototypes are built as close to production as possible, and the results of the field tests are compared to the concept. This point is used to find any shortfalls in the design and field use. Second-level prototypes are then built with the shortfalls corrected and first production components.

Short-Run Production

This is where the work force is trained in the assembly of the product. It is comparatively slow and expensive but allows time to work out any remaining problems.

Design work is costly! The value per dollar spent is difficult to qualify. The value of good design is obvious when one sees the results in the bottom line and when the end user instinctively knows what the product is used for and understands the quality built into it. Good design can only be good for the profit margin. It is a good idea to keep both the technical and marketing people working together throughout the entire project to prevent failure of the endeavor.

Patents

I am not a big fan of patents. This is some of the down side of the patent system. Anything you invent can be stolen! It has also probably been thought of before. If you don't act soon, it will be someone else's invention.

So how do you protect your idea? Patent it! To own a patent is the real American dream or so the "media" says. Maybe, but is a patent for you? They are expensive to get if you use professional help, and even more expensive to maintain. Sometimes they are needed to ease an investor's mind. Patents are always needed if you intend to sell your idea. New concepts, large companies with many lawyers need patents, but not always for the average inventor! Examine your needs carefully. A "Patent Pending" may be enough protection; after all, what competitor wants to make a capital investment before they know what your final patent will cover? A lot of them! Examine your idea with a critical eye. Is it totally unique or a variation of something else? How easy is it to copy? How much money is involved? Are there any secret processes or ingredients that are yours alone? What type of Patent do you need, utilitarian or design? One is almost totally useless! Patents can be circumvented with relative ease. How, you ask? Well . .

Once you put every little detail of your idea into a patent, anyone can get a copy by sending a few dollars to the patent office. You've heard the old saying about there being more than one way to skin a cat? Same goes for inventions. Ask any company that has had a product reverse engineered how one can start with the end product and work backwards to a different starting point. When you apply for your Patent, be as general as possible, why make it easy for your competitors? In the claims section, try to cover all the different ways to "skin the cat. " An experienced attorney will already know this and will make a few "claims" into many.

A well written non-disclosure form and a "tight lip" will protect your pre-production idea almost as well as most patents. Note that the Coca-Cola Company does not have a patent on its syrup; only a handful of people within the company even know what goes into it - a "trade secret" guaranteed by only a non-disclosure agreement. Don't go writing the Patent Office for those eIeven herbs and spices used by one chicken company. Their patent is for the pressure cooker they use, the secret seasons are just that, secret. The tight lip is much cheaper and you may find some important changes as you develop your idea. I know you are proud of your invention, but now is not the time to "crow" about it.

Another strike against a patent is the cost of defending it. In many cases defending a patent in court will cost upwards of $100,000 and it opens

the possibility that the infringing entity will sue you as a challenge to your right of the patent. Yes, you could end up without a patent while trying to defend it.

A large company will not risk the bad public relations and their company assets to steal your idea. The large company can afford to buy it (or challenge the validity in court), although not always at a fair price. With all the resources and knowledge of new technologies, they may even re-engineer the idea and call it their own.

Most companies don't buy patented or unpatented ideas nor will they sign non-disclosure agreements, can you blame them? If you tell them of your idea without such an agreement, you may well lose it with little chance of getting any compensation. Walk away if there is any doubt. Enough about the big companies, what about "Joe Slick" at "Fly-by-Nite Company?" He has no name to protect, no assets to lose, no reputation to protect. Should he infringe on your patent, you must hire an attorney to go after him. You drag him kicking and screaming to court. The court orders him to close. You get the bill for thousands of dollars in legal fees, the satisfaction that he is not ripping you off anymore and that's all. So what happens to "Joe Slick?" Nothing! He takes a short vacation, changes the name on the door and starts production again. You have to find him again and start the whole legal process over once more. Remember too, you

may lose your patent rights in court. The inventor of the string trimmer lost his patent rights when a judge ruled it to be an "obvious concept". It is now, anyway. It can be very expensive to defend a patent!

If you can afford a patent with all its expenses, see a qualified attorney who deals with patents routinely. He will save you money in the long run. He will help you with the drawings, the general write-up and the specific claims. Follow his advice, ask questions, and get your money's worth. The more "conceptual," the better chance you have against the person who reverse engineers your idea. I have gone both ways and found that a good patent attorney is money well spent. My attorney is part of a large law firm with twenty-four general partners; all of which are also graduate engineers in one field or another. As engineers, they can easily communicate in my language then translate that into the terminology required by the patent office. While we are on the topic of attorneys, a few are accepting royalties in lieu of payment, don't give up too much future money to save a few up front dollars.

You can, of course, do your own patent search, application, and so on to get a patent yourself I use to say it was like doing your own 1040 Tax form - follow the instructions, spend some time and you will get through it; not anymore. The tax code is easier to read, understand, and with fewer penalties. If you don't follow the rules to the letter or

the Patent Examiner has a bad day, they will reject it and may or may not tell you Your tax dollars pay the bills at the Patent Office. These civil servants are real people and will help you correct any problem by referring you to the appropriate law. You may need an attorney to tell you what is meant by these cryptic words. Lawmakers do not use plain English. Another problem with filing your own patent is that the Patent Office may not tell you that you have errored. That is until they have determined that your application has been abandoned. That does not mean everything is lost, it just means that they want about $700.00 more to resurrect it. The Government Printing Office in Pueblo, CO. has an excellent step-by-step guide to help you. The few thousands of dollars saved by doing it yourself may come back to haunt you if you have to defend your patent in court.

If you eventually obtain a patent, it is no guarantee your invention will make money for you. A patent office study published in February 1989 found that fewer than 1% of patents earn the cost of getting them. (Copies of this report may still be available through the Government Printing Office). Of those who just tried to sell or license their patent to another company, not one was successful! Patentees who earn money on their patent either were, or went into, business making and selling the things they invented.

When production starts, a whole new set of problems develop. Anyone can buy your product and reverse engineer it. There are hundreds of ways to impede this process but no way to prevent it totally. My advice: hit the market hard and establish yourself as the leader. Crab a large share of the market before your competition does, (i.e., ask for a “Kleenex” and you will get a facial tissue - no matter the brand). Competition is good; it means someone else believes the market is there for your type of product and it also means that they are going to advertise. More people will hear of your idea and that will, in turn, create an even larger demand. Remember the rules of a Free Market Economy.

Remember too, if you tell even one person without safeguards, your idea could be someone else’s idea tomorrow. Keep quiet and work fast. Patents are for those who can defend them, or want a patent to attest to their creative accomplishment, need something to boast about, orsometimes for venture capitalists (money people) who don’t see the risks involved with patents.

One last note on patents that you may not have thought of - every name listed in the “inventor’s name” has the legal right to sell or license the patent without notifying the others - any one of the “co-inventors!”

Patent Companies

Idea Management Companies, Patent Companies, or whatever they are calling themselves today, are to be avoided. A lot of money/ideas have been lost with these organizations.

Leave your checkbook at home for this next adventure. Visit one of these patent companies with some novel idea you've gotten from one of those mail order catalogs. You know the idea is already on the market, you just don't need to tell the company that information. Here is what they are going to do for you.

First they will give you a free non-disclosure agreement form similar to the one in the center of this booklet. It may not look important, but it is one of the most important documents an inventor can have. Good solid advice is to get everyone you are going to tell about your idea to sign such an agreement before you say anything. Second, at no cost to you, your ego will be inflated with an evaluation of the idea -- "Why your idea is the best to come along since the light bulb (or sex, or sliced bread)". They will even do some "market research" for you, or so you're told. In about a week, you get a notebook with all types of ego-boosting statistics, such as the number of households in the United States. Implied, but not stated is that your invention will go into each one. In reality they did not do a study

but pulled this information from a computer data bank. The computer program inserts your name/ invention name in the proper place - you get a custom looking “study.” From that notebook, it sure looks like you’ve got a winner of an idea.

With your ego inflated and implied visions of untold wealth in your mind, comes the pitch. They think your idea is so good that they want to be your partner! They will help you sell your idea to a major manufacturer, and all they will want is the “finder’s fee”. What a deal; the buyer pays the fee so it doesn’t cost you anything. But, you’re told, you will need some protection. The Patent Company will do the “leg work” to get a “patent option” for you. Since you will be partners, the company will pay half the fees for the more in-depth search, the filing, and so on. Your part will be only $1500 to $24,000; you can negotiate this fee. They won’t ask for it all at once, just $500 now. Then it will be $300 for something else. Before long you have too much money invested to “quit’. Often times these companies apply for design patents which protect only how the idea will look - changing the appearance circumvents your patent!

WHOA! Let’s do a little arithmetic, A legitimate patent search is usually less than $750 (manual) and typically you can do it on the inter-net for free. Filing fees run about the same if you do it yourself. That is some pretty high-priced help when you consider you are only paying part of the cost. This is a

good time to ask for legal documentation showing how many inventions THAT company has actually sold and how much of the company's income is from people like you. You will probably be escorted to the door. Just in passing, the "industry" these companies submit these ideas to, are those like Assembled Products. I've gotten the same idea twice in the same week from two different inventors and both were submitted by the same invention company! Another costly mistake I hope you won't make. It is also a good idea to check with the Better Business Bureau in the city where the company is headquartered.

Are you beginning to see why many good ideas never make it to market; never show a profit?

I've had no firsthand knowledge of Inventor's Club activities. Some seem on the level and claim they will put money into development of some promising products. It is an interesting concept. Still, it is my advice to keep your idea to yourself as much as possible and ask many questions. When you're sure of the membership's integrity, then and only then, tell them of your idea. A signed non-disclosure statement is still a good idea.

Do not let an inflated ego get in the way of good judgment. Let your attorney or some other trusted and uninvolved person read any contract with a critical eye. Read what is written not what is implied or you think is implied.

Prototypes

You've thought your idea through; you've committed it to paper; you've done the market studies; now it's time to get physical. A prototype is almost always needed. If you're a "Jack of all Trades" and have the equipment to do it yourself - do it! Make the first level of prototype yourself, you'll save a bundle of money. One can also have the individual parts made at different job shops over the entire country if you have the time and resources. This may keep the cost down, but be sure of your tolerances as each part must fit with the others. Keep good records. Remember, the financial people will be cynical and you need to favorably impress them. The prototype must look professional and work flawlessly. Don't try to cut costs here.

The alternative is to go to a professional prototype company (such as Assembled Products, Inc.) with a non-disclosure agreement form in hand. Get it signed. Explain your idea in general terms to see if it fits with the company. Get an estimate of the cost and time needed. Cost will range from $3000 and up ($300,000.00 is not uncommon and I have seen $2.5 million) for one unit, 10 units will cost about the same. Order 10, you'll use them. Knowing the price scale, you won't be shocked when you go to your local professional. It also helps when you appear professional. As a "Pro," negotiate the price, it is usually flexible. Listen to the company's engi-

neers, talk to the marketing person; an invention isn't worth your time if it can't be produced/sold at a reasonable cost. Be careful of your expectations. A new electronic game that requires 100 megabytes of memory is possible, but not economically practical. The multitude of products on the market deceive us into believing anything is possible at a low cost. This is not usually possible in quantities of less than one hundred thousand pieces. You'll learn more about this in the "Finance" section.

Changes made after production has begun are very expensive. Know what you want before production starts. Moving a knob "a little to the right" may well cost thousands of dollars. These are your dollars! Prototypes are less expensive to change than production units. Drawings are even less expensive to modify, but they will still cost something.

With the prolific use of plastics in our society, this booklet would not be complete without mentioning this material and associated costs. Custom injection molded plastic is versatile, allows unique designs and is cheap! The mold, however, is not. It will run from $5000 to well over $100,000 for each cavity. If the top and bottom of a box are not identical, each will require its own cavity. These are customarily paid for up front! That makes for a big up-front expenditure that your banker is not going to like.

The alternative is to use standard plastic parts.

They're inexpensive when compared with a custom-molded piece because you don't have to buy the mold first. The off-the-shelf part may not be perfect for your application, but many styles of plastic are available. A little research will usually turn up something that is adequate. Vacuum molded plastic is much cheaper and looks it. Vacuum molders, however, can make precise prototypes, something the injection people can't do at a reasonable cost. Which is best for your application? It depends on that application, review your budget and get the best you can afford.

While we are on prototypes, it's a good time to discuss packaging. Packaging does not refer to that very important cardboard carton, blister pack or bag that the product is put in, but rather the external appearance that the customer sees as the product. Packaging must be impressive, rugged, practical, safe and economical. Be careful. You will have to invent your own, hopefully using standard parts. Standard parts will always be the least expensive for the prototype, but do not be afraid to change if sales warrant.

An example of poor planning is: A person came into my office with an idea for an electronic child/parent separation warning device. This is old technology and was easy to design. His marketing research used "Carebears" as a characture/package for his product. This killed his entire project when he found that a license to use the name would cost

over $200,000, plus a royalty on each unit produced. You must get written permission in advance to use logos, trade names, product lines, etc. The courts do not care if your name is “Ford,” you can’t manufacture a line of cars with that name on them. Indulge me for one more example of a packaging problem. The product was a pillow with audio speakers built into each side. It was beautifully made of molded foam, it kind of looked like an instamatic camera film pack, only much bigger! It looked close enough to the film package that it was forced off the market as a design patent violation. With all the attorneys and money lined up against the little person, they were not interested in reason. One would think that the court system would consider size, material, use, market and so on when ruling on such an infringement, but they don’t.

Marketing

"Nothing happens until the sale is made." An interesting but true quote from one of my "made it" customers.

Most established companies are not interested in inventions not invented in-house. That is a real problem for you and idea management companies. One glaring exception is an innovation for the place where you work, even then it is "invented in house. " It may even belong to the company if you worked on your project during company time or used any company parts or technology. Many large companies make all new employees sign an agreement to the effect that anything they invent during their employment and for two years after termination, belongs to the company! If you had to sign something when you started work, check with your personnel department to see what exactly was agreed to. You're not alone, most people don't read all those forms they're asked to sign when they're first hired. A spouse or relative is not usually covered by such an agreement. That is a hint for getting around such an agreement. See an attorney.

What is the overriding concern of the purchasing company? The bottom line - to sell to a company, be ready to show start-up costs, production costs, and how your product will make the purchasing company money. You'll also need to identify who

the ultimate consumer is going to be. Say, aren't these the same questions that one would ask if he or she was going to find the American dream of owning a business on his own? A complete marketing study.

In the Prototype section, we briefly mentioned the importance of the carton or container the product is shipped. If it is to be installed by a technician, then a plain brown corrugated box is fine. The only purpose of the box is to ensure that the product does not get damaged during shipping, nor that any of the loose parts get separated. As of this writing, those Styrofoam peanuts cost about five cents per handful, so get a box about the right size. On the other hand, if it is also going to be the store display, then a great deal of care must go into its design and appearance. The graphics on the outside will have to grab the customer's attention; tell him what is on the inside and how it is to his advantage to buy your idea/product. This is your advertising and should convey a positive image of your product and company.

Direct Sales - Your own Company

Did you do that market study needed to sell your idea/product to "industry?" Answering the above question "yes" leads us to a new alternative for your invention - direct sales. But before starting on this approach, get together with your lawyer and accountant. If you don't already have one of each, get them. The library is a great source of information on setting up and running small mail-order enterprises. Also contact the SBA and SCORE (Service Core Of Retired Executives). This booklet won't even skim the high points of starting a business, it will give you the basics as it relates to your invention.

Pricing can be tricky. People won't buy if it's too cheap because they will think they're getting an inferior product. And if its too cheap, you will not recover your development cost. If the cost is too high, they won't be able to afford it. A good rule of thumb is that the selling price should be about three to five times the manufacturing cost. When figuring manufacturing costs, don't forget labor, tax, depreciation of equipment packaging and other overhead items. Test market your idea by running ads in three different geographical areas with similar populations at three different prices. A near equal response from all areas means your high price wasn't high enough, so try again.

What happens to all that “extra” money between manufacturing costs and the retail cost? Part of it is your profit.

Another part will go for advertising. With the plastic mold makers, you at least had something physical to show for your investment; not so with the advertising people. Do everything you can yourself You would get paid work for someone else, so figure that cost even if you are not paying yourself (yet). If you contract your own printing, you’ll find they’re not too overly priced. Postage is the same throughout the United States. You can type envelopes from your own mail list and stuff them yourself cutting out their advertising company. That will get a 1000 piece mailing out for under $500. An Ad Agency could never do you that well. You could rent a mail list, but can your budget support that many names? With a little direction, you can sell your product better than anyone else. Stop! Don’t look. What small business ad do you remember from today’s newspaper? Can’t remember even one? Don’t make that mistake. Even a “classified ad” is better than a newspaper space ad. Magazine ads are better, they stay around longer. Many magazines will write your copy and do your graphics, all for a chance to run your ad in their publication. Costs for magazine space ads are very negotiable. When you pay for that ad, you usually own the copy and graphics to use in other places, check with the magazine.

A big part of the mark up will go to distributors and retailers. The more the retailer gets to keep, the more he'll push your product. That only makes sense. Distributors don't want as big a cut but want to move big quantities. Distributors will handle a lot of the marketing once you've convinced them to carry your invention. Again, visit the library for up-to-date information on the subject of selling mail order and other techniques for small enterprises. Not found at the library is when major distributors go Christmas Shopping. No, not the day after Thanksgiving; not the 5th of July, but they're finished by the first day of June! Don't go to your manufacturer in late August and tell them you want to make the Christmas sale period for that year.

Can your product be manufactured on the kitchen table? Many "big" companies are actually just dining room tables (or started there). Inventing is certainly looking like the easy part now, isn't it? Too many orders for you to fill from the kitchen table/ garage, or too large, or too complicated? Not to worry. Most large cities have contract manufacturers who will make your product for you. You don't have to risk economic ruin by investing in a factory or capital equipment. Speaking strictly for Assembled Products, Inc., we will do as few as 10 units per order. The cost is about the same as if you did them yourself provided you credit your time/overhead at a reasonable rate. The price per unit will drop as the quantity increases. Even if you are making the product on the kitchen table, keep

an open mind for an easier method or possible subcontractors. Important to remember is that your time is worth something. Add it to the cost and a little bit for the government "tax man." Assembled Products, Inc. makes 1000 little circuit boards a month for a "kitchen table" operation that sells its product for $168 each. Over $100 of each sale is retained by the company because it has no fancy offices, no equipment; in fact, very little overhead at all. But remember, it takes time, and neither a contract manufacturer nor supplier is going to finance your project. Most will want at least 50% up front until you've established a credit record. We will discuss financing in the final chapter.

How about "going offshore?" "Going offshore" is a buzz word for having your product made in another country where labor/parts may be cheaper. There are horror stories galore for those who don't know the ins and outs of "offshore." Think about the problems of being half a world from your manufacturer; every crisis must be handled over the telephone and you don't speak the language! Money is fun too; it must be exchanged and on deposit in a bank escrow account before work starts. When your product passes its port-of-entry, it automatically triggers the transfer of funds to the offshore manufacturer. See the error? You haven't seen your product! The manufacturer's been paid! A 50% failure rate is not that uncommon for some offshore manufacturers. Half your product bad? That could certainly put your com-

pany's reputation in jeopardy. It is very important to send exactly what you want the offshore company to do, including all testing and inspections you want done. Yes, they have to be told not to send the failures. Even what might be an obvious error to you will be incorporated into your final product. i.e.: A prototype radio sent offshore for replication had a paint scratch on the front panel (it was a prototype); 10,000 radios came back with a scratch on the front panel! Don't laugh, it cost over $20,000 to fix them. Should the inventor decide to take the chance, get someone with experience to help. It is worth the extra expense.

Financing

It always comes down to money. Most new inventors/ entrepreneurs don't have a lot to spare. That's the beauty of the small kitchen table type operation, you can "moonlight" with the family while keeping your "real job".

Can't bootstrap your invention into an economical success or don't want to wait for it to grow off the kitchen table? Maybe the demand is so great you've got to expand or you need more advertising; what you really need is financing. A full page ad in a national publication will easily cost $20,000 each month (others may only cost $200 per month). A plastic injection mold may run $100,000. You've invested many dollars of your own money into the development of your device, it would be a real shame not to proceed onward --just to see if it will fly.

When faced with the risks, most inventors start to have self doubts and real financial people will do nothing to relieve those doubts. Before you quit, think about this: 80% of those who try, succeed; 99% of the people don't even try. If you've done an honest evaluation, don't let the people with the money dissuade you. Nothing ventured, nothing gained. Money people are very conservative! They didn't get rich investing in half-baked ideas. They do their homework, and if you've finished yours, let's look at how to finance your invention.

Unless you are independently wealthy (six figures of disposable assets) you may need additional money to make your idea a commercial success. Note that Stephen Jobs was only making about 50 "Apple computers" a month until he got an investor to put up $600,000 and his sales suddenly jumped exponentially.

Relatives are a good source of start-up capital. They are also going to try to poke holes in your balloon. If you've done your homework, you can convince them to invest; if you can't sell the idea to your relatives, re-examine your idea but don't quit. Although this source is usually very limited, it is a start. Keep everything legal with the proper paperwork and your mother will not disown (sue) you should things turn sour. The risk should be explained at least a dozen times. The risks should be put on any paperwork too - your honesty will be rewarded. Your in-laws will think you're trying to keep the "gold mine" to yourself and beg to get in on the deal. If you are getting a loan, then, it must be repaid; on the other hand, if you get a stock investment, you do not have to repay it, but rather split the profits with the relatives. Don't be to hasty to sell all your stock or you may find you have nothing left to raise any real money with later. Or you may find that you have an unwanted majority stockholder. If you have sold all the stock, you will not reap the benefits when your invention becomes a commercial success.

The S.B.A. has no money to lend despite what that politician has said or you've read in some magazine ad. They will guarantee 80% of a bank loan. That will reduce your banker's risk and make it easier for you to get a loan. Go to a bank that specializes in S.B.A. guaranteed loans - the paperwork is monumental. Some local banks will even take all the risk to avoid the government hassle. In any case you will need a personal financial statement, projected cash flow statement, business plan, resume' of each owner/principal, proposed collateral structure, etc. Loan Officers don't get promoted making bad loans, your situation must look good. Fill out the application before you invest all your own funds. No one will finance your project if you don't have enough faith to put your own money into it. The strategy is to put money in at just the right time.

Can't get a loan? Don't feel bad, you're a high risk! Don't want the burden of a repayment plan? Sell your soul! Well, almost. Venture capitalists are more adventuresome than bankers but want more in return (about 10 times the investment). Most venture capitalists are not loners, they're groupies. They call themselves Investment Companies, Small Business Investment Corporations (SBIC), Capital Investment Corporations and so on. They usually want at least 80% of your company and to sell you back their shares at a nice profit later. Now you see why I suggested that you don't sell too much to your relatives. How much do these investment companies have to invest? $100,000 to $300 mil-

lion. For your "piece of this pie," you will need everything you needed for the bank and more. An in-depth business plan (not too long), your resume' (they're investing in you and not your invention), and a proforma.

A proforma is an interesting medium to test your ability to dream. It is, in reality, a monthly projection of all your expenses and income over the next five to ten years. If you can accurately do this; play the horses as you'll make a lot of money fast and won't have to look for investors. Most of us can't do this, so where do the numbers come from? Research the past histories of similar size companies -- this will help with the expenses. The income is, well, anybody's guess, and yours is just as good as the next guy's, A tip or two worth remembering when writing the proforma. 1) It takes time to tool up and get your invention to market, during which you will have a minimal income - show this down side. 2) Most inventors are overly optimistic about sales and revenues - don't be. 3) If you're breaking even or making money (according to your proforma) before the end of the second year, you've screwed up! Venture capitalists are experienced and expect a loss during the first two years. Your proforma should look good but not so good that you're perceived as a dreamer with his head in a cloud. We know, from the invention companies, that every family in America is going to want at least one of your inventions. Just be subdued about it when approaching these investors. Some

successful inventors even throw all this planning paperwork away once they've got the money in hand to market their idea. Don't spread that information around to your money people.

There are other places to go for money. Contact your local college, economic development board, minority business group, accountant and people who have already "made it." Each have their own advantages and pitfalls. "Guido" is a real disadvantage of asking the "Godfather" for an investment. Enough said about that source and other less-than-above-board monies.

Some Advice to Achieve Success

You're an inventor filled with new product ideas you want to develop. How do you get to market and "Easy Street?" Persevere! There are going to be obstacles, roadblocks and hoops to jump through on your way to success. Perseverance is what separates successes from failures. If you try and try and try until the failures end, you succeed.

Build your ideas in small increments. One step at a time. Mao Tse-Tung is quoted as saying, "A journey of a thousand miles starts with a single step." Take the first step, then another, and another. If it doesn't seem that you are making progress, take smaller steps.

Work with protectable ideas. Establish a property right by confidential disclosure, copyright, trademark or patent or move on to another idea. If you feel the idea is very good and has potential, develop it in a way that creates a trade secret, original creation, or trademark.

Avoid cold calls. Don't bother yourself on trying to submit your idea to just any industry or business. Most will not accept outside submissions. There is little use in fighting this losing battle.

Treat all your contacts as valuable allies. Work with people you have known in the past. Make lists of people to stay in contact with -- network. Find

work and play activities that expose you to a widespread area of contacts.

Inventors have opportunities to sell and license ideas and products, be shrewd. If you are not good at negotiations, find someone you can trust who is good and let them work on your behalf It is trite but true that if you believe, you probably will. Negotiations take preparation, patience and a positive mindset.

Start small, get little agreements for your ideas. You won't get rich on the first one but you can build on that reputation. Each success will raise you up by your bootstraps. As the creative person that you are, you may not be good at business, get help. If you are not a good negotiator, find someone who is. Work with professional when needed -- lawyers, accountants, engineers, and places like Assembled Products, Inc.

There is some hard work ahead but it shouldn't bother you. There is a new respect for inventors who keep us ahead in the Global Economy. New venture capital firms are across the country providing funds for new products. Search is out if you need it. Most important advice, PERSEVERE!

A Parting Thought

I didn't set out to write about going into business. As you've seen, nobody is going to be as excited about your idea as you are. You may have to go it on your own to keep even some of the fruits of your labor. Those who would capitalize on your idea while leaving you with nothing are everywhere. Be careful, do your homework, figure your labor, add a cut for the government (tax) and if it still looks like a money maker - go for it. Be objective, if it's not working out, don't panic, but know when it's time to get out. Neither the conservative" nor the "fool" is likely to become wealthy from any given venture, but the informed risk taker can profit from almost any venture.

Good Luck!