I HAVE AN IDEA. HOW DO I KNOW IT IS GOOD? HOW CAN I PROTECT IT?

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ABSTRACT

Most folks in the oilfield are true experts in their field. They are, for the most part, good thinkers with original ideas that when properly conveyed bring value to both the inventor as well as the industry. Our industry needs new ideas. The majority of innovative ideas come when a person doing his/her job realizes there is a better way to accomplish a task. However, a good idea is nothing more than a dream until it is born.

This paper deals with the capturing and documenting of ideas and what to do with them. Topics covered are:

- What is patent protection?
- How does one know if the idea is unique or novel or is patentable?
- How does one protect his/her idea?
- Who owns the idea?
- What are the general costs involved?
- When does one cross the infringement line?
- What web sites are available to help develop and protect one's ideas?

The starting Point: The process always starts with an idea. The idea may be a reaction to a change in business conditions or it might be a wiz-bang machine that can solve problems or maybe build "what ifs" at lighting speeds. Clearly, the idea is always first and if the device or system works, then one should consider the protection afforded by a patent. Industry acceptance and/or perceived economic value will become the drivers to seek a patent.

HOW DO YOU KNOW IF YOUR IDEA IS GOOD?

Coca-Cola: Ever wonder how or even "if" the pharmacist John Pemberton knew he had a great idea when he invented the Coca-Cola? The story goes like this . . .the doctor was making a brew in a three legged brass kettle in his back yard and marketing it as a nerve tonic, stimulant, and headache remedy under the name of "Pemberton's French Wine Coca." Of course, one key ingredient was wine. Sales were good as most drug stores in the region were selling this drink and the doctor was making a few dollars on his brew and then along came the government. In 1886, the city of Atlanta instituted prohibition, which would force Dr. Pemberton out of business because wine was no longer legal. Being the creative man he was, he solved the problem by substituting the wine with sugar in his secret formula.

He continued to mix the brew in the kettle and ship his syrup to the stores who would just simply add water. Although the wine was gone, sales were still moderately good. Then, a soda jerk by the name of DeLuise, pulled the soda water spigot which mixed the syrup with carbonated water rather than just water as the recipe called for. It tasted great so DeLuise went on to serve it to other customers who loved the drink. As sales soared, the marketing ploy was quickly changed from a nerve tonic approach to a "delicious, exhilarating, refreshing, and invigorating soda-fountain beverage." Thus was the beginning of Coca-Cola.

So what happened? A backyard business using a secret formula and not a patent was forced to change because of prohibition; the creative thinker reacted to the change by using sugar in the formula rather than wine; and then an employee substituted carbonated water, which completely transformed the product both in makeup as well as marketing thrust. Incorporations, trade secrets, and patents followed the innocuous drink made from a secret coco formula. A group of entrepreneurs sensed the moment and converted the secret into a 50 billion dollar business and arguably, the most famous brand in the world.

Intelligent Ignorance: In the 1930's, only the rich could afford refrigeration and as result, Frigidaire was a struggling company only selling 365 units per year. In those days, refrigeration units were bulky (600 plus pounds)

and dangerous as they used ammonia, methyl chloride and sulfur dioxide as a refrigerant, which was extremely toxic as well as highly combustible. So bad in fact that in 1929, 15 people died in a Cleveland apartment building due to a simple leak in a pipe. Being too dangerous and too expensive, no one bought it. Frigidaire, as hard as their folks tried, could not solve the problems associated with their refrigerant.

There had to be a better way, so after the war, General Electric (GE) purchased Frigidaire and began working on a safe and economical refrigerant for their products. A research engineer by the name of Thomas Midgley was assigned the project as he had reputation of being bright and an out of the box thinker around GE. His boss once said he possessed "Intelligent Ignorance" which means he had the ability to think coupled with an absence of preconceptions, which is the hallmark of inventors. Mr. Midgley, who was not a chemical engineer, is also the guy who invented TEL or the lead that is put into gasoline to stop the knocks and pinging. He went on to invent dichlorodifluoromethane or what became to be known as Freon 12, which of course, changed the course of refrigeration, made the name Frigidaire a household name, made air conditioners and refrigerators affordable to the world, and made GE a lot of money.

Were Coke and Freon great ideas? Sometimes, history adds a strange twist. Pemberton's exhilarating Coke is now being blamed for childhood obesity and Midgley's Freon is blamed for global warming. Today few people even know what an "ice box" was and Freon is no longer considered environmentally friendly. Isn't life complicated?

Closer to home, how about Sam Gibbs 1992 patent # 5,252,031 entitled: *"Monitoring and Pump-Off Control with Downhole Pump Cards."* Think about this one for a moment. It started with a device to measure the rod load of an oil well, disclosed in his 1967 patent #3,343,409, which taught the use of a load cell. The technology then progressed to the 1976 patent # 3,951,209 in which he taught the use of a position card, and moved further along the line to a technique of drawing a surface card disclosed in the Gibbs' 031 patent. A great idea? Care to speculate how many kilowatt-hours of electricity have been saved by this idea or how many gallons of gasoline have been saved because pumpers do not have to drive to every well every day? Everybody would agree this technology has a huge impact on lifting cost and energy savings. Our industry now has SCADA and electronic well surveillance systems that have been spawned because of his 1967 idea. Although he started it in the mid-sixties, Sam Gibbs never let it go as he added to and improved it over the next thirty years. Clearly, his inventions did not cause obesity or contribute to global warming so he passes that history test. Maybe the pulling rig industry has a gripe as he surely cut in on their market by lowering failure rates or possibly, the pumper's union might complain as he certainly reduced the number of folks needed to lift oil out of the ground.

So, how do you know it is a good idea? History is the best teacher and judge of all.

THE PROCESS OF IDEA DEVELOPMENT AND PROTECTING THE IDEA

Let's suppose for illustrations purposes that you are the owner of a small mom and pop oil company that operates several low volume gas wells in Crocket County. Suppose further that these wells produce just enough fluid, less than a barrel per day, to be a nuisance and the bottom hole pressure is so low that a plunger lift won't work. The only current solution to keeping the hydrostatic head off the formation is the conventional sucker rod pump and the ever increasing ”pull and repair" costs are really working on your bottom line. Further adding to your economic problems is the fact that the once economical single pole pulling unit has long since gone and replaced with a four man 300,000# capacity rig that is an overkill deluxe for your 1,800 foot wells. You need a better lift system to stay in business.

Sitting in your recliner one night, enjoying the wee sip, you do some rough calculations and determine that you can lift the one barrel of fluid in one hour from 1,800 feet using less than one horsepower or 750 watts of electricity. That beats the heck out of having a D-25 pumping unit being driven by a 10 HP motor. You then get on the web exploring the options to solve your problem. What you do not find is a company that makes a pump to fit your application. You do find that Parker Hydraulics makes a wobble-piston pump that would work just fine in your application if: 1) it can be modified and slimmed down to run into 4 1/2" casing and 2) you can get enough power down to the pump without spending a fortune on Reda pump type cable. You find a small high speed motor that will work, but the specifications do not allow starting the motor under a load so you add a spring type clutch which will allow the motor to build up speed before the pump starts running into hydrostatic pressure. The motor is high speed and the pump needs to be turned at a slow speed so you need a set of planetary gears to couple the motor to the pump.

Maybe there is an opportunity here so you pull out a sheet of paper and design a pump that might do the job and the sketch looks something like Figure 1.

With the idea captured on the sketch, you must ask the following questions:

- Will this solve the problem?
- Can you build it and make it work?
- Is it worth investing time and money into the project?

It is always a safe bet that you are not the only person in the world with this type of a problem so the thought will always follow: (1) Can I get a patent? (2) Can I sell this idea or device to others? (3) And to at the very least, can I offset my cost of development? If the answer to the three questions is yes, then you are free to move on to the next set of problems.

All you have at his point is the idea. You do not have the expertise to design the pump, gears, and motor so you are going to get some outside help as to how to develop this idea and yet keep it protected? The following is a logical sequence of tasks that you can follow to develop and protect your new wiz-bang downhole pump:

STEP ONE

Do not share the idea with anyone yet. Hold it close to your chest and give it time. Explore the various options to build this device and research as much as you can to find out what has been done in the past. Look for what is out there and do not limit yourself to the oilfield. Paper mills, the food industries, construction companies, and the like all have problems and solutions and you might find something here that will work. Do an "art search," which will be discussed in detail later on.

STEP TWO

Protect your self by filling a provisional patent. This process, too, will be discussed further, but the cost is only $110 and the filings protect you for one year. The response time from the patent office is normally 2-3 weeks and you will receive a unique number associated with the title of your proposed invention. At this point, your idea is protected for one year.

STEP THREE

When you receive the initial notification from the United States Patent and Trademark Office (USPTO) your idea is officially yours and you are free to go find the experts to help you with the invention without fear of someone claiming to be the inventor. You might need a mechanical engineer, as well as an electrical engineer, to guide you along the way. Normally speaking, these folks will listen and throw ideas at you on the how toos, the why nots, and the ifs of your device. Capture their thoughts and if one of them throws you a modification to your original sketch, consider going back to step two and modifying your application. For sure, collect and catalog all the conversations and ideas along the way.

A few points about the provisional patent application:

- The sole purpose of the provisional is to give the inventor origination protection while he/she perfects the idea and explores the options with others. It gives the inventor time to decide if the idea is worth pursuing and going forward with a full utility patent application, which can get expensive.
- The provisional will not be examined for validity or patentability. The content is not read by a patent examiner.
- The provisional expires after one year. The inventor must file a utility application if he/she wants long-term protection.

STEP FOUR

With the provisional in hand, do your homework. Suppose that your research has turned up wells in West Virginia and Illinois and in the NE that have the same problem: Low pressure and low fluid entry. You determine the market is there. That is a "GO" flag.

You have contacted the mechanical and electrical engineering experts who tell you: "Yep, that would be a cake walk" so you now know it can be done. That is the second "GO" flag but a word of warning: Be careful, however, because the phrase "cake walk" is really engineering code for "let me see your checkbook."

With a column of "yeses" in hand, you have two options: 1) Go immediately to step five or 2) first find an investor to help you develop the idea and then go to step five. There is lots of investment capital looking for the latest wiz-bang deals.

STEP FIVE

Hire a patent agent or a patent attorney and get that individual to file a utility application on your idea. Supply them with all the information you have including drawings, detailed descriptions, the provisional application, as well as the market study. The history of the usefulness is extremely important in defending your patent should you get one allowed on your new pump. What has been done or why has it not been done before is critical to the application.

Be absolutely sure you discuss and agree to the cost of the application process with the agent or attorney. Drafting the application is one cost, but follow-ups and responding to questions (office actions) from the patent office is another expense item. Make sure you understand what the agent/attorney is going to do for the fee.

Sit back and relax. Enjoy a wee-sip. Early in the process, expect to spend time explaining to your agent the invention. Later in the process, expect to wait from 2-3 years from the USPTO for any communication or a ruling on patentability. Expect to spend from seven to ten thousand dollars with your agent/attorney for the application costs. Pass your time building the pump and enjoying that wee-sip. If you find you need to make a material change in the design, be sure you let your agent/attorney know of the change.

What is a Patent: So you are off and running with your idea. Exactly what is a patent and why does it have value? In very broad terms: ***A patent prohibits someone else from building, selling, or making your invention in the United States. Surprisingly, you may have a patent but are not able to use it.***

Most likely, designing, building and marketing this new pump is not going to be cheap. It will take a lot of engineering work, machine tool time, some creative thoughts, and a lot of tweaking in field trials. The process is not simple. In addition, it is going to take marketing and promotion investment to get the product to market. The only way you are going to invest in the start up cost and recover your investment is to have an exclusive right to build and sell your pump. That is what the patent does for you.

COMPONENTS OF A PATENT APPLICATION

Abstract: This is self-explanatory and is a very brief description of the invention.

Field of The Invention: This section describes the general technology fields that are covered in the invention. In our example, we would say this invention covers electrical as well as mechanical and hydraulic fields as applied for moving fluids from an oil well.

Background of the Invention: This section starts with the historical aspects and the needs of lifting fluids from wells. It defines the problem to be solved and discloses what has been done in the past to overcome the problems associated with lifting fluids from wells. Normally in this section, the inventor will discuss and make a statement why all the current art will not solve mom and pop's lifting problems. It would disclose existing patents that were studied for prior art and this section would disclose the unique features of the new pump or process.

Summary of the Invention: The summary is just that: A summary of the various components and how they interact and accomplish the objectives of the invention.

Description of the Drawings: This is brief explanation of all the drawings that will be referred to in the next section.

Detailed Description of the Invention. This section is the "meat on the bones" of how the invention works. It discloses, normally using the drawings, how the system works and what each component part does to accomplish the

objective. It is the "teaching" section of the patent. The agent/attorney will go into great detail explaining the elements and workings of the invention.

Claims: Clearly, this is the most important part of the patent application as it describes in detail each element of the invention. The claims become the skeletal structure (bones) that supports the whole invention. If any bone fails to be in the invention, it will not work. Example, in your pump case, you might claim A) a housing, pistons, B) a wobble plate, C) bearings, D) an electric motor, E) a set of gears, F) valves as well as other elements that when combined, accomplish the objective of the invention. Each one of those parts becomes a key element of your invention. Claim one should be the simplest form of your invention.

Claims are both dependent as well as independent. Claim 1 always states the elements of the invention in the broadest of terms and elements as in A through F above. A dependent claim to 1 might read: the device disclosed in claim one (A-F), but with an external filter (G) to prohibit trash from entering the cylinder cavities. The dependent claims expound on the variations of the base invention, but can become very important.

The best way to explain how important claims are and how one might have a patent but not be able to use it is to review an example. **Yes, this is a true story.**

Pfizer owns the patent on the little blue wonder pill called Viagra and in their patent, they named and claimed the formula. Suppose for example Viagra has six basic ingredients mixed to certain specifications.

[A + B + C + D + E + F] mixed to form Viagra

Wrigley Gum explored this art or the patent teachings and discovered that this formula will work in chewing gum. Why use the pill when you can have a stick of gum, right? So Wrigley filed for a patent using the same formula as Pfizer but added two ingredients to make it a delightful chewable gum. Their patent is granted and it looks like:

[A + B + C + D + E + F] plus [G + H] …..But

Since Wrigley did not alter the form or usefulness of Pfizer's patented Viagra, Wrigley cannot use their invention as it would infringe on Pfizer. At the same time, Wrigley blocked Pfizer from marketing the little wonder drug in chewing gum form.

Had Wrigley been able to eliminate any chemical from the A-F of Pfizer's formula, they would have been free to make and sell their gum. They did not or maybe could not eliminate any element of the drug so they must get permission to use their gum product from Pfizer.

One more comment on the claims. When searching patents for existing or prior art, you always look at the claims first as this will save you a lot of time. If the art your are reading is close, go to the detailed description and the drawings of the art to determine if your new pump is close to what this patent is teaching.

TRADE SECRETS OR A PATENT

The option of holding something or a process as a trade secret or filing for a patent is strictly a business call. There is a difference between the two. A trade secret can be held behind closed doors or in a vault for over a hundred years and you never have to publicly disclose it. Two good examples are Coca-Cola and the Halliburton Fracturing formula. Coca Cola chose to keep their formula a trade secret only accessible to a few. Had they patented it twenty years after issuance, any company could have duplicated the drink and *The Coca-Cola Bottling Company* would have had a lot of competition early on. That was a sound decision on their part. As a side note, for years, no cokes were sold in India because that country would not honor the U. S. trade secret laws.

Halliburton holds their frac chemical formulas secret and do not have to disclose them under the federal regulations. Well, that is until recently when the EPA's strong arm got involved and opened up that huge can of worms. That is going to an interesting case to follow and the question will be: Does a person or company really have to disclose to the world their secrets?

Be clear, a patent application will become public after a year and if granted or not, the complete art will be disclosed for all to see. For sure, if you want to keep the secret, do not file for a patent.

BE CAREFUL AS THE FIRST USE AND PUBLIC DISCLOSURE STARTS THE CLOCK

In August 1864, General Ulysses Grant was camped near City Point, Virginia. One of his generals was voicing his conviction that the camp had Confederate spies amongst the troops when an ammunition-laden ordinance boat exploded littering the camp with debris and killing 53 union troops. Was this an accident or sabotage? A fact finding board, led by Lt. Col. Horace Porter was appointed to investigate the explosion which later on determined the explosion was indeed an accident, but suspicion lingered on for years.

Seven years later when Grant was president and Porter was undersecretary, a Virginian lodged a complaint with Porter regarding some patents he was trying to procure. To drive home his point, the inventor revealed that during the Civil War, he had invented "an infernal machine filled with explosives, and triggered by a clock. He said a friend had smuggled the device aboard an ordinance boat at City Point." Now talk about prior use and public disclosure to the wrong folks.

INFRINGEMENT

To protect yourself from infringement, go to Google or to United States Patent & Trademark Office or *www.ustpo.gov* and pull up the patent you are concerned about. Go straight to the claims and write down each element's claims. Key words might be "pump" and "gears". It is what the inventor described and is protecting. Then look at your invention. If your apparatus contains each and every one of those elements or more, you are infringing. If your invention is missing any one of those key elements, you may be clear. Remember, claims are where the strength of protection lies. The inventor is supposed to disclose the simplest art that accomplishes the object of the invention. If you have a device that accomplishes the same objective, but uses fewer elements (simpler) you are on to something.

Your patent application might get rejected because "It is Obvious to those skilled in the Art."

FACTORS IN SUPPORT OF OBVIOUSNESS

- The prior art suggests some reason or motivation to combine patents. Although this still supports a case of obviousness, KSR says this is no longer a requirement.
- Due to recent case law (KSR), combining or substituting known elements of different patents produced predictable or expected result. This particularly irksome because it places more value on foolish engineers who accidentally stumble upon a solution than on smart engineers that understand science and creatively apply it. For example, the foolish engineer says, "WOW, I didn't think that would happen!" and they get a patent. The smart engineer says, "If you do this, it will solve the problem because …," and others in amazement say, "WOW, I think you're right – great idea, I'm sure it'll work." No patent in the later case, because the result was arguably predictable.
- Known problem with limited number of known possible solutions, so it would be obvious to try those limited number of possibilities to see if one them would work.

FACTORS IN SUPPORT OF NONOBVIOUSNESS (IN APPROXIMATE ORDER OF IMPORTANCE)

- Even when combined, patent-A and patent-B do not include all the elements of invention as listed in the claims
- In an attempt to render an invention as being obvious, if modifying patent-A with a chosen feature of patent-B destroys some intended function of patent-A, then it would not be obvious to make such a change.
- One of the patents being combined "teaches away" or says don't do what your invention wants to do. In combining elements of different patents, one of the patents provides a reason why you wouldn't want to combine those elements. If patent-A, for example, says it's important to have a constant speed motor, then it would not be obvious to change the patent-A device to include the variable speed motor of patent-B.
- Combining known elements of different patents produced a surprising or unexpected result
- Obviousness must be supported by some "articulated reasoning" with "rational underpinning," so an examiner can't simply conclude it's obvious with no good reason.
- Nobody before was even aware of the problem that you discovered and solved

- Long-standing problem others have tried to solve but failed. It must be unsolved for reasons other than lack of interest by others.
- Commercial success of your invention (market share, not just gross sales figures)
- Infringer advertises that "their new product" is great, when it's actually your invention

SEARCHING FOR PRIOR ART:

There are numerous sources that can be researched to find prior art. A few are:

- Trade Journals
- Papers from SPE, PBALC,
- Trade magazines
- Advertising materials from vendors.

Google has a great search engine.
Ask Google questions
Search words
Click on more…. then even more…. then scroll down to patents.

United States Patent and Trademark Office. *www.uspto.gov*

- Go to search patents
- Click on Quick Search
- Use Boolean…"pump AND motor AND gears AND clutch" (Note the space between the words and the word AND is in all caps. Continue on with each element of your inventions.

Try this website: *www.bobharter.com,* which contains a wealth of information and access to a patent.

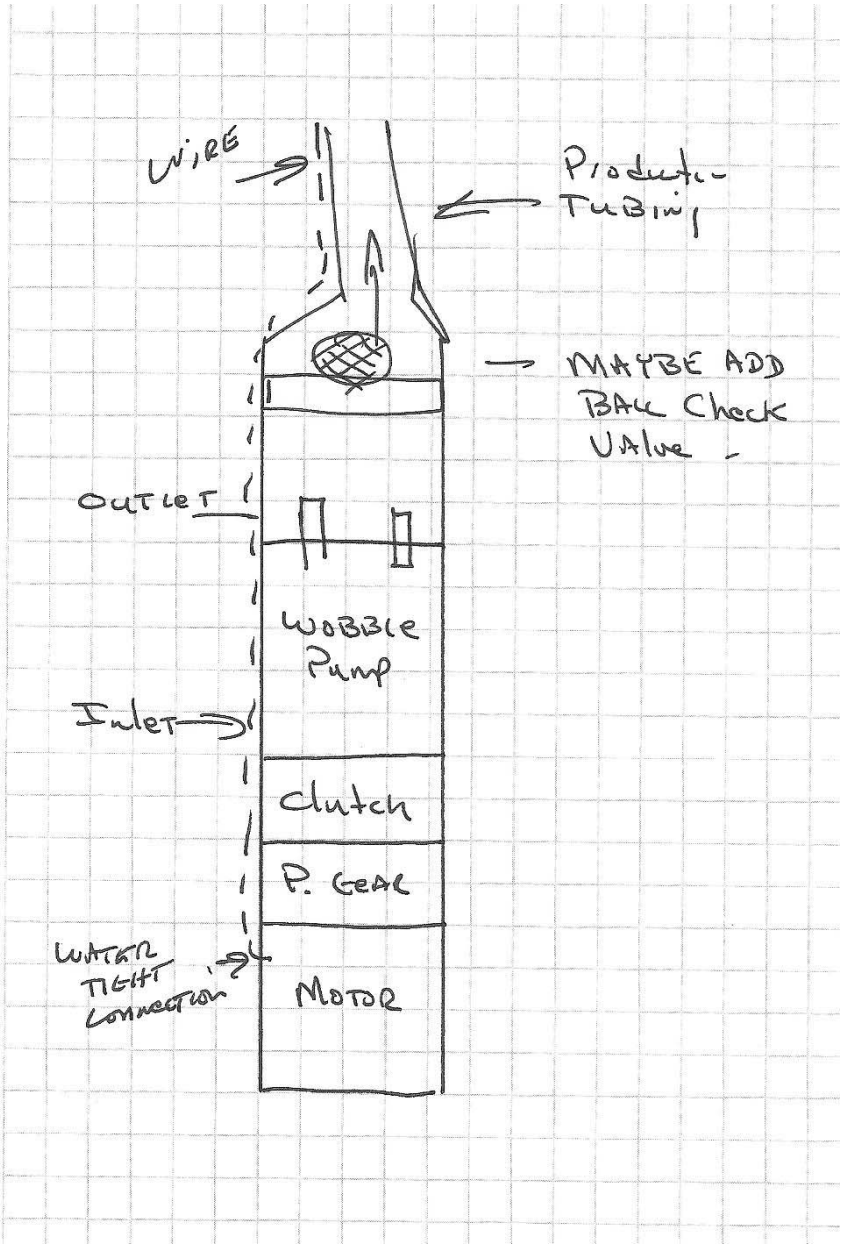
WIRE
Production Tubing
MAYBE ADD BACK Check Valve
OUTLET
WOBBLE Pump
INLET
Clutch
P. GEAR
WATER TIGHT CONNECTION
MOTOR

Figure 1

PTO/SB/16 (12-08)
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET – Page 1 of 2

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. _____

INVENTOR(S)

Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
FREDERIC M.	NEWMAN	MIDLAND, TEXAS

Additional inventors are being named on the _____ *separately numbered sheets attached hereto.*

TITLE OF THE INVENTION (500 characters max):

A LOW HORSE POWER OIL WELL PUMP

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

☒ The address corresponding to Customer Number:

OR

☐ Firm or Individual Name FRED M NEWMAN

Address 8201 DUNBLANE DRIVE

City MIDLAND State TEXAS Zip 79707

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ENCLOSED APPLICATION PARTS ***(check all that apply)***

☒ Application Data Sheet. See 37 CFR 1.76 ☐ CD(s), Number of CDs _____

☒ Drawing(s) *Number of Sheets* 4 ☐ Other (specify) _____

☐ Specification (e.g. description of the invention) *Number of Pages* 6

Fees Due: Filing Fee of $220 ($110 for small entity). If the specification and drawings exceed 100 sheets of paper, an application size fee is also due, which is $270 ($135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

METHOD OF PAYMENT OF THE FILING FEE AND APPLICATION SIZE FEE FOR THIS PROVISIONAL APPLICATION FOR PATENT

☒ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check or money order made payable to the *Director of the United States Patent and Trademark Office* is enclosed to cover the filing fee and application size fee (if applicable).

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized to charge the filing fee and application size fee (if applicable) or credit any overpayment to Deposit Account Number: _____.

$110.00

TOTAL FEE AMOUNT ($)

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Provisional Application for Patent Cover Sheet