Patents and Cold Fusion

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Abstract-- Patents are available for any arrangement that exploits Cold Fusion. The arrangement must incorporate a feature which is new. Furthermore, the Patent Office may require proof that the procedures defined in the patent actually work. And the description must be sufficient to enable others to duplicate the invention.

Index Terms-- cold fusion, description, patents, utility,

1. Introduction

The role of a Patent Agent is like that of a journalist who is also a detective. First you have to understand the story that is being presented by your client. Then you have to have to discover what it is in the story that is relevant in terms of being new and valuable. Finally, you have to write-up a disclosure that does justice to the idea according to the requirements of patent law.

This paper addresses patents as they relate to the Cold Fusion/LENR universe. When I refer to "Cold Fusion", I do so because this is a convenient term. I have no opinion as to the mechanism that may be operating that provides unexplained excess energy. I almost wish the phenomena were identified by the acronym: UEE.

With that observation, I will address some background points on the topic of patenting.

2. Why patent?

Patenting the results of their work is frequently exciting for those engaged in research. They may have a dream of patenting as a path to generating vast riches. This can happen, but the road is not an easy one to follow.

A patent by itself does not provide financial success. You must have a successful application of technology before a patent becomes relevant. But if you have such a technology success, patents can enhance the profitability of marketing that technology.

Patents enhance profitability by allowing producers to charge customers more for the product. This may be trite to acknowledge but often people lose track of this objective. Patents are valuable if they are associated with a successful business. This may lead to a buy-out at a higher price. It may appear that the patent has made the business more successful.

But the value of the patent and its ability to deliver enhanced profits only arise if the business itself is delivering a successful product to the marketplace.

Patents cannot enhance profits if the product itself is not a success.

3. Patentable subject matter

Turning now to issues of patenting as they relate to Cold Fusion, a first misconception needs to be clarified. Patents must address products, processes or new compositions of matter. No patent is going to be issued for the person who finally provides the correct theory that explains the source of the Cold Fusion effect. That will properly be the subject for a Nobel Prize.

Patents relate to products, articles, machines, or chemicals that are to be delivered to consumers or can be used by producers. Patents also relate to procedures that can be carried-out industrially. I include all of these classes of "patentable subject matter" under the word "arrangement". For an arrangement to become patentable, three critical conditions must be met:

1. There must be a feature or aspect of the arrangement which is new; a difference,

2. The arrangement must actually work and deliver a useful result, and

3. The patent disclosure document that accompanies a patent application must describe how others can obtain the promised useful result.

Those are the three requirements for patenting. They are simply stated but require careful contemplation to appreciate their effect completely.

4. Examination requirements

In referring to patents as addressing new arrangements, it is critically important to understand that a patent must focus on some sort of physical structure or procedure. It is the responsibility of a patent applicant to define what it is about this structure or procedure that is new. Examination at the Patent Office focuses on this issue: is the applicant's proposed definition of exclusive rights limited to things that are new?

In the case of Cold Fusion, the Patent Office is also concerned about whether the new arrangement actually works and has been described in a manner that will enable others to achieve the promised results.

5. Patent novelty requirement

The Golden Rule of patent law is that a patent, once granted, cannot take away from the public anything that was previously available to the public. This principle goes back to the Statute of Monopolies passed in England in 1624. No monopoly may be granted for something that is already available to the public. A shocking consequence of this principle for many inventors is that their ideas, no matter how apparently creative they may appear to be, may not necessarily be patentable. Inventors may have subjectively conceived of a new idea, an "invention" from their perspective, but their ideas may not be patentable if such ideas have already been made available to the public anywhere in the world.

With the enactment of the America Invents Act on September 16, 2011 this will be the law in the United States as of March 16, 2013. From that date on America will be on the same standard of novelty as the rest of the world. This standard is: Absolute World Novelty. This means that an invention must be pristine in the sense that it has not been previously publicly disclosed, or even suggested in a way that would make it obvious, anywhere in the world by any means as of the date of filing of a patent application. This is a high standard to meet. This is the standard that Americans will have to live with. This is a standard imposed by patent laws elsewhere in the world.

Furthermore, it is wrong to assume that the objective is to slip something past the US Patent Examiner. Examination for novelty will occur at the Patent Office, but it has never been assumed that a Patent Examiner's ruling in favour of granting a patent is conclusive. A patent granted in error can be revoked or invalidated in the Courts. That is why patent litigation is so complicated, and expensive.

Examiners do not evaluate patents on the basis of whether the idea is valuable, or on the basis of whether the inventor deserves particular credit. Examiners evaluate patents for novelty to ensure that the exclusive rights being sought are restricted to things that are new. It is much easier to obtain a patent on a far-fetched or silly idea than a good idea. Good ideas are less likely to be novel. Good ideas are thought of by others regularly.

6. Searching the prior art

Before filing for a patent, it is appropriate to search to see whether the idea being addressed is novel. Searches can be conducted anywhere in the world, but for convenience, searches are often initially done at a major patent office such as the United States Patent and Trademark Office.

It is important to appreciate that a prior patent or application is relevant as prior art not only for what it addresses in the claims but also for anything that is discussed anywhere in the patent document. A disclosure is a disclosure, no matter where it occurs.

Invention novelty searches are normally begun at a major patent office such as that in the United States where patent applications and granted patents are very well indexed and are easily accessible over the Internet. If you find your idea described in a patent document, your search is over. Your search is not over if you do not find your idea described in a patent document; in fact your search is never over as long as you do not find your idea described in the prior art.

If you get into litigation, your opponent may discover that references to your ideas have been made elsewhere. In one case in Canada, which went to Court on the subject of spiral nails, there was an additional disclosure in a prior Australian patent that was not found in corresponding patents filed in other countries around the world. It was, however, relevant to the validity of the Canadian patent. And that feature was not addressed in the claims of the Australian patent.

Examiners primarily review patent applications for novelty. But they are also entitled to question whether a patent disclosure addresses an invention which is useful and whether the disclosure is sufficient to obtain the promised results.

7. Invention utility and sufficiency of disclosure

There has been a lot of discussion, and criticism, of the United States Patent Office for refusing to grant patents that address Cold Fusion inventions. This is not as unreasonable as it may first seem.

A patent can only validly issue for an arrangement that delivers the useful result promised in the disclosure. Normally examiners take it for granted that the applicant's description of a machine or process meets this requirement. But at any time, if an examiner has good reason to suspect that the promised useful result is not available, or if the examiner simply suspects that the disclosure is inadequate to allow other people to build the invention, then the examiner may require that the applicant provide proof that these requirements are met.

In the case of applications that apparently are directed to perpetual motion mechanisms, the examiner may require the applicant to provide evidence demonstrating that the system will work and that the description of how to achieve the useful objective of the invention is sufficient. Fortunately or unfortunately, patent applications that are directed to Cold Fusion effects are treated as if they were equivalent to a claim to perpetual motion. This means that any applicant who proposes to patent a specific arrangement that will produce unexplained excess energy from Cold Fusion will be subject to a challenge from the examiner who will say: "Prove it!" The burden then shifts to the applicant to file evidence from reliable sources confirming all the representations being made in the patent application.

If you think about this last sentence, you will see that it is greatly in the interests of the patent applicant not to make extravagant representations in a patent application. In fact, you should never say that the invention is superior, cheaper or otherwise better in ways that will be hard to prove if challenged by the Examiner. It is sufficient to simply say: "I am achieving a useful result and there is something about what I am doing that is new." A patent application is not a place to include a sales pitch.

8. Importance of a complete disclosure on filing

At this point, it is important to observe that once a patent has been filed in final form, the "story" contained in the disclosure of the invention cannot be changed. Grammatical errors, however, can be corrected and any information that is already provided can be presented with different language, but the story itself is frozen. By way of contrast the claims can be amended.

The claims are the single sentences at the end of the patent that stipulate what the applicant believes to be new and for which the applicant seeks to obtain exclusive rights. Those claims can be rewritten, but only to the extent that they address what has been described in the story.

Once a final application has been filed, the disclosure content of the final application cannot be changed.

This is an extremely important consequence. The result is that you only have the flexibility of revising your application during the first year following the filing of a first Provisional application. After that, the application is frozen.

Technically, from then on, the inventor is no longer required. The application goes forward based on the words that are written and contained in the final text when the final application is filed. All over the world in various countries patent attorneys will engage in an exchange with the Examiner at the local national patent office based on the text in the final patent application. Those foreign patent agents do not really need to talk to the inventor as long as the application is comprehensible. The exchange with the foreign patent office will always take place on the basis of the final document as filed.

An applicant would be well advised to make a careful re-reading of his entire patent disclosure while there is still time to make amendments. If he has forgotten to mention something important at the time of filing, it will be too late to amend it during examination. But if he has said something that is incorrect it is permissible to delete the incorrect statement.

9. Parts of a patent specification

We could review individually the key parts of a patent disclosure: the Title, identifying the Field of the Invention, the Summary of the Invention, the listing of the Drawings and the Description of the Preferred Embodiment(s). But the most important part of any patent is the section containing the one or more claims at the end of the document. These represent the "shooting end" of a patent.

In a patent application, a patent applicant must include proposed claims that define the exclusive rights that the applicant hopes to obtain. Some may think of the Claims as being too complicated to understand. This is not necessarily true. Claims are supposed to be logical and grammatically correct.

10. Structure and function of patent claims

Each Claim constitutes a single sentence that serves as a check-off list for parts or components that constitute the arrangements which fall within the patent owner's exclusive rights. To infringe, competitors would need to adopt every element listed in a claim. Claims appear at the end of patent documents in the form of numbered sentences. Multiple claims are allowed. Each claim is a restatement of the inventor's exclusive rights with variations. The first claim is always critical.

The first Claim lists the minimum essential elements that need to be present in order for someone to infringe on the exclusive rights of the patent. Subsequent claims can refer back to the first claim and adopt its limitations by reference, and adding something more. These are dependent claims. Thus, Claim 2 may read:

"The Cold Fusion apparatus as in Claim 1 additionally including an ultrasound generator positioned to introduce ultrasound vibrations into the Nickel/Palladium as previously referenced."

This second, dependent, claim may therefore appear to be quite short. It is in fact a longer claim than Claim 1 even though it uses fewer words because, being a dependent claim, it adopts all the limitations of the independent Claim 1 by reference. And it is narrower in scope.

If Claim 1 is not infringed, then none of the claims that refer back to Claim 1 will be infringed either. This is because claims that refer-back adopt all the limitations of the earlier claim or claims to which they refer. Therefore if somebody does not carry out all the limitations of the earlier claim, they do not infringe the later claim. This is because the later claim adopts by reference all of the limitations of the earlier claim. The referenced earlier claim itself may refer back to a yet earlier claim. Claim 1 is always independent because there is no prior claim to which it can refer-back.

On this basis it can be seen why Claim 1 is so important. In fact, all of the claims that refer-back to an independent claim are potentially redundant. They are there merely backups in the event that Claim 1 fails, available as a consolation prize if the Examiner finds something which exists in the prior art that is described by Claim 1. In such a case Claim 1 will get a big red "X".

But an applicant may be entitled to amend Claim 1. If you have multiple dependent claims previously drafted in the document, you can propose to add limitations from one or more of the dependent claims to Claim 1 to avoid the prior art. If the Examiner finds this is acceptable then you will get a patent with your modified version of Claim 1. But it will have a narrower scope of monopoly because it will have more limitations. Dependent claims are pre-planned positions of retreat.

11. Sample patent application

To assist in understanding the nature of a patent, it is helpful to examine an application of Robert Godes, the inventor associated with Brillouin Energy Corp in California. The Web site for that company is: http://www.brillouinenergy.com/. The patent may be viewed at the US Patent Office website, www.USPTO.gov by entering the publication number: 20110122984.

This application has been rejected several times by the US patent Examiner, most recently on the basis of failure to demonstrate that the invention works. That hurdle can still be overcome by filing further evidence. Meanwhile, we can use this reference to review the scope of potential patent coverage that might be obtained.

12. Godes proposed Claim 1

In the Godes patent application Claim 1 is written out as a block of words completing the preamble, "I claim…" This is hard to read. But it is permissible to reorganize the layout of the words in this claim to identify the various elements for which exclusive rights are being sought. Here is a parsed version of that claim:

1. An apparatus for energy generation comprising:

- a body, referred to as the core, of a material capable of phonon propagation;

- a mechanism for introducing reactants into said core;

- a source of current pulses for establishing current pulses through said core,

> said current pulses inducing phonons in said core so that reactants, when introduced into said core, undergo nuclear reactions; and

- a closed loop control system, coupled

> to said mechanism for introducing reactants and to said source of current pulses,
>
> for specifying operating parameters
> > of said mechanism for introducing reactants and
> > of said source of current pulses,
>
> for sensing one or more operating conditions, and
>
> for modifying one or more operating parameters

thereby controlling the number of nuclear reactions and the depth of the nuclear reactions in said core so as to provide a desired level of energy generation, while allowing energy released due to the nuclear reactions to dissipate in a manner that substantially avoids destruction of said core."

Other independent claims in this application address operating the invention in a liquid phase. Claim 1, above, is not, however, so limited. Accordingly, Claim 1 has broader coverage. Correspondingly, Claim 1 risks being invalid if it describes anything present in the prior art.

As you run through the claim you will see that it is simply a check-off list of parts that have to be present in order for someone to infringe. If competitors omit one element listed in the claim, they will not infringe. The patent will be ineffective to prevent competition under those circumstances.

The art of good patent claim drafting is to draft a claim that addresses an essential collection of features that the competitors will have to adopt in order to compete. It is desirable for the claim to be short. Every time additional elements are added to the claim, competitors are provided with the opportunity of avoiding the claim by not adopting one of those additional elements. But elements may have to be added by an applicant in order to avoid the prior art.

Looking inside this claim we see that Godes has stipulated, or rather his patent attorney has stipulated based on instructions from Godes, that there must be "current pulses inducing phonons in said core". This means that there must be an electric current running through the host material that contains the deuterium or hydrogen nuclei.

However the disclosure recites repeatedly that cold fusion may be precipitated by the use of ultrasound or heat. Nevertheless we see that the patent attorney has limited the claim to require the presence of a pulsed electrical current for inducing phonons in the core.

With this limitation, the claim will not extend to or cover the precipitation of a Cold Fusion effect by means of ultrasound, heat or any other stimulant except the application of current pulses. The claim is narrower in its coverage than the disclosure.

We might ask why this would be done when it says in the document that the Cold Fusion effect could be precipitated by a variety of means, e.g. by current, ultrasonic energy or heat? By limiting Claim 1 to only one method of inducing phonons in the core, this claim leaves open the freedom for competitors to adopt other methods.

While this may appear to be a damaging initiative, there may be several explanations for why the claim has been so limited. If this were an oversight by the patent draftsman (not very likely), then it is still fixable as long as the applicant has a right to amend the patent claims and the amendments are based upon material contained in the disclosure. But we have to ask how this could have happened in the first place.

There is also a possibility that this stipulation for the presence of: "current pulses inducing phonons in said core" is an essential requirement to ensure the invention will work. In which case we have to go back to the disclosure and see whether the disclosure warns that there must be a pulsating electric current passing through the metal lattice as an essential feature. Having looked through this disclosure I have not found such a warning. But this is nevertheless a possibility.

And this limitation may be present because the applicant knows about the existence of something in the prior art that prevents the claim from being broadened to include ultrasound as an alternative to current pulses for precipitating a Cold Fusion reaction within the core. If such a prior art example does exist, then, unless covered by a patent obtained by someone else, the technology described in the prior art will be in the public domain and available to the public as an alternative to the technology claimed in the Godes application.

A further possibility, particularly available under US law, is that the claim may have been limited to its most important variant, removing alternatives only for the purposes of prosecution of an initial application. Such a procedure can simplify examination, removing the possibility that the Examiner may cite the other means for inducing phonons if the Examiner can find such references in the prior art. If a patent were to issue on this stripped-down claim focus, then US law permits the filing of an additional patent for the alternate variants. Such further one or more applications would be called "Continuations" based on the same disclosure and original filing date.

13. Inclusion of a theory in patent claims

As one last observation on Claim 1 referenced above, this claim adopts a theory of operation of the invention described earlier in the disclosure.

It is not necessary to include a theory of operation in a patent disclosure. The disclosure need only be sufficient in the sense that a recipe for baking cookies in a cookbook will eventually produce cookies. There is no need to explain the physics of the transformation from cookie dough to cookie that occurs in the oven.

Godes proposes a theory based on electron capture by protons to produce neutrons. This is followed by neutron capture to form higher hydrogen isotopes, e.g. ^{4}H which then, through beta decay, produce ^{4}He. Claim 1, however, adopts a broader theory.

Claim 1 addresses infringers who pursue the steps of providing: "current pulses inducing phonons in said core so that reactants, when introduced into said core, undergo nuclear reactions".

While a theory may be optionally present in a disclosure, in order to enforce this claim it will be necessary to demonstrate that this mechanism is occurring in an infringer's apparatus. Without such a demonstration, the claim will fail to achieve the objective of shutting-down the activities of a competitor.

It is dangerous to include in a claim theoretical requirements that are hard to prove. It is better just to stipulate the ingredients and their order of mixing if

you want to control the making of cookies by others.

14. Future of Godes application

This application has gone through several cycles of amendment, with the applicant paying special fees in order to amend. It still stands rejected because the Examiner says that the applicant's attempt to prove the utility of the invention was not good enough. This application is not being presently rejected because of applied prior art, although that could occur later. It is being rejected because it addresses a Cold Fusion invention and the Examiner is of the opinion that insufficient evidence has been filed to date in order to prove that the invention works.

I do not know whether the assessment of the Examiner is fair or not. Eventually, if the applicant has nothing better to present to the Examiner, the only recourse that an applicant has is to file an appeal to the Board of Appeals. But this is only justified if the applicant has filed adequate evidence that is sufficiently robust to satisfy the members of the Board of Appeal that the invention works and that the disclosure is adequate. Otherwise, the application may have to be abandoned. Because it was published as of 18 months from its earliest priority date, it may be too late to file a fresh application for the same invention.

On the other hand, the inventor may already have filed one or more further applications that have not yet been published. Such applications will only be published as of 18 months from the earliest priority date upon which they are based, allowing that there may also be a processing time delay particularly in the US Patent Office.

In this specific case, the Examiner is not applying any prior art to the claims. The Examiner has rejected the patent for failure to file sufficient evidence to demonstrate that the invention works. In such cases, an Examiner may choose to avoid investing effort in searching the prior art and assessing the claims for lack of novelty or lack of inventive step. But such an objection on these bases could still be raised subsequently.

15. Conclusion

Patents can be valuable. The value starts with a working invention that will serve people's needs. If an invention is a success, a patent can enhance the profitability of exploiting that success. But patents cannot make an invention succeed. It all starts with the invention.

A good invention combined with a good prior art situation must be supported by a properly prepared patent disclosure; otherwise a valuable opportunity may go to waste.

Patent applications that aspire to control the generation of energy through the effect of "Cold Fusion" are subject to the special procedure of demonstrating that the invention works as promised and that the instructions provided in the patent disclosure are sufficient to enable others to reproduce the invention.

Inventors embarking on the process of patenting should understand these requirements in advance and prepare their applications accordingly.

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