Geez, One-and-a-Half Page to Describe my Netlist in One Sentence!

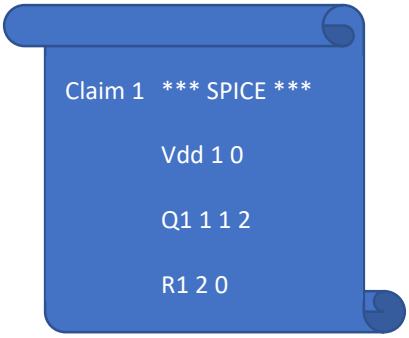
This Patent Stuff and My Semiconductor Business – Part 29

Welcome to this post about patents and chips. Not a lot has been written about this combination, but there is a lot to know, especially for the innovators and entrepreneurs themselves. In this three-weekly series, I talk about various aspects, from a dual perspective of a patent agent and a semiconductor entrepreneur. If you like the article and read it on LinkedIn, give it a thumbs up, and/or click on Follow. If you like to work with us for your next patent, "contact us" info is on www.icswpatent.com. You can also subscribe/unsubscribe for short email alerts when the next post is available.

Your top designer has invented this really cool circuit that takes half the power and delivers 50% better performance than the competition. It can even be manufactured in standard CMOS. Now you can keep your next chip in 22 nanometers and don't need to migrate to 14 nm FinFET. That will save you a ton of money and will have your competition scrambling!

You just need to protect your invention, so that they don't all copy the thing. You go for a patent and will also register your layout to protect the mask works.

Your patent practitioner even understands your invention. Life can't get any better. When you read the draft, it looks spot on. Just the claims are a bit funny. Claim 1 is one sentence of one-and-a-half page, and it is basically a netlist of the circuit. Couldn't he better have just copied the SPICE deck? And if patents need to be as broad as possible, couldn't he leave a bit more room for variations?



To be frank, I've been there myself.

Here's the situation: chip circuit innovations have been going on for more than half a century. The 1970s were probably the golden time, and many of the bipolar transistor pioneers in Silicon Valley developed a good number of basic circuits. Later innovators improved on and expanded on those. CMOS became dominant, so innovation started focusing on that. Thousands of designs were made, produced, sold, and published. There is a boatload of prior art. It is almost impossible to patent a broad class of circuits, because in many cases an innovation today is only a couple of transistors different than something that was done before. Your patent application can only have a narrow scope. The invention must be claimed in great detail.

Another thing is that litigators really like netlist claims. If you ever have to take on an infringer, then your lawyer will love it if he/she doesn't need to read the description but can just look at the claim and go "Check, connected! Check, connected! Etc.).

Yet another point is that when it is so close to something that may have been done before, there is a good chance that the examiner will find a couple of prior works that, together, have all the elements in your current invention. That will give him/her ammunition to reject the application as being obvious.

Obviousness rejections can be hard to overcome, even if your claim is very detailed, and thus very narrow. But the majority of patent examiners are not bogeymen who are out to hurt you. They just do their job and find reasons why a patent should not be allowed. The way I see it, they provide you a first line of defense against getting a worthless patent. Say, they would be really "friendly" and would just accept whatever you put in front of them, then competitors would *en masse* attack your issued patents. It already happens a lot that issued patents are challenged, and without the examiner's work, very few patents would survive those challenges. Your cost, at that stage, would be much higher than when you go through the normal process, with a smart examiner who is critical and does a good job of saying "no" when it should be "no". Or rather, "not yet".

As I said, I've been there. One of my inventors had a brilliant circuit. It turned out that somebody in Korea had been about as brilliant, twenty years earlier. The difference was only one transistor. We let it go, as the invention was not core technology for this company. But, as I sometimes remind inventors: it is easy to recognize if an invention is brilliant, but it is almost impossible to know if somebody else wasn't brilliant before, too. Finding this particular prior art would have been possible with a good prior art search. But it might not have been easy, and it could have been expensive to find it. Both the inventor and the examiner had done a great job.

What would have happened if this had been core technology for this company?

The same inventor had another brilliant idea. He had, once more, used his brain differently than anybody else. He recognized a problem that occurred in his class of timing circuits. It was a problem that occurs at the highest speeds, or at the lowest power. Some kind of glitch. He figured out a brilliant way to mitigate the effect of the glitch, resulting in an architectural change. When his patent application was examined, the examiner found two pieces of prior art that, when combined, had all elements of the claimed invention. So, the examiner rejected the independent claims on the basis of obviousness. But the examiner accepted one of the dependent claims.

Normally, to overcome an obviousness rejection, you can do two things: (1) prove that the cited prior art doesn't teach all elements of the current invention; or (2) amend the rejected claim to include something that the cited prior art doesn't have. In this case, I could have taken the content of the accepted dependent claim, and moved it into the independent claim. That would have been an easy way to get the patent allowed. But it would also narrow the patent's scope, and make it much less valuable. It would essentially have given the invention away to all competitors.

In this case, one of the two cited prior art documents was a patent by an industry veteran who developed the main technology while he worked at TI. He then went on to teach at several universities in Europe. He wrote the textbook about the technology and has a laundry list of patents on the subject.

I decided to (formally) call the examiner, and discuss the situation. Even this professor, who is the world's foremost authority on this particular timing technology, had never used, published, or suggested either the problem addressed in this invention, or its solution. So, in my view it was not reasonable to say that a person with ordinary skill in the art (known in the patent world as a POSITA) could have come up with the idea. In other words, it wasn't so obvious.

The examiner agreed, and withdrew the rejection. A brilliant idea got its maximum protection.

Claims are interesting beasts. They are always exactly one sentence only. The language can be a bit weird. But they must represent the invention, and you must be able to go element by element, and recognize your invention. You may have questions when you read the claims. Ask them—your patent practitioner will be happy that you looked at it critically, and will explain the thinking or strategy behind the verbiage, or structure of the claim. Much better than that you take it for granted.

Upcoming:

30. How Patents, Secrets, Open Source, and Reverse Engineering Help Humanity
31. Can't I Just Hide My Invention in My Chip?
32. My invention can be implemented with 500 different circuits. Can a patent cover that?

Published so far (find the articles on www.icswpatent.com or #ThisPatentStuff):

29. Geez, One-And-A-Half Page to Describe My Netlist in One Sentence!
28. CES or DAC Is within Weeks. I Got to Present and Demo There!
27. Is it OK if I Can Hardly Recognize My Own Invention in the Application?
26. So What If the Patent Guy Doesn't Understand?
25. I Can't Wait for the Patent Office for 3 Years, Can I?
24. Can I Check If My Patent Guy/Gal is Doing a Good Job?
23. Do I Really Need to Spend So Much Time to Get a Patent?
22. They Don't Understand My Invention‼
21. Why Are Patent Claims So Weird, Anyway?
20. My Company is in Brazil. How Do I Manage Patenting Worldwide?
19. How Many of Those Patent Office Actions Should I Budget For?
18. Should I Pay Extra to Get the Patent Faster?
17. A Prior Art Search Before Filing the Application

16. How Do I Screen My Employee's Invention Before Deciding on a Patent?

15. How Do I Know If My Invention Is Patentable?

14. I Want to Use an FPGA Before an ASIC. Can It Be One Patent?

13. I Want to Protect It Now, But Am Still Working Out Architecture Details. Can I Add Those Later?

12. My Invention is Vital for My Business Plan. But I Don't Have Much Money Yet. How Can I Save?

11. What Makes and Inventor, and How Can I Stimulate Innovation?

10. Should I Do a Provisional, Non-Provisional, Or a PCT?

9. My CTO Can't Explain His Invention to Me. But He Is the Smartest Guy in the World.

8. I'll Be A Billionaire Soon Enough. But Now I'll Just Buy This Book on Patent Writing on thriftbooks.com.

7. Woohoo! I Invented a Huge Improvement over My Competitor's Invention!

6. How is a Chip or Firmware Patent Different than Other Patents? What About a Software Patent?

5. Choosing the Right Patent Person for Your Inventions

4. In What Countries Should I Patent, Anyway?

3. Developing an IP Protection Strategy for Your Semiconductor Company – PART II

2. Developing an IP Protection Strategy for Your Semiconductor Company – PART I

1. So You Got This Great Idea That Will Wipe Out Competition. Now What?

Disclaimer

Please do not construe anything in this article as legal advice: it isn't. The article contains my private opinions, based on experience as a semiconductor industry entrepreneur and as a patent agent fighting for the inventor and the entrepreneur. If you need a strong patent on your circuit and/or system, I might be your guy.

I work directly for patent customers, and am also associated with Haynes, Beffel & Wolfeld LLC (HBW) and Trellis Intellectual Property Law Group PC (Trellis). All opinions in this article are mine only. The article has not been reviewed by either HBW or Trellis, and its content does not represent their opinions or advice.

www.icswpatent.com