

CHAPTER
11

The Business of Inventing

DAN Tedesco noticed two things while standing in front of the vending machine down the hall from his desk. First, the machine was once again sold out of Snickers bars and, once again, still held a stack of Mounds bars. Second—and this was the thing that bothered him—Snickers bars and Mounds bars both sold for the same price. On this particular day this seemed particularly wrong.

Incongruity is the mother of invention. Dan Tedesco is an expert in something called “revenue management.” He works at Walker Digital, the parent company that created and spun off Priceline, the reverse auction company. Priceline’s original focus had been on selling seats on airplanes that would have otherwise stayed empty. Prospective travelers offer to buy seats between, say, Chicago and Phoenix at some price that they are willing to pay. Then the airlines flying between Chicago and Phoenix survey the offers from different buyers and decide whether they have seats that look like they will otherwise go unfilled and whether the offers look attractive. If it looks like accepting an offer will produce some additional revenue (the plane is flying in any case, with or without customers in seats), the airline sells a seat at the offered price. Consumers think of Priceline as a way to fly on the cheap. But airlines think of Priceline as one component in their broader programs for revenue management. Tedesco knew all about those programs.

Why couldn’t you use revenue management to make vending machines more profitable? Why should candy bars, chips, and the other products in vending machines always sell for fixed prices rather than in response to the preferences of the local market that the vending machine serves? Many new vending machines have microprocessors;

why not use the machines as point-of-sale devices in an overall revenue management system? Tedesco went back to his office with a candy bar that he didn't really want and began thinking about these questions.

Tedesco works in an environment that takes such questions very seriously. His business card says that his title is "Inventor." Walker Digital has developed a set of procedures to help inventors determine whether questions such as Tedesco's have answers that might lead to useful inventions.¹

The first step in the Walker Digital process involves making a quick determination as to whether the inventor really has a new idea. Have other people been thinking, talking, or writing about applying revenue management to vending machines? If so, even if it is a great idea, it may be difficult to protect. Walker Digital is not interested in business ideas that are just going to be copied as soon as they are introduced. Instead, Walker is interested in inventions that are unique enough to receive patent protection.

In the course of assessing the "protectability" of his potential invention, Tedesco surveyed the structure and the state of technology in the vending machine industry. His objective was to determine, first, whether the idea looked viable from the 35,000-foot level. For example, if he had found that digitally controlled vending machines were having a hard time finding acceptance and that the industry was moving back to mechanical machines, that would have been a cause for concern (and perhaps an indicator that there was another potential invention lurking in the background).

What Tedesco found was reassuring. Microprocessors were being used in increasing numbers of vending machines, but the focus was on bringing down costs, on performing basic accounting, and in some cases on enabling purchases against a debit card rather than requiring change. In other words, the vending machine industry was still thinking of the machine's function in the same way that it had for the last fifty years, as a dispensing and collection device. Nobody was thinking in terms of the machine as a point-of-sale device within an inventory and revenue management system. So, Tedesco's insight might really be a new one, which is to say a protectable one.

Having established that the potential invention was worth a closer look, Tedesco's next step was to arrange a "knockout" search. At Walker Digital the small group of inventors is complemented by a small group of top-notch patent attorneys. Since the potential value of an invention depends both on its solving a business problem and its being protectable, attorneys and inventors work together as a team from the outset. At Walker there is no throwing an invention over the wall to "legal" to start the patent process; the legal and business objectives are pursued in parallel. The purpose of the knockout search, which involves an average of 10 hours of patent and literature

searching, is to uncover any prior art that might weaken or constrain the invention's patentability and value.

Dan Tedesco's vending machine idea made it through the knockout search without a hitch. That meant it was potentially valuable enough to bring before the entire group of inventors at Walker for consideration, brainstorming, and critiquing. The working group of inventors, led by founder Jay Walker, is small, numbering between a half dozen and a dozen people. The size varies as inventors move from the working group out to individual projects and back and as the group looks at different technologies and businesses.

The inventors are generalists who have acquired lots of specific knowledge over time. They proceed by asking questions. Why hasn't revenue management been thought of before in the vending machine industry? How is ownership and control of vending machines distributed: who would make the buying decisions? How would the cost of the management compare with the expected revenues?

The objective is not to answer all the questions but instead to ensure that there are no immediately negative answers—no slapping of a palm against the middle of a forehead. The questions, of course, also push and extend the inventor's thinking. If the questions raise only interesting possibilities, and if the impact and value of the invention looks large enough, the group authorizes further investment in developing and patenting the invention. Everybody at Walker Digital, attorneys and inventors alike, has an equity stake in the outcome; everybody wants to develop a portfolio of inventions that builds value, and nobody wants to waste time on marginal inventions.

Tedesco received authorization to proceed with developing his potential invention. This meant weeks of intense research and work to define the scope of the invention, develop and describe an implementation, and evaluate the business case behind the invention's use. The research required analyzing the structure of the vending machine industry and understanding current revenue flows and bottlenecks. The analysis looked both for horizontal applications across the different industry segments and for rich, vertical starting points. Tedesco looked beyond U.S. practice to understand how the vending business works in Japan and other countries where vending applications are radically different than they are in the United States. He focused on understanding how the patent would become an opportunity for Walker Digital to make money.

The research took about a month. Tedesco had been working with the patent attorneys assigned to the team from the outset; now it was time to develop the disclosure statement that would be used as the foundation for the patent. The research team had been continuing its search for prior art and for possible evidence that the invention

might be obvious. At Walker Digital the average amount of time invested in patent and literature research for a patent application is 26 hours, in addition to the time spent on the knockout search. Outside of Walker the average amount of time spent searching for prior art related to an invention is more like 8 hours. The investment that Walker makes in its research is a reflection of its focus on protectability. Walker intends to make money by enjoying a protected monopoly on important ideas. It wants its monopoly position to be a sure thing.

Walker Digital constructs its invention process around the fact that the U.S. patent system grants patent rights to the person who is the “first to invent” something, rather than first to file a complete patent application. This means that Walker moves quickly once it has an interesting idea. It also means that Walker is careful to document each step of the process, starting with the initial idea and going forward. All documents are notarized. If it looks like it will take more than a few weeks to define the claims that will be made in the patent and to reduce the invention to practice, Walker will sometimes file a provisional application, which requires only a description of the invention but does not require claims. The purpose of the provisional application is to establish an early filing date to support the other evidence that a Walker Digital inventor was, in fact, the first to invent.

In the case of Tedesco’s vending machine invention, the Walker team was able to prepare an initial patent application after several months of work. But filing the application, complete with claims, was in no way an end point. Walker Digital is a business methods laboratory. The company’s value is tied to the value of its inventions. That value is determined, in part, by ensuring that inventions can be protected. Protectability is what drives the company’s focus on rapid development of inventions and of patent applications. But the other key determinant of an invention’s value is its scope and its ability to either increase a business’s revenues or decrease costs. Walker Digital wants inventions that are not only protectable but that also have a big impact.

It would be very unusual to have developed the maximum scope and impact of a new business method in just a few months. So, after the initial application filing, Tedesco continued to study the vending machine industry. He also began looking hard at the more general issues associated with revenue management in retail sales. He began thinking about ways to sell slow-moving inventory, or inventory that is reaching the end of its shelf life, by changing things other than price. What would happen if, instead of dropping the price, you offered package deals that bundled slow-moving products with ones that were in more demand? In other words, the initial patent application was not an end point but a beginning. Dan Tedesco had a lot more work ahead of him.

A Business Method Laboratory

Dan Tedesco and the company that he works for, Walker Digital, approach business method patents from a different direction, with different objectives, than Amazon, Signature Financial Group, and most other companies that we have looked at in the preceding chapters. Walker is not selling books or managing funds but is actually focused on inventing new ways to do business. Its inventions center around the way that networks, distributed computing, and encryption create new opportunities to access and use information. Tedesco's vending machine invention is a good example: the key to the invention was the realization that the vending machines with microprocessors (and perhaps with an address on the Internet) have access to information that is not currently being put to productive use.

At Walker Digital the process of invention is not a complement to the primary business; it *is* the business. Success is measured in terms of the company's ability to create inventions that can be spun off into new companies or that can be licensed to other companies and perhaps traded for equity in those companies. Patents are central to the Walker Digital strategy: Walker is counting on receiving a limited monopoly that protects its exclusive right to exploit its inventions.

Monopoly is a familiar game for Jay Walker, the company's founder and driving force.² As a student at Cornell University he took on the task of mastering the Parker Brothers game of that name and, within a couple of years, won the world championship. To describe the situation using one of Jay Walker's favorite metaphors, he unraveled the DNA of Monopoly. Naturally, he decided to profit from his research, and so, continuing the metaphor, he published a book that contained the DNA sequencing for Monopoly, titled *1,000 Ways to Win Monopoly Games*. One might have expected Parker Brothers to see such a book as free promotion for the game—a good thing. But instead the company reacted as if Walker really were publishing Monopoly's DNA sequencing and, before the book appeared, sued Walker to stop publication. Walker hired attorneys and fought the suit, arguing that Parker Brothers was attempting to exercise prior restraint against his right to publish freely. He won the case and ended up using the proceeds from the book to pay for his legal expenses.

After graduating from Cornell, Walker started a number of publishing ventures, including a magazine that focused on coupons and other promotions for retail businesses. It seemed that every time he got a new idea, he started a new business. By the early 1990s he had started more than a dozen of them. Some didn't work out, but others, such as the businesses that grew from his idea about ways to automate magazine subscription renewals, made a fair amount of money.

In the early 1990s Walker began reading about encryption and the truly revolutionary invention by Ron Rivest, Adi Shamir, and Leonard Adleman of a way to exchange encrypted information without first exchanging encryption keys. (This is the RSA public key cryptography algorithm, U.S. patent number 4,405,829. I provide an overview of this algorithm and its uses in Part III as part of the description of electronic signatures.) Walker had been thinking about casinos, and it struck him that encryption provided a way to create a hand-held casino that would be immune from cheating and deception. But along with this insight came a problem: his model for making money from his ideas had always been to build a business around them. He wasn't going to open a casino. Besides, it seemed to him that the idea of encryption was so powerful and had the capability of transforming so many businesses—not just casinos—that he felt suddenly overwhelmed by opportunity. He could not possibly start and successfully manage the scores of businesses that corresponded to all the applications that he could see for encryption. Was there some way to ride above the details of all these individual businesses and make money just by developing the ideas? Walker began reading up on patent law. In an interview with *Strategy+Business* published in mid-2000, he described what happened next:

I hired some lawyers and said, "Let me see if I've got this right. If I invented the credit card and was able to describe it as a 'periodic billing system for transaction charges,' I would have been able to own the credit card?" And the patent lawyers said, "Yeah." I said, "If I invented the frequent-flyer program as a 'rewards points tracking system,' I could have owned any frequent-flyer program?" "Sure, of course," they said.

And I said, "Does it strike any of you as odd that nobody owns those things?" And they said, "Business does that all the time. They invent things and they don't realize they could own them." . . .

So I started raising and investing millions of dollars on the basis that I could invent new solutions that were indeed ownable. If they were useful, they'd be valuable. And if they weren't useful, I would just own something useless. The only question was: Was I going to own land in Montana or own land on Park Avenue. That's about the quality of invention, not the quality of patents. It turns out I can own land on Park Avenue.³

In short, when Jay Walker understood that he could patent business methods, he realized that he had found just what he was looking for: a way to own a new business idea, such as the idea to apply revenue management to vending machines, just like he could own a car or land. If he could own enough really critical, valuable patents, it would be just as good, maybe better, than owning a lot of midtown Manhattan. In the past year Walker Digital has applied for around 150 patents, each one a piece of conceptual real estate located somewhere between Montana and Park Avenue.

The most well-known Walker patents are the ones associated with Priceline. In the case of these patents Walker fell back to his old model of starting a business as a way of getting a return from his inventions. Walker describes this as a kind of bootstrap strategy—a way to generate some immediate cash flow while he waits for his other investments in inventions to mature. The intent over the longer run is to demonstrate to established businesses how they could benefit from the inventions. Once Walker Digital sells a company on the value of a new invention, Walker and the partner company can work together to find ways to cooperate and share in the upside. The options range from equity partnerships to simple licensing agreements.

In summary, Walker Digital is playing a long game. It typically takes two to three years to receive a patent, and in most cases Walker Digital will want to wait until the patents are in place before beginning the sales, demonstration, and negotiation process. Full patent protection increases Walker's leverage in negotiations about licensing and ensures that anyone who decides to simply copy the ideas and infringe on Walker's patents will be facing treble damages. It's just like Monopoly: you want to make sure, if possible, that you have hotels built on Boardwalk and Park Place before the other players land on them.

Inventing from Value and Extending Value

One of the key ideas at Walker Digital—an idea that other companies might usefully emulate (it's not patented)—involves focusing on the value of inventions. There are two parts to this idea. The first has to do with where ideas come from. The second has to do with how the ideas grow and extend.

For many companies the value is centered in the technology. Stac Electronics, discussed in the preceding chapter, is a good example of how this works. Stac invented a nice, fast compression algorithm. Stac's managers are astute businesspeople and so they have been diligent in finding new markets for compression technology, starting with tape backup, extending to real-time disk compression, and most recently moving into network support systems. But the applications have emerged from the technology. It is as if Stac has an answer, and the answer is real-time compression, and the company has spent the last decade looking for questions to which it can apply this answer.

Walker Digital reverses this process. It begins by looking for things that seem broken or wrong. Sold-out candy bars when a vending machine is still full of other brands of candy bars looks wrong. Starting with the business problem, Walker begins its research to find whether a solution to the problem looks protectable, whether good

solutions are likely to exist, and whether there is enough value in the solution to provide Walker with property on Park Avenue rather than property in Montana. In short, Walker has identified the value and potential licensees even before it reduces the invention to practice.

Even so, inventions at Walker Digital are not rifle shots; when someone is thinking about a business problem, one thing leads to another. That is what happened with Dan Tedesco. Working with the rest of the Walker team, he filed the patent application for his vending machine invention, titled “Method and apparatus for dynamically managing vending machine inventory prices.” But once he began seeing the retail inventory problem in vending machines, he began seeing it everywhere. That is one of the important functions of the brainstorming and inventing sessions at Walker Digital—important business insights often reveal other opportunities to create value.

For example, Tedesco’s vending machine work came together with other work on revenue management at Walker Digital to extend the thinking about revenue management from vending machines to fast foods. As Jay Walker describes it, a typical fast food franchise might have profits of around \$300K per year. But that same franchise will give millions of dollars in change back to customers. Why? Do the customers want all of those quarters, dimes, and nickels? Walker’s bet is that they don’t. They’d rather have fries, or maybe a cookie for dessert.

The Walker Digital team saw a convergence of several problems and opportunities. In the simplest case, suppose a customer has 43 cents of change due. If the order did not include fries, the customer might find the offer of a bag of fries that normally sells for 79 cents to be an attractive alternative to receiving the change. If the actual cost of fries to the vendor is only 22 cents, the proposition makes sense for the vendor, too.

Things are more complicated if the restaurant has a policy of discarding fries after they have been on the hot table for more than 20 minutes. If the fries are 18 minutes into their shelf life, it might make sense to the vendor to offer them to a customer in return for change even when the amount of change is only 15 cents. The customer gets a great deal, and the vendor avoids losing the entire value of the product.

The problem with such complicated offers is that the cashier, who is the point of contact with the customer, could not possibly keep track of all the offers and revenue enhancement possibilities without assistance. So, the Walker Digital team devised a system using databases, order information, and information from timers used for quality control to dynamically calculate the most interesting offers and opportunities for revenue enhancement. The system then turns these opportunities into prompts that the cashiers can read from the point-of-sale terminals. “I see that you have 43 cents in

change coming back to you. We have a special promotion where I can offer you our 79-cent fries in place of that 43 cents. Would you like the fries?" The result is an invention that was awarded patent number 6,119,099, titled "Method and system for processing supplementary product sales at a point-of-sale terminal." A prototype is in use in the Burger King across from Walker Digital's offices.

What is interesting about this invention from a patent processing point of view is that Walker applied for this new patent by making use of a U.S. Patent Office procedure called "continuation-in-part" (CIP). A CIP is filed while an original, parent patent is still pending. Here is the reference to the parent and applications presented in the '099 patent:

The present application is a continuation-in-part application of co-pending patent application Ser. No. 08/822,709, entitled "System and Method for Performing Lottery Ticket Transactions Using Point-of-Sale Terminals" filed on Mar. 21, 1997, incorporated herein by reference.⁴

Notice that the earlier patent is still pending. The CIP provides Walker with a way of mixing old claims with new ones. Here is an even more dramatic example of use of the CIP procedure—this one is from patent 6,138,105, an invention that represents more of Dan Tedesco's work on vending machines and related revenue management ideas (don't worry about the details here—just skim this to get a quick sense of what is going on—the sequence of "begats" is almost worthy of the Old Testament Book of Genesis):

This is a continuation-in-part of commonly owned, co-pending U.S. patent application Ser. No. 09/012,163 entitled "Method and Apparatus for Automatically Vending a Group of Products" filed Jan. 22, 1998, which is a continuation-in-part of commonly owned, co-pending U.S. patent application Ser. No. 08/947,798 entitled "Method and Apparatus for Dynamically Managing Vending Machine Inventory Prices" filed Oct. 9, 1997, and a continuation-in-part of commonly owned, co-pending U.S. patent application Ser. No. 08/920,116 entitled "Method and System for Processing Supplementary Product Sales at a Point-of-Sale Terminal" filed Aug. 26, 1997, which is a continuation-in-part of U.S. patent application Ser. No. 08/822,709 entitled "System and Method for Performing Lottery Ticket Transactions Using Point-of-Sale Terminals" filed Mar. 21, 1997, the entirety of each being incorporated herein by reference.⁵

Notice that both the '099 patent and the '105 patent start from the same root on the "family tree," a March 1997 patent application dealing with lottery tickets. The CIP procedure gives Walker a way to associate earlier dates with patents, making them easier

to defend: even though the '105 patent was not filed until May 1998, it has, in part, claims that go back more than a year earlier. Even more important, notice how the CIP provides Walker Digital with a way to organize its patents that actually reflects its internal process of continual development, refinement, and extension.

As Jay Walker learned during his first years at Cornell, the way to win at Monopoly is to keep improving your properties, adding value so that they are worth even more when another player lands on them.

Walker Digital's Big Idea

Just as the general debate over business method patents is polarized, so is the view of Walker Digital polarized. Some people see innovation and genius. They think that, just as Gideon Gartner invented a new kind of business when he created Gartner Group as a decision support and industry analysis service in 1979, so is Jay Walker creating a new kind of business with Walker Digital. Inventing is hard, requires different internal processes, and demands a different focus than most companies can afford to maintain as they manage the patterns and disciplines of their core businesses. It's like architecture. Most companies don't have architects on the staff; they hire them when they want to build a new building. Perhaps someday they will also hire a business method laboratory when they need to renew or reinvent their business processes.

Other commentators view Walker Digital as something closer to the work of the devil. They suspect that Walker is consciously using the weaknesses in the patent system to engineer a massive intellectual property land grab, providing very little value in return for a frighteningly large monopoly on business methods. They assume that, given enough property, Walker Digital will be able to litigate its way to wealth.⁶

Still others just see Jay Walker as the "guy with the patents."⁷ Not a threat, and not the harbinger of a new business model either. The tendency to write Walker Digital off as being an odd company of no real significance has been particularly strong since the fall of Priceline's fortunes, and stock market value, in the last months of 2000. Priceline's stock fell to less than 1 percent of the value that it had earlier that year. Because Priceline was a key component of Walker's strategy for bootstrapping Walker Digital, the enormous change in Priceline's value has had a big impact on Walker Digital's immediate operations. But it is a mistake to confuse the two businesses or to equate Priceline's troubles with a judgment on the value of what Walker Digital is doing.

My own take is that Jay Walker and Walker Digital have picked up on a really important new idea. Time will tell whether they can build on the idea, how they will

make money from their portfolio of patents, and how other companies will respond to offers from a business methods laboratory—but the big new idea is right.

The idea is that we are reaching the end of interesting ways to use computers, technology, and better access to information to reduce costs and increase efficiency. We have been automating business processes for almost half a century and have been reengineering the enterprise for over a decade. It's over—we are chasing diminishing returns. Applying Web technologies to existing business methods to wring out more costs and save more time is a fine thing to do, if its cheap, but it's a thin play. It is certainly not the foundation for a "New Economy."

Having said all of that, I believe that the Web really does hold out the promise of creating new value. Getting at the new value involves inventing new ways to do business. With more information available more cheaply, the big win is not to find ways to use the information to improve efficiency; instead it consists of using the information to create new value. We are reaching the end of the time when rewards go only to speed and execution and are entering a time when rewards will be attached to thinking deeply and creatively to make something new.

That's the big idea. It is a hopeful, optimistic idea. Walker Digital understands it and believes it. We will see what they do with it.

Learning from Walker Digital's Practices

At the more mundane level, Walker has, of necessity, figured out some useful, innovative approaches to working with patents, particularly business method patents. Any company interested in using patents to protect its assets can learn from Walker's example. Here are the key points:

- Invent starting from value rather than technology. This typically means focusing on a business problem that, when solved, opens up new opportunities for creating value. This advice is most important for business method patents.
- Notarize and log everything as you go.
- Understand that business methods *can* be patented. Even if, for some reason, you choose not to pursue a business method patent, understand that some other company might do so. This means that keeping careful track of development work, complete with dates and notarization, is important even if you do not intend to seek patents: it provides you with a defense against patents by others.

- Recognize that the return that you can receive for your investment in an invention is a function both of its value to those who use it and your ability to protect it from copying. Patents are, of course, an excellent way to address the second concern.
- Because protectability is so important, you should take the search for prior art very seriously. There may not be much point in developing an invention that you cannot own (and perhaps cannot use without infringing on someone else's patent).
- Patent attorneys and inventors should work together from the outset of creating an invention. Don't do the work and then hand it to the legal department.
- Consider use of a provisional patent application if it looks like developing the full application might take awhile.
- Keep extending the value of your patents. View the patent application as a way point in a longer journey rather than an end point.
- Consider use of continuation-in-part applications as a way to formalize and recognize your continuing efforts to refine and extend your inventions.
- Repeat: start from the value, not from technology.

As always, the usual disclaimer applies: this is not legal advice. If you are developing patents you should be working as closely as possible with good patent attorneys.

Walker Digital is a wonderful example of a company that is making the most of current patent policy as it has emerged through the courts and in the hands of the PTO. Congress, of course, can change patent policy. In the next chapter I look at what Congress has been doing and at what it is likely to do next.

Notes

1. Information about Walker Digital's internal processes was collected during a set of e-mail exchanges and from a site visit to Walker's facility in November 2000. Chief Counsel for Intellectual Property Dean Alderucci was particularly helpful in explaining processes and in reviewing a draft of this chapter.
2. Biographical information about Jay Walker comes from interviews that I conducted at Walker Digital on November 21, 2000, and from an article in *The Industry Standard* (December 18, 1998) by David Noonan titled "The Priceline.com is Right."
3. As quoted by Randall Rothenberg in "Jay Walker: The Thought Leader Interview," *Strategy+Business*, 19(2), 2000, pp. 87-94. This interview provides a good synopsis of Jay Walker's thinking about patents, technology, and the future of the Web.

4. From the text for patent 6,119,099, accessed in May 2001 at <http://164.195.100.11/nethtml/srchnum.htm>.
5. From the text for patent 6,138,105, accessed in May 2001 at <http://164.195.100.11/nethtml/srchnum.htm>.
6. For an article that develops this darker view of Walker Digital, see Mark Gimein's "Jay Walker's Patent Mania," in *Salon* magazine (August 27, 1999). Accessed at <http://www.salonmag.com/tech/feature/1999/08/27/priceline/index.html> in December 2000.
7. From James J. Cramer, "Jay Walker Has Left the Room," *TheStreet.com*, October 6, 2000. Accessed at <http://www.thestreet.com/comment/wrongtactics/1114317.html> in December 2000. This is a good example of a viewpoint that looks only at current financial performance of Walker properties, in particular, Priceline. I would argue that the more interesting things about Walker Digital are still below the surface and won't show up in immediate financial performance.

