The American Patent System and Farm Steam Engines

By Robert T. Rhode

That puffing engine we see rolling along at the agricultural steam show is a collection of parts. Some are essential in making the machine go; others serve a more utilitarian purpose, such as fastening one thing to another. A hundred of the parts might be said to be essential. Counting the utilitarian parts, over a thousand parts comprise the steam engine. Logic suggests that each farm engine builder must have held at least a thousand patents to protect the various parts so that they would not be copied by a competitor. But not so! In their heyday, each of the fifty or so major producers of farm steam engines in the United States held no more than a dozen patents for steam engine parts—and many of the builders held patents that could be counted on one hand. Only a few of these major producers held more than a dozen. Plenty of the parts for which patents were held barely qualify as essential. What explains what can be perceived as the relatively low number of patents? This article examines four answers to the question:

1. When America began building farm steam engines, most of the essential parts of such machines were already in the public domain: that is, no intellectual property rights covered those parts. By the 1870s and 1880s (when agricultural steam engines came into their own), the fourteen-year patent protection period (plus any seven-year extension) of most of the once-protected parts of farm steam engines had run out, and such parts could be imitated freely.

2. Builders of farm engines sought patents for only those inventions or significant improvements that distinguished their products from those of their competitors. Some builders perceived patents as helpful advertising, or "talking points"—commendations akin to prizes. Advertisements for agricultural steam engines occasionally mentioned patents.

3. Faced with a choice of making the precise functions of their inventions publicly known or trying to keep them secret, some builders might have decided not to seek patents. (Others secured patents but cleverly hid the inner working principles behind the language of the patent application.) Evidence for reluctance to file for patents is nearly impossible to obtain, but, as is often said, absence of evidence does not mean evidence of absence.

4. Rarely (if ever), pressures against monopolistic practices might have dissuaded builders of farm steam engines from taking out patents.

The patent story begins in England, where, during the Middle Ages, monarchs came up with the idea of selling monopolies to raise revenues. Such monopolies included builders' products and an assortment of intellectual endeavors. Monopolies occasionally stifled competitive inventions and were financially disadvantageous to the public. After sufficient outcry, monopolies were outlawed. In succeeding centuries, patent rights that did not produce full-blown monopolies were granted. Granters of patents did not check to see if inventions were valid. Anyone paying the steep filing fees was granted a patent. Those who could afford to pay were assumed to be among the nobility or the gentry and above reproach. Rich heads of trading companies patented devices they had not invented. Machines that had long been used by the public were patented. To rectify such abuses of the system, rules governing the application process became narrowly prescribed.

Soon after England's Industrial Revolution began, interest in securing patents became widespread. The numbers of patents on both sides of the Atlantic Ocean mushroomed throughout the nineteenth century and thereafter.

Scottish inventor James Watt's first patent in 1769 for an improved steam engine had been involved in litigation, but, ultimately, it had proved to be of great commercial benefit. Watt blazed the trail for generations of inventors that followed. His achievement has been viewed in opposing ways that highlight the problems with analyzing the effects of patents.

Michele Boldrin and David K. Levine's *Against Intellectual Monopoly* (2008) offers one perspective: "Was Watt's patent a crucial incentive needed to trigger his inventive genius, as the traditional history suggests? Or did his use of the legal system to inhibit competition set back the industrial revolution by a decade or two? More broadly, is the system of intellectual property—patents and copyrights—with all of its many faults, a necessary evil we must put up with to enjoy the fruits of invention and creativity? Or is it an unnecessary evil, a relic of an earlier time when governments routinely granted monopolies to favored courtiers? … In the specific case of Watt, the granting of the 1769 and especially of the 1775 patents likely delayed the mass adoption of the steam engine: innovation was stifled until his patents expired; and few steam engines were built during the period of Watt's legal monopoly. From the number of innovations that occurred immediately after the expiration of the patent, it appears that Watt's competitors simply waited until then before releasing their own innovations."

George Selgin and John L. Turner's article "Strong Steam, Weak Patents, or the Myth of Watt's Innovation-Blocking Monopoly, Exploded" (2011) offers an opposing point of view: "James Watt's 1769 patent is widely supposed to have stood in the way of the development of high-pressure steam technology until it finally expired in 1800. We dispute this popular claim. We show that although it is true that high-pressure steam technology developed only after the expira-

tion of Watt's patent, the delay was due to factors other than that patent itself, including the widely held opinion that the use of high-pressure engines were excessively risky. Indeed, Watt's monopoly rights may actually have hastened the development of the high-pressure steam engine by inspiring Richard Trevithick to revive a supposedly obsolete technology so as to invent around them."

While basing its patent system on Britain's, America sought to remedy what Americans perceived as deficiencies within the British system. The philosophy on which American patents were based can be succinctly stated: *What is good for the inventor is good for society* (a philosophy continually debated). America's patent laws established that patent rights should belong only to those whose inventions had never previously existed anywhere in the world. Further, America's laws provided that inventions that had already been sold commercially should not qualify for patents. America's laws also stipulated that patents should not be granted for inventions that applicants did not personally invent, patents should go only to inventions that are useful (implying that they serve a purpose and do indeed operate), and patents should not go to any applicant attempting to pass off one or two insignificant alterations in the design of another invention as constituting a new invention.

In a manner of speaking, the American patent system was an agreement between inventors and society: inventors could have exclusive rights for fourteen years in return for making available to the public precisely how their inventions worked. Beginning with the Patent Act of 1836, patents were placed in public libraries across the country, thereby guaranteeing society access to the exact functions and specifications of the latest discoveries, which could be duplicated once the exclusionary period had run out.

In the earliest years, inventors were permitted to patent concepts of a general character. Inventors occasionally cloaked the working of their inventions behind generalities or by diverting readers' attention from the significant points. Before long, American patent law forced inventors to describe their inventions clearly with exact details.

Thomas Alva Edison made 1,093 successful U.S. patent applications, according to Rutgers University, where Edison's papers are housed. On the 8th of January in 1898, Edison published an editorial on page 19 of a supplement to *Scientific American*. These excerpts from Edison's arguments shed light on difficulties surrounding patents:

"[If an inventor] gets up a patent on a system which revolutionizes things and is of tremendous value to the world at large, that patent is not valuable to the inventor, on account of the procedure of the court.

"In a great many cases, outside of mechanical things, the trade secret is more valued as a protection than a patent. Dishonest persons often can get the inner track of an important discovery or patent, and make use of it illegally, while the inventor may never realize anything on his work, although he may spend thousands of dollars and continue the fight for years. Yes, the value to the inventor of a patent increases just as its value to the public decreases; the reward for his services increases with the lack of value of the patent. There is less reward than ever for the industrious inventor.

"One of my biggest inventions, for which patents were asked years ago, has just been declared mine by law. Meantime other men have been and are using it and are deriving the financial benefit, all on account of the workings of the patent system. Of course, I can sue them, but it will be a long time before I can do anything. In short, there is comparatively little reward for the inventor of the important machine. ...

"If you get out a patent which is likely to become valuable to the public at large, you will find that it will sooner or later be infringed upon. If it were possible to get an injunction immediately against an infringer all would be well, but you cannot do this. When you start up, the other fellow sails right in and begins manufacturing and selling just as you do, and generally at a lower price. You cannot do anything in court for five or six years, and the infringer knows this. After having spent a large amount of money and time in inventing your patent, you place the price of it to the public at a figure which will, you think, reimburse you for your expenditure. The infringer does not have to meet any of these expenditures, and can therefore afford to sell far below your price. A lawsuit for you is a costly matter; for him it is comparatively a trifle. For instance, in order to prove your patents you have got to make researches, you have got to have expert drawings made, and there are numberless other expenses which eat up profits. All the infringer has to do is to employ a lawyer who is noted for causing delays in court. Every time your case comes up he attempts to delay it, and generally succeeds. Meantime, you are manufacturing at a loss, while the infringer is manufacturing at a profit.

"If after five or six years you prove to the court that you are rightfully entitled to the invention, there is but one thing left to you—to attack your opponent's factory. At this point you will awake to the fact that he has no factory. You will find that the machinery has been rented, or else it is in the name of his wife, or that he has an irresponsible company made up of his employes or of his family, and when finally you swoop down upon him all you can find in his office is a desk and a chair. He can still run the shop machinery and give more trouble, and in the end there is not only no reward for the inventor, but absolute loss. It takes time to pioneer all new things. After you talk to the public, other people see that you have a good thing and organize irresponsible factories. You have, perhaps, spent $100,000 for machinery, tools, etc., then along comes the other fellow, without any responsibility, and makes all the money he can before you are able to get judgment against him."

Edison's editorial offers insights into why inventors could be reluctant to apply for patents, but Edison took a different approach, patenting everything he could think to patent while developing his discoveries. He did not want to confront someone, such as a patent shark, holding a patent for a necessary technological step leading to one of his important inventions.

Here is a summary providing an overview of American patent history prior to the 1950s. As may be seen, only the acts of 1793 and 1836 pertained to the farm steam era.

Numerous decisions by state and federal governmental agencies and by courts shaped the interpretation of the patent acts.

Patent Act of 1790: Fleshing out a statement within the U.S. Constitution, ratified in 1787, the act awarded patentees fourteen years of exclusive rights to their inventions.

Patent Act of 1793: The act simplified the patent process while rendering null the Patent Act of 1790. The 1793 act established this patent definition, which has proved to be of longstanding importance: "any new and useful art, machine, manufacture or composition of matter and any new and useful improvement on any art, machine, manufacture or composition of matter."

Patent Act of 1836: A Patent Office was created to take the patenting burden off of staff members in cabinet offices. Extensions of seven years beyond the initial grant of fourteen years were made possible. Applicants no longer had to be American citizens.

(Additional patent legislation took place *after* agricultural steam power came to an end.)

Farm steam engine builders took advantage of the opportunity to sue for infringement of their patents.

Elon Augustus Marsh, Minard "Old Judge" LaFever, and James Scott sued Nichols & Shepard for using a valve gear for which the three held the patent. In 1891, a lower court gave Marsh, LaFever, and Scott the judgment in their favor, but a higher court reversed the decision over a technicality in the granting of the patent.

Less well known than the Marsh case is one involving Henry Blandy and Frederick J. L. Blandy of Zanesville, Ohio, who, in 1869, sued Thomas Griffith and Francis Wedge, also of Zanesville, for infringing the Blandys' hollow bedplate design, which was incorporated in the Blandys' portable steam engines. The Blandys won.

In California, Harvey W. Rice persuaded David Morey to equip Rice's return-flue portable engines with Morey's firebox feeder; in turn, Rice sued John L. Heald for infringement of the feeder and return-flue boiler combination. Ames engines and Enright engines were implicated, as they, too, used a combination similar to the Rice and Morey combination. In 1877, Rice won in a suit that newspapers portrayed as a David and Goliath story pitting a lowly inventor against wealthy and powerful influences.

These three cases (above) are only a few of the many important patent infringement cases that took place during the era of the farm steam engine. (Incidentally, dozens of infringement cases involved the design of threshing machines.)

Copying other builders' parts—and copying other builders' entire products—became rampant during the farm steam era. Out of view of the public, manufacturers made deals with other manufacturers that permitted copying in return for exclusive rights to sales territories (often called "block agreements").

Here is a case of copying. From August of 1916 through May of 1917, Charles M. Giddings published a series of articles in *American Thresherman* in which he mentioned that "different firms," including Russell (one of Giddings' employers), "had copied the Wood, Taber & Morse design of engine by using the parts they had purchased for patterns to make identically the same portable engine." Andy New first pointed out to me that cuts, or engravings, of Wood, Taber & Morse portable engines and Nichols & Shepard portable engines from the same time period were virtually identical. The portable engine of Marshall, Graves & Company of Dayton, Ohio, bore some similarity to the Wood, Taber & Morse portable. One style of portable engine built by Hooven, Owens, Rentschler & Company of Hamilton, Ohio, may have been modeled on the Wood, Taber & Morse. The Empire and Oneida portables likely belong on the list of Giddings' "different firms." The fact that early Aultman & Taylor portables resembled Wood, Taber & Morse products may be attributed to friendship. Cornelius Aultman often went hunting and fishing with John Nichols and David Shepard, and, at one point, Henry H. Taylor worked for Nichols & Shepard. Not all Wood, Taber & Morse look-alikes were the products of copying. In *Engineers and Engines Magazine* for August and September of 2008, Rick Mannen published the information that the Joseph Hall Machine Works in Oshawa, Ontario, originally sold Wood, Taber & Morse portables. Selling another firm's products is not mimicry, but, when Joseph Hall developed the Oshawa portable, the engine exhibited some resemblance to a Wood, Taber & Morse portable. Apparently, Joseph Hall enjoyed a good working relationship with Wood, Taber & Morse. Peck & Tyler of Jordan, New York, was another firm that sold Wood, Taber & Morse portables. We could go on citing additional examples of engines styled after the Wood, Taber & Morse portable engine.

(Readers interested in exploring instances of potential imitation might turn to my articles titled "Mimicry Among Farm Steam Engine Builders" in *Engineers & Engines Magazine* 57.5 and "More Mimicry Among Farm Steam Engine Builders" in *Engineers & Engines Magazine* 57.6. Both are available on my website at http://www.robert-trhode.org.)

In periods of national financial recession, some manufacturers were cautious about seeking patents for devices when elements of the public were likely to perceive such efforts as attempts to form monopolies. In the 1870s, the medieval term "robber baron" began to be used in the U.S. to castigate businessmen making profits in what many considered an unregulated market concocted by crooked politicians. The chorus of accusing voices swelled whenever economic distress threatened the country.

Here is a summary of national financial upheavals during the farm steam era.

Recessions occurred from 1860 through 1861, from 1865 through 1867, and from 1869 through 1870.

In 1873, banks failed, briefly closing the New York stock market. Numerous businesses declared bankruptcy and farms were lost. Unemployment soared as real estate values plummeted. The financial lethargy ensuing after the initial panic persisted some six years. The 1870s came to be called the Black Seventies, and the financial downturn came to be known as the Long Depression.

Recession struck again from 1882 through 1885 and again from 1887 through 1888. The Interstate Commerce Act of 1887 brought federal regulation of big business.

Another recession took place from 1890 through 1891. The first federal act to make monopolistic business practices illegal, the Sherman Anti-Trust Act was approved on the 2nd of July in 1890.
In the antitrust climate, courts held increasing numbers of patents as invalid.

Then there occurred the full-blown Panic of 1893, which lasted through 1894, followed closely by the Panic of 1896, which lasted from December of 1895 through 1897.

On the heels of the recession of 1899, which lasted through 1900, came the recession of 1902 through 1904. In some ways, the recession in 1904 was almost as devastating as the Panic of 1907, which lasted through 1908. From 1901 through 1909, Theodore Roosevelt served as President of the United States; he came to be known as "the trust-buster" because he thought the monopolizing practices of leaders of business and industry were indications that such leaders were foolishly trying to set themselves above the law—and Roosevelt was willing to take them on. (In this context, a *trust* is a combination of firms or corporations for the purpose of reducing competition and controlling prices throughout a business or industry.) Roosevelt preferred to have the executive branch unilaterally regulate trusts, rather than dissolving them altogether. Roosevelt felt he could distinguish between good trusts and bad trusts. In a little over seven years, Roosevelt brought forty-four antitrust suits (according to the *Wall Street Journal*). In four years, William Howard Taft, who became the next President after President Roosevelt and later served as Chief Justice of the Supreme Court, brought eighty antitrust suits (according to the White House website). Taft thought that the fate of various trusts should not be up to the discrimination of the executive branch but that courts should apply uniform standards to decide the future of trusts. Roosevelt had a falling out with Taft, largely over Taft's determination to break up United States Steel. In 1907, Roosevelt had formed an agreement with John Pierpont Morgan, financier and founder of U.S. Steel, not to go after U.S. Steel's acquisition of the Tennessee Coal and Iron Company.

The Panic of 1910, which lasted through 1911, was arguably less of an outright "panic" and more of a recession.

The Recession of 1913 endured through 1914, and then came the seven-month recession at the end of the First World War (1918 and 1919). In 1914, the Clayton Antitrust Act and the Federal Trade Commission Act brought further regulation to big business.

The Depression of 1920–21 led to recessions in 1923, 1924, 1926, and 1927, with a general recession in farming communities that lasted uninterruptedly throughout the decade of the 1920s. Beginning in 1929, the Great Depression wracked the American economy for a long time.

While patent laws could be perceived as encouraging monopolistic practices by excluding competition, antitrust laws opposed the exercise of monopolistic power to drive out competition. The two bodies of law were at loggerheads. With the notable exception of the muckraking journalism at the turn of the twentieth century, consequential debate about balancing antitrust law and patent law took place mainly in legislatures and in courts, not in public discourse, and the dynamic interplay among lawyers for various interest groups helped form patent laws and their interpretation.

This is not to say that clamorous journalists did not raise a ruckus about businesses that sold farm steam engines. On the 24th of April in 1899, for example, the *Daily Inter Ocean*, published in Chicago, carried this story, in which the reporter obviously sided with the proposed monopoly: "Another gigantic trust, to include all the large farm-machinery factories of the United States, is in process of formation. ... The preliminary terms have been arranged, and all that remains to complete the mammoth consolidation is a final meeting of the representatives of the interests involved and the incorporation of the new enterprise. It is the purpose of the promoters to consolidate under one management all the factories for the production of reapers, harvesters, thrashers, traction engines, and other important machines used in the great agricultural industry. Eastern capital is behind the deal, but the West, and especially the states of Illinois and Wisconsin, are heavily represented. ... The Deering, McCormick, David Bradley & Co., and Walter A. Wood factories of Chicago are all said to be included in the plans, and in Wisconsin the J. I. Case plant at Racine and the W. A.

Stevens plant at Marinette are included. The latter plant is a new one, the business having been lately moved from Auburn, N.Y., where it had been successfully conducted for forty years. The J. I. Case works, operated under the reorganized company, represent a value of over a million. The Western Interests will predominate in the trust, and, with the Eastern Interests, the new company will be one of the largest and most important in the country. ... This work has been conducted with the utmost secrecy." The trust never came to pass.

In September of 1906, the *American Thresherman* proclaimed a victory for the J. I. Case Threshing Machine Company against the Indiana Manufacturing Company, a virtual monopoly that built windstackers for threshing machines: "Judge Seaman of the United States Circuit Court handed down a decision yesterday that will attract widespread attention among patent owners and manufacturers. He decided that the Indiana Manufacturing Company, which sued the J. I. Case Threshing Machine Company of Racine to enforce the payment of royalties on the 'wind stacker' is a monopoly under the Sherman antitrust law. The result is not only a complete victory for the Case people, but it establishes a new precedent for the management of patents." On the 17th of April in 1907, the *Indianapolis Star* announced that the United States Court of Appeals at Chicago had reversed the decision: " ... the Indiana Manufacturing Company is held not to be a trust ..." Such news demonstrates the push and pull of monopolistic and antitrust forces at the turn of the twentieth century.

As may be seen by perusing the financial upheaval summary above, only nineteen of the seventy years from 1860 through 1930 were free of recessions or panics. For over seventy percent of that seventy-year period, anti-monopolizing forces in government described efforts to drive out competition as attempts by manufacturers to become monopolists. For most of the era when agricultural steam engines were produced, there were pressures on certain manufacturers to neglect patenting. Nearly all anti-monopoly courtroom discussion, however, was aimed at the big manufacturing conglomerates that proliferated in the 1880s and 1890s and that sold products impacting exceedingly broad segments of the population. For the most part, farm steam engine businesses remained exempt from criticism directed at the robber barons.

In *A Connecticut Yankee in King Arthur's Court* (1889), Mark Twain, with a handful of patents for his own inventions (including a comfortable elastic strap for clothing), tells the fictitious story of Hank Morgan, a flawed and comical hero, who is knocked in the head and finds himself in Camelot a dozen centuries earlier—before English monarchs awarded patents. Hank manages to become, quite suddenly, the most powerful person in the kingdom. Hank reflects on what he did: "That reminds me to remark, in passing, that the very first official thing I did, in my administration—and it was on the very first day of it, too—was to start a patent office; for I knew that a country without a patent office and good patent laws was just a crab, and couldn't travel any way but sideways or backwards." Putting Pollyannaish faith in technology, Hank trusts patents as the means to encourage invention and to cause inventions to be shared for the progress of society. (Edison would be indignant about the sharing.) Hank understands the philosophies that, for better or worse, give structure and meaning to the American patent system.

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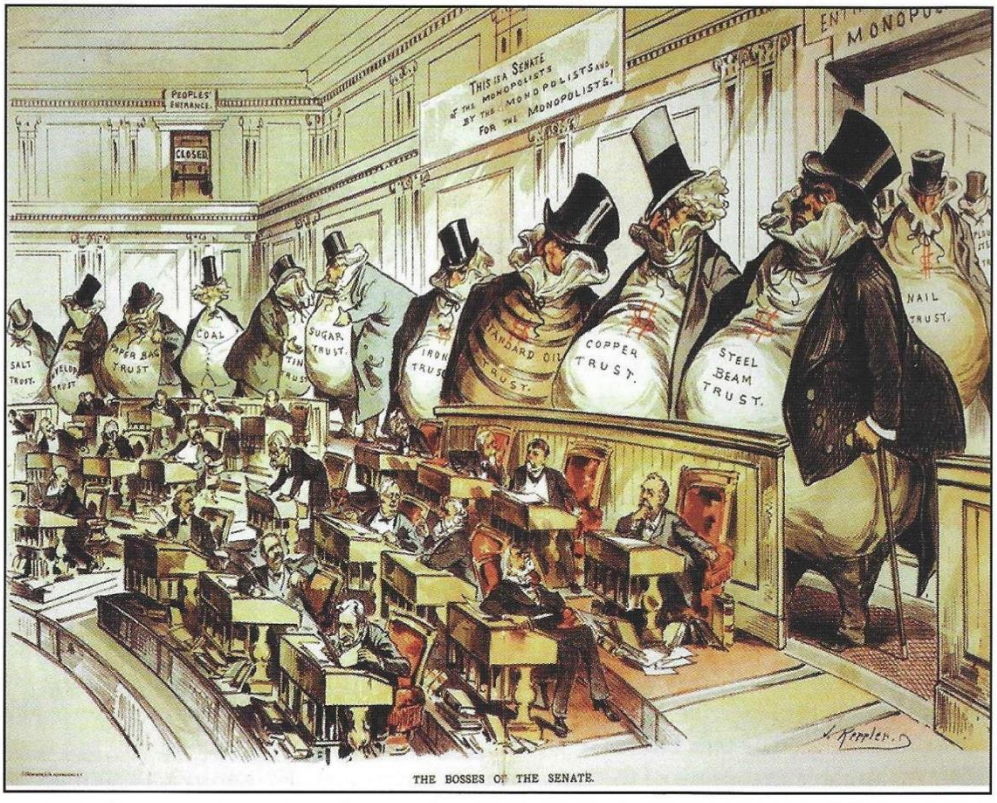

Joseph Keppler (1838–1894) tried launching a humorous newspaper in St. Louis in 1869 and a German-language paper in 1870. Both failed. He moved to New York to draw for *Frank Leslie's Illustrated Newspaper*, but, in 1876, Keppler founded his own German-language publication titled *Puck*, which became so popular that an English-language version was begun to widespread acclaim. Keppler first published this cartoon in 1889. Bloated money bags loom over tiny Senators. The door to the people's gallery remains barred shut. The motto is "This is a Senate of the Monopolists by the Monopolists and for the Monopolists!" Such a memorable cartoon captures the unfair exclusionary power of monopolies, which many associated with patents.