

Dear readers,

Thank you for taking the time to read something that is both published and a work in progress. I am currently working on a book called TECHNOLOGY'S TRIALS, which will recount the history of U.S. patent law from its origins to 1982. Several of the chapters will draw on material that I recently published in article form as *The First Patent Litigation Explosion*, 125 YALE L. J. 848 (2016). Given the rough state of the draft book chapters, along with the inherent difficulties of workshopping isolated sections of a larger book, I have opted to circulate the article instead—hoping that the tighter framing and more self-contained format will make feedback easier. The relevant sections of the (embarrassingly long) article are Parts II and III, so in the likely event that you wish to read selectively, I'd suggest focusing on pp. 875-923 and skimming the Introduction and discussion of political responses on pp. 923-933.

In this introductory note I'll quickly sketch the outline of the book and some of the major questions I'm facing as I adapt and extend the earlier research. Suggestions and guidance at this stage are invaluable, so thank you in advance for your comments and criticisms.

Chris

TECHNOLOGY'S TRIALS:  
A HISTORY OF PATENT LAW IN AMERICA

In recent years, patent law has become an unmissable feature of the American legal landscape. The enormous growth of patenting and the so-called “explosion” of patent litigation in the last quarter-century have transformed a once-niche field into a booming practice area and a hotbed of policy debate. Despite widespread current interest in the subject, however, there is no comprehensive history of the development of patent law in the United States. *Technology's Trials* aims to provide that account.

At the same time, the book aims to move patent law from the margins into the mainstream of American legal history. As I have suggested in earlier work—though have not yet tired of saying—patent law for most of its history was not the narrow, technically-minded specialist area that its later twentieth-century incarnation has conditioned us to expect. Instead, it was controversial, political, and ubiquitous; an outsize part of the business of the nineteenth-century federal courts, and a central piece in the relationship between law and the developing technological economy of the United States.

As presently conceived, *Technology's Trials* will span the two centuries from the formation of the first United States patent laws to the creation of the U.S. Court of Appeals for the Federal Circuit in 1982. The book falls roughly into three parts. The first will explore the emergence of patent jurisprudence in the early nineteenth century and re-examine the political foundations of the modern Patent Office in 1836. The second section will uncover the massive wave of patent litigation that began to break over the country beginning in the late 1840s. In the latter half of the nineteenth century, the book will show, the breakneck growth of patenting and patent litigation gave the law of invention a central place in American economic and political life. The third part of the book continues the story into the twentieth century. By the early 1900s, the tide of litigation had subsided, but patent law retained its legal and political salience, now increasingly as part of the politics of antitrust. Questions of monopoly and corporate control of innovation vexed the law throughout the New Deal era and beyond, even as patent practice hardened its disciplinary

boundaries and became a self-consciously specialized and inaccessible field. Eventually, the creation of the Federal Circuit in 1982 attempted a radical solution—a specialized appellate court—to the problems of scientific knowledge and judicial ambivalence that had characterized patent law throughout its history.

The contributions of *Technology's Trials* include a new approach to the history of patent law. Previous historical studies have relied overwhelmingly on reported judicial opinions, a source that gives some insight into doctrinal development, but which serves as only weak evidence of the law in action. By contrast, much of the material for *Technology's Trials* is drawn from the archival record of patent suits filed in the federal courts. This approach yields plentiful information on the practical operation of the patent system, including its procedural and institutional mechanics, its geographical and chronological hotspots, and the identities of the leading parties, patents, and industries involved. This is a history in the “law and society” tradition. By recovering the social, political, and economic context of the patent law, the book seeks give a richer account of both its doctrinal content and its institutional forms.

### **Possible questions for discussion**

I am looking forward to all of your questions and suggestions, but would especially welcome comments on the following:

- My primary unexplained question is why the great litigation boom of the mid-to-later nineteenth century ebbed away from the 1890s onward. How plausible do you find the tentative explanations offered in Part II of the article? Is it unsatisfying to say that the boom reflected particular circumstances that simply ended, and returned the volume of litigation to a more “normal” level? What other hypotheses should I test, given the available data I've described?
- One constant challenge for this project lies in connecting changes in patent doctrine to the background of patent politics and litigation. I have the strong intuition that the content of a body of law is heavily shaped by the ecology of repeat-player litigants, institutions, and affected parties involved. Edward Purcell has called such settings “social litigation systems,” and I think U.S. patent law, with its specialized intermediaries and relatively stable institutional setting, fits that category well. But it is difficult in most instances to draw clear causal lines between this system and the development of individual doctrines: judges and litigants hardly ever explained their innovations in those terms, and the public-choice motivations of patent law's judicial decisionmaking are murky. Are there examples, in this or other areas, where you have seen jurisprudence successfully explained in such terms? What are the appropriate burdens of proof for making an argument of this type?
- Finally, I wonder how well I can defend particular choices about the scope of my inquiry. I am trying to focus the book on patent law as a social and legal system, and for reasons of both sources and interest I have emphasized the role of courts within that system. There are many methodological challenges one might offer to that perspective. Yes, the courts have predominated in shaping U.S. patent law, and yes, battles in the courts have been the law's most politically salient side. But only a minority of patents are ever litigated, and the principal uses of patent law play out in spheres that are only tangentially legal, such as the

process of organizing invention or the market for inventions. To put it another way, the most important consequences of patent law lie in economic growth and in technological change—neither of which this book is equipped to evaluate. To what extent can I disavow those kinds of assessments? Can I fairly write a history of this field of law without doing a lot more economic or business history than I currently undertake?

Finally, in case it is helpful in situating the material I have circulated, a brief outline of the book's chapters is below. The article corresponds mostly to Chapters 6, 8, and 9 below.

## PART I: The Machinery of State, 1776-1836

### 1. The Embarrassment of Monopolies

*Colonial and state patents before the Constitution—English legal models and departures from them—Precarious place of monopoly in republican legal theory—Reality of state-building and patronage established a place for patents—Exclusive rights and the Constitution.*

### 2. Machinery of State

*Operation of patent law under the Acts of 1790 and 1793—Steamboats and the transition from state to federal exclusivity—Whitney's cotton gin and the first tests of patent enforcement—litigation in the district courts 1790s-1800s—Creation of a patent office.*

### 3. The Trials of Oliver Evans

*Oliver Evans's flour-milling patent (1790-1822) as the central test case for early patent law and politics—State patents—Creation of federal patent, expiration, and revival by Congress—Evans's as the first Supreme Court patent case—The first great patent enforcement campaign—Evans as an engine of legal formation.*

### 4. The Whig Interpretation of Patent Law

*Formative role of Federalist-Whig political economy—New England as hotbed: Daniel Webster and the Boston Associates—Patents and vested rights—Justice Joseph Story comes to dominate early patent law—The advent of equity in infringement cases—Thomas Blanchard and the next wave of litigation campaigns—Patent rights, the Charles River Bridge case, and the end of the old constitutional-economic order.*

### 5. Temple of Invention

*Patent litigation in the 1820s—Jacksonian reactions and the coming of the 1836 Patent Act—A new bureaucracy—the “Scientific Men” at the Patent Office—Patents and the “market revolution.”*

## PART II: Courts and Parties, 1836-1917

### 6. “The Patent Cases”

*Take-off of patent litigation in the 1840s—Woodworking and water power: the beginning of national patent campaigns—Chemistry and electricity: the challenge of science in the patent system—The sewing machine wars—The role of equity—Involvement of the political elite in patent lawyering—The U.S. Supreme Court splits over patent law.*

## 7. The Spider's Web

*Patent extensions in theory and practice—Lobbying in Congress—Morse's telegraph and the new Patent Office—Partisanship and sectionalism in pre-Civil War patent politics—The Patent Office turn to liberality—Reapers, sewing machines, and the rise of agrarian resistance—The Patent Act of 1861.*

## 8. Litigation Explosions

*Great litigation campaigns of the 1860s and 1870s—Causes and consequences of the broader litigation explosion—Characteristics of patent suits and litigated patents—Development of the patent bar.*

## 9. Patent Politics

*Political reactions—Patents and political mobilization—Railroads and the patent law—Congress and patent reform—"Fraud" and the executive branch—Patent regulation in the states.*

## 10. A Second Industrial Revolution

*Patent law and the rise of big business: Western Union, Bell Telephone, and the Edison electric light—Franchising organizes large entities around patent rights—The rise of corporate R&D and its impact on patent practice.*

## 11. The Patentee as Czar

*Patent and antitrust law 1890s-1910s—Creation of the Circuit Courts of Appeals—Return to the proprietarian conception—Wartime patent pools.*

## PART III: Inventing Leviathan, 1917-1982

## 12. Empires

*Patent law in 1920s-30s—The idea of "patent misuse"—Industry patent pools of the 1920s and the antitrust response—Science and the Patent Office—Depression, New Deal and patent policy—The TNEC and the search for suppressed inventions.*

## 13. New, Useful, and Nonobvious

*The Supreme Court and the patent law—The battle over secondary liability—Understanding the nature of invention and the requirement of "invention"—The coming of the 1952 Patent Act.*

## 14. American Century

*Patent law in 1960s-70s—Responses to the 1952 Act—the Court of Customs and Patent Appeals as custodian—The regional circuit courts as laboratories—Antitrust mega-cases and the patent law—Software, biotechnology, and the frontiers of patent law.*

## 15. Brain Surgery

*Economic stagnation and innovation policy—The (re)fracturing of patent adjudication—Genesis of the Federal Circuit—Internationalization of the patent system—The age of "intellectual property."*

# THE YALE LAW JOURNAL

CHRISTOPHER BEAUCHAMP

## The First Patent Litigation Explosion

**ABSTRACT.** The twenty-first century “patent litigation explosion” is not unprecedented. In fact, the nineteenth century saw an even bigger surge of patent cases. During that era, the most prolific patent enforcers brought hundreds or even thousands of suits, dwarfing the efforts of today’s leading “trolls.” In 1850, New York City and Philadelphia alone had ten times more patent litigation, per U.S. patent in force, than the entire United States in 2013. Even the absolute quantity of late-nineteenth-century patent cases bears comparison to the numbers filed in recent years: the Southern District of New York in 1880 would have ranked third on the list of districts with the most patent infringement suits filed in 2014 and would have headed the list as recently as 2010.

This Article reveals the forgotten history of the first patent litigation explosion. It first describes the rise of large-scale patent enforcement in the middle of the nineteenth century. It then draws on new data from the archives of two leading federal courts to trace the development of patent litigation from 1840 to 1910 and to outline the scale, composition, and leading causes of the litigation boom. Finally, the Article explores the consequences of this phenomenon for the law and politics of the patent system. The effects of the litigation explosion were profound. The rise of large-scale patent assertion provides a new explanation for patent law’s crucial shift from common law to equity decision making in the middle of the nineteenth century. And at its height, the litigation explosion produced a political backlash that threatened to sweep away the patent system as we know it. Recovering the history of patent law during this formative and turbulent era offers fresh perspectives on the patent reform debates of today.

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## ARTICLE CONTENTS

INTRODUCTION	850
I. THE RISE OF LARGE-SCALE PATENT LITIGATION	856
A. Antebellum Patent Wars	860
B. Postwar Patent Campaigns	866
C. The Dynamics of Mass Enforcement	872
II. INSIDE THE PATENT LITIGATION EXPLOSION	875
A. The Quantity of Litigation	878
B. Drivers of the Patent Litigation Explosion	883
1. Patent Stretching	883
2. Multiple Litigation and Mass Enforcement	894
3. From the Artisanal to the Corporate Economy	902
III. CASES, CONTROVERSIES, AND THE DEVELOPMENT OF PATENT LAW	908
A. The Formation of Patent Law	909
B. The Rise of Equity	912
C. The Politics of the Patent System Under Pressure	923
CONCLUSION	934

**INTRODUCTION**

The twenty-first century has witnessed a so-called “explosion” in patent litigation.<sup>1</sup> The number of patent suits filed each year doubled during the 1990s and continued to increase steadily during last decade, growing from around 2,500 in the year 2000 to over 3,500 in the year 2011.<sup>2</sup> Since 2011, a change in joinder rules has propelled the number of suits still higher to over 5,000 in 2012 and over 6,000 in 2013, before falling back to around 5,000 in 2014.<sup>3</sup> Although its precise nature and causes are contested,<sup>4</sup> the rising volume

1. See James Bessen & Michael J. Meurer, *The Patent Litigation Explosion*, 45 LOY. U. CHI. L.J. 401, 402 (2013). James Bessen and Michael Meurer use the term here to refer to the growth in litigation over the 1980s and 1990s, rather than in its (more contested) recent use as a description of the period 2011-2013. See also CHRIS BARRY ET AL., PRICEWATERHOUSECOOPERS, 2012 PATENT LITIGATION STUDY 6 (2012) (reporting an annual 6.4% growth in patent actions filed from 1991 through 2011).
2. LEX MACHINA, <http://lexmachina.com> [<http://perma.cc/D8XP-L5NJ>]. A “patent suit” for the purposes of this Article refers to a suit where the validity or infringement of a patent was at issue; it does not include, for example, purely contractual disputes arising over patent licenses or suits involving the disposition of patent rights in bankruptcy. Even under this relatively manageable definition, filing numbers differ from one source to another depending on sources and counting conventions. Most of the modern patent litigation data used in this Article were obtained from the legal analytics service Lex Machina, which collects filing information from courts’ electronic docket systems and other sources (and whose quality controls make it an appealing statistical source). Lex Machina counts suits transferred between districts in both the origin and destination courts; as such, commentators note that its data may potentially “inflate [case counts], perhaps by as much as 15-20%.” Jason Rantanen & Joshua Haugo, *District Courts and Patent Cases, Part I*, PATENTLY-O (Apr. 28, 2014), <http://patentlyo.com/patent/2014/04/district-courts-patent.html> [<http://perma.cc/D5VF-SG4C>]. On the other hand, unlike some sources, Lex Machina excludes cases brought under the false-marking provision of the patent statute, which prohibits deceptive marking of an unpatented product as covered by a patent, because it does “not consider them to be Patent cases.” *Understanding the Data*, LEX MACHINA, <http://law.lexmachina.com/help/understanding-data> [<http://perma.cc/J4LW-2ET3>]. Lex Machina’s explanation of its data is on file with the author.
3. LEX MACHINA, *supra* note 2.
4. The demonstrable effects of joinder rules aside, the absolute number of suits filed is not the best indicator of the number of actual disputes: the total number of plaintiffs and defendants provides a better metric. See, e.g., Christopher A. Cotropia et al., *Unpacking Patent Assertion Entities (PAEs)*, 99 MINN. L. REV. 649, 662-66 (2014). However, the number of suits remains a useful measure of the quantity and organization of patent business in the courts, and it provides the most practical basis for historical comparison. Debate also continues on the relative contributions of technological change, legal uncertainty, the growth of patenting, and the litigation tactics of nonpracticing entities. See, e.g., U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-13-465, ASSESSING FACTORS THAT AFFECT PATENT INFRINGEMENT LITIGATION COULD HELP IMPROVE PATENT QUALITY 16, 28 (2013); John R. Allison et al., *Extreme Value or Trolls on Top? The Characteristics of the Most-Litigated*

of litigation in the last fifteen years has generated criticism of the patent system as a whole. Detractors point to such problems as burdensome litigation and uncertainty costs,<sup>5</sup> patent portfolio arms races among large technology companies,<sup>6</sup> and the opportunistic enforcement of patent rights by speculative and/or unscrupulous actors—the dreaded, if ill-defined, “patent trolls.”<sup>7</sup> A political response to the perceived crisis is in full swing, with legislation proposed at the federal and state levels aimed at mitigating abusive practices in patent assertion.<sup>8</sup>

Despite the attention devoted to the modern surge in patent filings, this development is not as unprecedented as recent coverage presumes.<sup>9</sup> In fact, the patent system of the mid-to-late nineteenth century was in some ways more litigious than that of the early twenty-first. Relative to the size of the patent

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*Patents*, 158 U. PA. L. REV. 1, 12-28 (2009); Colleen V. Chien, *Predicting Patent Litigation*, 90 TEX. L. REV. 283, 316-20 (2011); Cotropia et al., *supra*, at 653, 666-67.

5. See, e.g., JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK 120-46 (2008) [hereinafter BESSEN & MEURER, PATENT FAILURE]; James Bessen & Michael J. Meurer, *The Direct Costs from NPE Disputes*, 99 CORNELL L. REV. 387, 399-407 (2014) [hereinafter Bessen & Meurer, *The Direct Costs from NPE Disputes*].
6. See, e.g., Colleen V. Chien, *From Arms Race to Marketplace: The Complex Patent Ecosystem and Its Implications for the Patent System*, 62 HASTINGS L.J. 297 (2010).
7. The literature on these entities is vast. On its empirical, conceptual, and rhetorical outlines (and shortcomings), see, for example, Colleen V. Chien, *Of Trolls, Davids, Goliaths, and Kings: Narratives and Evidence in the Litigation of High-Tech Patents*, 87 N.C. L. REV. 1571 (2009); Cotropia et al., *supra* note 4; and Michael Risch, *Patent Troll Myths*, 42 SETON HALL L. REV. 457 (2012).
8. See, e.g., BRIAN T. YEH & EMILY M. LANZA, CONG. RESEARCH SERV., R43979, PATENT LITIGATION REFORM LEGISLATION IN THE 114TH CONGRESS (2015); Leah Chan Grinvald, *Policing the Cease-and-Desist Letter*, 49 U.S.F. L. REV. 411, 445-47 (2015); Paul R. Gugliuzza, *Patent Litigation Reform: The Courts, Congress, and the Federal Rules of Civil Procedure*, 95 B.U. L. REV. 279, 283-87 (2015).
9. See, e.g., Bessen & Meurer, *The Direct Costs from NPE Disputes*, *supra* note 5, at 390-91 (“[W]hile NPEs have been around a long time, over the last few years, NPE litigation has reached a wholly unprecedented scale and scope . . . .”); Dennis Crouch, *Rush to Judgment: New Dis-Joinder Rules and Non-Practicing Entities*, PATENTLY-O (Sept. 20, 2011), <http://patentlyo.com/patent/2011/09/rush-to-judgment-new-dis-joinder-rules-and-non-practicing-entities.html> [<http://perma.cc/69QE-G28L>] (reporting fifty-four suits filed as “an all-time-high for a single day filing”). Ron Katznelson has recently reported that relative to the number of patents in force, the intensity of patent litigation in the 1920s and 1930s was similar to that of modern (pre-2011) times, and that relative to GDP, the amount of litigation in those years was considerably higher than today. Ron D. Katznelson, *A Century of Patent Litigation in Perspective 1* (Nov. 17, 2014) (unpublished manuscript), <http://papers.ssrn.com/abstract=2503140> [<http://perma.cc/8ACC-4R7B>]. Yet this helpful corrective misses the still larger story of patent litigation in the nineteenth century, where litigation was more frequent in both relative and absolute terms than in the 1920s and 1930s.

system, the gap is considerable: the national rate of litigation per patent in 2013 was less than one-third of the rates in 1860 in New York City and Philadelphia alone. Those two cities had ten times more patent suits filed in 1850, per U.S. patent in force, than did the entire United States in 2013.<sup>10</sup> Even in *absolute* terms, the scale of patent business in some nineteenth-century courts bears comparison to modern levels. In 1880, 381 infringement suits were filed in the U.S. Circuit Court for the Southern District of New York, a number which would have ranked third on the list of districts with the most patent infringement litigation commenced in 2014 and would have headed that list as recently as 2010.<sup>11</sup> Federal courts in New York State in 1880 recorded more than 650 infringement suits filed, more than any single state in 2011.<sup>12</sup> At least one year in the late nineteenth century saw as many as a thousand suits filed in a single judicial district.<sup>13</sup>

To put these numbers in still broader context, between the Patent Act of 1952 and the creation of the U.S. Court of Appeals for the Federal Circuit in 1982, the number of patent suits filed nationwide averaged just over eight hundred per year.<sup>14</sup> In the 1920s and 1930s, this number was slightly higher,

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10. Author's Database, C.C.E.D. Pa. (Nov. 20, 2015) (on file with author); Author's Database, C.C.S.D.N.Y. (Nov. 20, 2015) (on file with author); *see also infra* Section II.A (presenting data on the quantity of patent litigation in New York City and Philadelphia).
  11. LEX MACHINA, *supra* note 2; Author's Database, C.C.S.D.N.Y., *supra* note 10. Excluding false-marking cases, the 2010 rankings were led by the Eastern District of Texas (284 suits filed, excluding false-marking cases) and the District of Delaware (253). The 2014 rankings were headed by the Eastern District of Texas (1,427), the District of Delaware (946), and the Central District of California (323). LEX MACHINA, *supra* note 2. Until 1911, the U.S. circuit courts had jurisdiction over cases arising under the patent laws. *See* Act of Apr. 17, 1800, ch. 25, § 3, 2 Stat. 37, 38; Act of July 4, 1836, ch. 357, § 17, 5 Stat. 117, 124. These circuit courts were trial courts and should not be confused with the circuit courts of appeals created in 1891. Circuit courts were originally presided over seasonally by Justices of the U.S. Supreme Court "riding circuit," but by the later part of the nineteenth century they had evolved into permanent courts staffed by district or circuit judges with occasional participation by the Justices. The district and circuit courts officially merged in 1911. *See* ERWIN C. SURRENCY, HISTORY OF THE FEDERAL COURTS 48-49 (2d ed. 2002).
  12. Author's Database, C.C.E.D.N.Y. (Nov. 20, 2015) (on file with author); Author's Database, C.C.N.D.N.Y. (Nov. 20, 2015) (on file with author); Author's Database, C.C.S.D.N.Y., *supra* note 10. By comparison, there were 599 patent suits filed in the Central, Eastern, Northern, and Southern Districts of California in 2011. LEX MACHINA, *supra* note 2. Again, false-marking cases are excluded from the 2011 numbers.
  13. Around 1,000 patent infringement suits were filed in the U.S. Circuit Court for the Northern District of New York in 1883, most of them on Nelson Green's patent for the driven well. Author's Database, C.C.N.D.N.Y., *supra* note 12.
  14. This is derived from the underlying data used in Katznelson, *supra* note 9. I am grateful to Ron Katznelson for sharing this information.

with an average of just under one thousand annual filings.<sup>15</sup> Before the post-2011 spike in filings, the modern peak of patent litigation was around two thousand eight hundred suits filed across the entire United States in 2004.<sup>16</sup> There is as yet no national-level data for the number of patent suits filed each year in the United States during the nineteenth century. But it seems likely that the volume of patent litigation in the late nineteenth-century United States routinely exceeded the number of suits filed during most of the twentieth century. And it is even possible that there were years in the nineteenth century when the *absolute* quantity of patent litigation approached or matched the levels of that during the early twenty-first.

This Article is a historical study of the first patent litigation explosion. Its principal thesis is a novel descriptive claim: there was a surge of patent litigation in the middle part of the nineteenth century, the dimensions of which have not previously been recognized and the causes and effects of which have consequently not been explored. Using hitherto-untapped sources, the Article begins to sketch the outlines of the litigation boom and advances some theories about its composition, causes, and effects.

The picture that emerges is of a world where patent law and litigation were even more legally and politically salient than they are today. Almost every high-profile new technology of the nineteenth century passed through the courts. Patent battles broke out over water wheels, machine tools, mechanical harvesters, sewing machines, railroad equipment, rubber goods, the telegraph, telephone, and electric light, to say nothing of the phonograph, bicycle, automobile, and many other inventions. At the same time, the total litigation generated sometimes took place on a scale that was enormous for its day. As early as the 1840s, a few patent owners launched multistate enforcement efforts involving suits being filed by the hundreds.<sup>17</sup> By the years after the Civil War, some individual enforcement campaigns produced thousands of suits, over inventions ranging from oil-well blasting to rubber dentures.<sup>18</sup>

This phenomenon deserves exploration on its own terms. Despite the startling numerical comparisons between nineteenth- and twenty-first-century patent litigations, the aim of this Article is neither primarily to compare the two periods nor even to insist that they represent quantitatively parallel experiences of patent litigation. It would be misleading to assume that a patent case in the nineteenth century was the same phenomenon as a patent case in

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15. *Id.*

16. LEX MACHINA, *supra* note 2.

17. *See infra* Section I.A.

18. *See infra* Section I.B.

the twenty-first century. Patent litigation in the nineteenth century was much cheaper: it operated under different procedural rules; namely, the scale and organization of business, the legal profession, and the federal courts were all profoundly different.<sup>19</sup> Simply placing past and present litigation statistics alongside each other tells us little. Nevertheless, what was happening in the patent law of the mid-to-late nineteenth century belies the conclusion that patent litigation has not “exploded” before. Indeed, one can believe in the magnitude of the first patent litigation explosion even if one thinks that reports of the modern version are sorely exaggerated.<sup>20</sup>

Determining the overall size and composition of the first patent litigation explosion is a still unfinished task. Until now, the only quantitative source used to gauge nineteenth-century patent litigation has been the published record of reported judicial decisions. The leading empirical work in this area, undertaken by the economic historian Zorina Khan, gathered all 795 reported opinions in patent cases that were issued in the period 1790-1860.<sup>21</sup> Khan used these numbers to gauge the litigiousness of the patent system generally and to analyze the geographical distribution, industry breakdown, and outcomes of suits.<sup>22</sup> Khan was reasonably careful about acknowledging the limitations of reported decisions as a source, but her results have been widely cited as indicating how much patent litigation there “was” in nineteenth-century

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19. See *infra* Sections I.C, II.B.3, III.B.

20. See, e.g., Katznelson, *supra* note 9, at 9 (concluding that “the number of patent lawsuits surged in 2011-2013” but that “this is directly attributable to the America Invents Act (AIA) and is not reflective of an underlying increase in the number of litigated patent disputes”); Adam Mossoff, *The “Patent Litigation Explosion” Canard*, TRUTH ON MARKET (Oct. 18, 2012), <http://truthonthemarket.com/2012/10/18/the-patent-litigation-explosion-canard> [<http://perma.cc/EJK4-D36F>] (“[T]he complaints today about today’s patent litigation crisis arise more from unchecked intuitions about what feels like a bad situation, from unrealistic assumptions about how much certainty we can achieve in the patent system, and from emotionally-compelling anecdotes about innovators running into trouble with patents . . .”).

21. B. Zorina Khan, *Property Rights and Patent Litigation in Early Nineteenth-Century America*, 55 J. ECON. HIST. 58, 62-92 (1995), revised and reprinted in B. ZORINA KHAN, THE DEMOCRATIZATION OF INVENTION 67, 69-105 (2005) [hereinafter KHAN, THE DEMOCRATIZATION OF INVENTION].

22. Khan measured litigiousness relative to a somewhat arbitrary denominator: the number of patents issued in the same decade as the reported decision. See KHAN, THE DEMOCRATIZATION OF INVENTION, *supra* note 21, at 71. This number gives a very rough sense of the decade-by-decade relationship between the growth of litigation and the growth of patenting, but (especially given the age profile of litigated patents described *infra* Part II) it hardly describes the actual propensity to litigate available patents.

America.<sup>23</sup> Unfortunately, nineteenth-century case reporting is a deeply flawed measure of actual litigation. First, cases litigated to a decision were only a small subset of all lawsuits filed, and reported decisions were a further, unrepresentative subset of that. Second, reporting coverage varied wildly over time and across different courts and was heavily affected by the practices of the individual reporters and judges. Published judicial opinions may be a good way to track the development of case law, but as a proxy for the actual number of historical patent disputes they are so problematic as to be nearly useless.

As a result, the history of the litigation explosion must be found in other sources: in contemporary journalism, congressional reports, the histories of individual technologies, and, above all, the records of case filings preserved by the courts. Part I draws on these sources to sketch the most visible kind of patent litigation—the large-scale enforcement campaigns that did the most to shape the politics (and perhaps the law) of patents. This Part offers only the highlights of the patent litigation system during the nineteenth century, but it suggests the scale of enforcement and points to some of the dynamics that made patent law a high-profile legal battlefield. Part II then uses sampled data from the archives of two important federal courts, located in New York City and Philadelphia, to reconstruct the landscape of patent disputes and to get at the fine-grained detail of the litigation. The deep-dive approach confirms the existence of the litigation boom more generally and offers insights into the patents and parties involved.

The effects of the first litigation explosion on patent law range from the obvious to the subtle. On the more visible side are the political consequences of the great patent fights. Large-scale patent conflicts were live and controversial issues in federal and state politics during the mid-to-late nineteenth century. This state of affairs eventually provided the impetus for proposals to curtail patent litigation—to deter nuisance suits, to limit suits against small-scale users of patented technology, and on the state level, to institute consumer protection-type measures regulating the conduct of patent owners. As far as the courts are concerned, the doctrinal effects of the litigation explosion are harder to capture. That said, this period covered the classic formative era of American patent jurisprudence, and the mark of heavy litigation is visible on at least some major areas of judge-made patent law. Above all, the effects of large-scale litigation can be detected in patent litigation's shift to equity, a hugely

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23. See, e.g., Jonathan Rothwell et al., *Patenting Prosperity: Invention and Economic Performance in the United States and Its Metropolitan Areas*, BROOKINGS INST. 9, 43 n.76 (Feb. 2013), <http://www.brookings.edu/~media/research/files/reports/2013/02/patenting-prosperity-rothwell/patenting-prosperity-rothwell.pdf> [<http://perma.cc/TAD4-QUTU>].

important nineteenth-century development whose timing and causes have hitherto been misunderstood. These results are discussed in Part III.

The Article concludes on a note of historical comparison. For those grappling with the notion of a “patent crisis” today, the nineteenth century offers a highly resonant earlier example of patent law under institutional and political stress. Both of these periods feature the rise of an aggressive, entrepreneurial system of patent litigation, met and countered by a backlash against abusive patent enforcement. To a modern observer, the content of the earlier legal and regulatory reactions can seem strikingly familiar. Many of the measures now proposed or attempted as solutions for the ills of modern patent litigation were proposed or attempted in the nineteenth century as well. As a result, arguments based on historical examples from past patent struggles have begun to filter into recent commentary on patent reform. Yet crucially, they have done so without the necessary context of the first patent litigation explosion. Recovering the broader history of patent law, I suggest, offers new perspectives on some of these arguments and sets the lessons of the past on a more solid foundation.

## I. THE RISE OF LARGE-SCALE PATENT LITIGATION

The first patent litigation explosion covered a period lasting roughly from the mid-1840s to the mid-1880s. It overlapped to a large extent with the great surge of patenting that occurred in the middle of the nineteenth century. It also followed close behind the foundational administrative reform of U.S. patent law, the Patent Act of 1836. Chronology alone might suggest that the rise of patent business in the courts reflected the expansion of patenting under a new and improved system of patent rights. Yet the relationship between reform, patenting, and litigation was not so straightforward.

The period between 1850 and 1870 saw the highest rate of growth in patenting in U.S. history.<sup>24</sup> During the 1850s, the number of applications and grants more than tripled, to more than six thousand applications filed and more than four thousand patents granted in 1859.<sup>25</sup> After the Civil War, the number of grants tripled again, to almost thirteen thousand by 1869.<sup>26</sup> The acceleration of the 1850s and 1860s began a sustained half-century climb in the

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24. Alan C. Marco et al., *The USPTO Historical Patent Data Files: Two Centuries of Innovation* 16-17 (U.S. Patent & Trademark Office Econ., Working Paper No. 2015-1, 2015), <http://ssrn.com/abstract=2616724> [<http://perma.cc/6J9E-RD3E>].

25. 3 HISTORICAL STATISTICS OF THE UNITED STATES: EARLIEST TIMES TO THE PRESENT, 3-426 to -27 tbl.Cg27-37 (Susan B. Carter et al. eds., millennial ed. 2006).

26. *Id.*

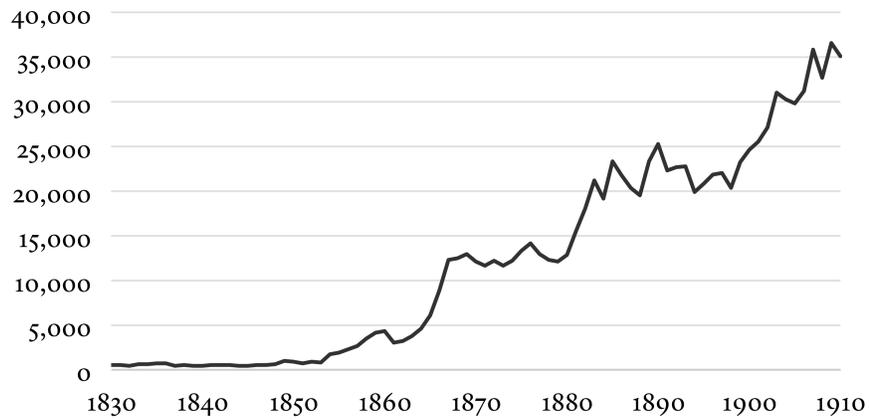
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THE FIRST PATENT LITIGATION EXPLOSION

numbers of patents issued (Figure 1). Patenting per capita similarly rose sharply and by the 1870s and 1880s had reached levels comparable to those that prevailed for most of the twentieth century (Figure 2).

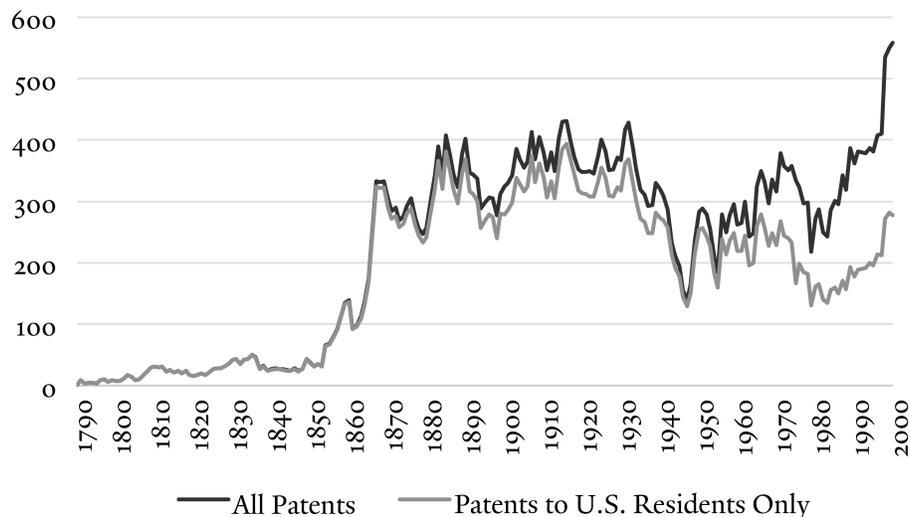
**Figure 1.**  
U.S. PATENTS ISSUED ANNUALLY, SAMPLE YEARS 1830-1910<sup>27</sup>



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27. *Id.*

**Figure 2.**  
U.S. PATENTS ISSUED PER MILLION U.S. RESIDENTS, SAMPLE YEARS 1790-2000<sup>28</sup>



The explosion of patenting rested on an important institutional foundation: the Patent Act of 1836, which created the first truly modern patent system. Since 1793, American patent law had operated as a registration regime, under which applications were simply filed with an office in the State Department, and questions of novelty and validity were generally left for the courts to resolve.<sup>29</sup> In response to widespread complaints about the poor quality of patents granted in this way, Congress acted in 1836 to create a reorganized Patent Office with a staff of professional examiners.<sup>30</sup> The new Patent Office greatly increased the presumptive value of grants by conducting an *ex ante* check on their validity, and by providing a vital institutional platform for formalizing patent practice and disseminating information about new inventions.<sup>31</sup> The 1836 Act did not immediately result in an expansion of

28. 1 HISTORICAL STATISTICS OF THE UNITED STATES: EARLIEST TIMES TO THE PRESENT, *supra* note 25, at 1-28 to -29 tbl.Aa6-8; 3 *id.* at 3-426 to -427 tbl.Cg27-37.

29. Act of Feb. 21, 1793, ch. 11, 1 Stat. 318.

30. Act of July 4, 1836, ch. 357, 5 Stat. 117; S. REP. NO. 24-338, at 4-8 (1836); EDWARD C. WALTERSCHEID, TO PROMOTE THE PROGRESS OF USEFUL ARTS: AMERICAN PATENT LAW AND ADMINISTRATION, 1798-1836, at 322-45, 421-32 (1998); Steven Lubar, *The Transformation of Antebellum Patent Law*, 32 TECH. & CULTURE 932, 940-42 (1991).

31. See KHAN, THE DEMOCRATIZATION OF INVENTION, *supra* note 21, at 53-55; Naomi R. Lamoreaux & Kenneth L. Sokoloff, *Intermediaries in the U.S. Market for Technology, 1870-*

patenting, however. In fact, the number of grants initially fell as a result of the more rigorous examination system and the economic downturn that began with the Panic of 1837. Patent grants did not return to their pre-1836 levels until 1849.<sup>32</sup>

In the meantime, the most conspicuous development in midcentury patent law was the appearance of large-scale enforcement campaigns. A relatively small number of patent grants accounted for what was then an enormous quantity of litigation. The details of these efforts varied. Some of the most notable examples involved older technologies from the first wave of American industrialization—and patents from before the 1836 Act. Others involved the cutting-edge inventions of the 1840s. While most of the early large-scale patent assertion campaigns benefited in some way from the statutory changes of the 1830s, it was not the new examination procedure that mattered: instead, these patentees took advantage of other pro-patentee tools that had become available, especially term extension and reissue.<sup>33</sup> Many of the leading campaigns also involved politics in one way or another, relying on lobbying and patronage in a fashion that belied the ostensibly bureaucratic and technocratic tenor of the new Patent Office administration.

Several of these large-scale assertion efforts have attracted historical attention as discrete (and dramatic) episodes in the history of technology or patent law.<sup>34</sup> However, these efforts have not hitherto been considered as a collective phenomenon. The Sections that follow aim to draw out both the diversity and commonalities of large-scale patent litigation efforts, showing the range of technologies and geographical regions involved even as certain core features recurred. Surveying the major campaigns can give only a selective view of the patent litigation system during the nineteenth century, but it indicates the magnitude of nationwide enforcement and reveals some features common to the leading examples.

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1920, in *FINANCE, INTERMEDIARIES, AND ECONOMIC DEVELOPMENT* 209, 213-14 (Stanley L. Engerman et al. eds., 2003).

32. 3 HISTORICAL STATISTICS OF THE UNITED STATES: EARLIEST TIMES TO THE PRESENT, *supra* note 25, at 3-426 to -27 tbl.Cg27-37; *see also* Kenneth L. Sokoloff, *Inventive Activity in Early Industrial America: Evidence from Patent Records, 1790-1846*, 48 J. ECON. HIST. 813, 818-20 (1988).

33. Term extension was provided for by the 1836 Act. *See* § 18, 5 Stat. at 124-25. Reissue was an administrative innovation approved by statute in 1832. *See* Act of July 3, 1832, ch. 162, § 3, 4 Stat. 559, 559; *Grant v. Raymond*, 31 U.S. (6 Pet.) 218, 240-44 (1832) (affirming the Secretary of State's authority to cancel and reissue patents).

34. *See infra* Sections II.A, II.B.

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*A. Antebellum Patent Wars*

Many of the patents that generated the most litigation in the years after the 1836 Act were not issued under the new law. Instead, these rights had been granted under the earlier registration regime and dated back to the 1820s or earlier. Given the standard fourteen-year term of a patent, such patents would ordinarily have expired by the early 1840s, at the latest. A select few, however, survived into midcentury thanks to term extensions—a feature that made them unusual among patents generally but characteristic of those that generated the most litigation in the 1840s and 1850s. Term extensions could be granted legislatively, by congressional private act,<sup>35</sup> or administratively, under the 1836 Patent Act, by a board of senior federal officeholders consisting of the Secretary of State, the Solicitor of the Treasury, and the Commissioner of Patents.<sup>36</sup> The theory behind extensions, as stated in the 1836 Act, was to reward a deserving patentee who had “without neglect or fault on his part . . . failed to obtain, from the use and sale of his invention, a reasonable remuneration for the time, ingenuity, and expense bestowed upon the same.”<sup>37</sup> In practice, the definition of “fail[ure] to obtain . . . a reasonable remuneration” proved elastic, and energetic lobbying secured extensions for several of the most lucrative patents of their day. Term extension raised the stakes both for and against a patent: it allowed patentees to enforce their rights over a more mature and thus more valuable technology, and it stimulated legal and political resistance to monopolies that were widely attacked as illegitimate.

The leading examples concerned ubiquitous technologies of early American industrialization. Two patents in particular controlled important advances in the mechanization of woodworking technology. Thomas Blanchard’s turning lathe enabled the shaping of wood into irregular forms such as gun stocks, tool handles, and shoe lasts, reducing to a ten-minute task what might have taken a skilled last-maker hours to complete using hand tools.<sup>38</sup> His patent, granted in 1819, was not enforced intensively during its initial term. In 1834, however, Blanchard secured from Congress a private act extending his patent’s term by

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35. See *Bloomer v. McQuewan*, 55 U.S. (14 How.) 539, 543-44 (1852) (listing twenty-five patent extensions by private act between 1808 and 1847).

36. § 18, 5 Stat. at 124. From 1848, the power to grant extensions was vested in the Commissioner of Patents alone. Patent Act of 1848, ch. 47, § 1, 9 Stat. 231, 231.

37. § 18, 5 Stat. at 125.

38. Carolyn C. Cooper, *A Patent Transformation: Woodworking Mechanization in Philadelphia, 1830-1856*, in *EARLY AMERICAN TECHNOLOGY: MAKING AND DOING THINGS FROM THE COLONIAL ERA TO 1850*, at 278, 316-17 (Judith C. McGaw ed., 1994).

fourteen years.<sup>39</sup> With this extension in hand, Blanchard expanded the reach of his patent enforcement. According to his biographer, Carolyn Cooper, the inventor brought “dozens and dozens” of suits against woodworkers, continuing the campaign after a controversial second congressional extension was allowed in 1848.<sup>40</sup> Reported decisions, most of which were from between 1846 and 1855, trace a line of cases through Massachusetts, New Hampshire, Connecticut, and Pennsylvania.<sup>41</sup>

William Woodworth’s planing machine patent had a shorter duration than the Blanchard patent, lasting “only” twenty-eight years from 1828 to 1856, but it evidently cut more broadly. “No patent, it is believed, which has ever been granted in this country, has been so much litigated as this one,” remarked Justice McLean in 1853, on one of the patent’s numerous visits to the Supreme Court.<sup>42</sup> The technology at issue was unquestionably a valuable one. The cylinder-head planing machine enabled the rapid production of wooden boards that were flat; smooth; had a uniform thickness; and featured tongues, grooves, and molded features suiting them for floorboards, doors, and other elements of house construction.<sup>43</sup> What had once been a journeyman’s multiday floorboarding job could now be completed in under two hours.<sup>44</sup> Woodworth, a carpenter from Hudson, New York, conceived a machine along these lines for which he received a patent in 1828.<sup>45</sup> However, lacking capital to develop or manufacture it, Woodworth quickly parted with his rights: he first granted a half share to his local congressman James Strong, and then joined Strong in selling territorial assignments to purchasers across the country.<sup>46</sup>

It was only after the inventor’s death in 1839 that the Woodworth patent became a phenomenon.<sup>47</sup> The grant was extended twice in quick succession, first by the board of commissioners in 1842, then for an additional seven years by act of Congress in 1845.<sup>48</sup> By that time, the patent had come under the control of a syndicate led by James G. Wilson, one of Woodworth’s early

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39. H.R. REP. NO. 23-397, at 1-2 (1834).

40. Carolyn C. Cooper, *Social Construction of Invention Through Patent Management: Thomas Blanchard’s Woodworking Machinery*, 32 *TECH. & CULTURE* 960, 982 (1991).

41. CAROLYN C. COOPER, *SHAPING INVENTION: THOMAS BLANCHARD’S MACHINERY AND PATENT MANAGEMENT IN NINETEENTH-CENTURY AMERICA* 48-54 (1991).

42. *Brooks v. Fiske*, 56 U.S. (15 How.) 212, 224 (1853) (McLean, J., dissenting).

43. Cooper, *supra* note 38, at 280, 293.

44. *Id.* at 293.

45. U.S. Patent No. X5,315 (issued Dec. 27, 1828).

46. Cooper, *supra* note 38, at 296.

47. *Id.* at 303-04.

48. *Wilson v. Rousseau*, 45 U.S. (4 How.) 646, 658-62 (1846).

assignees.<sup>49</sup> The syndicate established a network of assignees that functioned as an interregional cartel, setting the price of boards planed on Woodworth-type machines and taking a royalty on each one.<sup>50</sup> By 1852, a hostile congressional committee estimated—how realistically is not clear—that \$9 million in annual sales of lumber were covered by the scheme and that the owners of the patent had received around \$2 million in royalties.<sup>51</sup> Unsurprisingly, the Woodworth interests were both able and willing to launch hundreds of infringement suits against those who resisted the patent. Wilson claimed to Congress in 1850 that \$150,000 had been spent on litigation costs.<sup>52</sup>

The Blanchard and Woodworth campaigns did not stand alone. Another prominent enforcement effort was that of Zebulon Parker, a millwright from Ohio, who with his brother Austin Parker had developed an improved reaction water wheel in the 1820s and obtained a patent for their invention in 1829.<sup>53</sup> The wheel provided superior power generation, and its use spread among water-powered mills. In 1843, with the patent about to expire, Zebulon Parker obtained a seven-year extension.<sup>54</sup> This was rare, though not unprecedented: the board of commissioners empowered to grant extensions did so seven times between 1836 and 1844.<sup>55</sup> Much more striking was the scale of the subsequent campaign to enforce the patent. Agents spread across the countryside, seeking license fees of between \$10 and \$50 per mill (equivalent to between \$300 and \$1,500 in 2014).<sup>56</sup> A correspondent of the journal *Scientific American* noted that Zebulon Parker's representatives had visited "all, or nearly all, of the saw mills" in Lycoming County, Pennsylvania, during 1848.<sup>57</sup> Ohio and Pennsylvania were the focus of Zebulon Parker's enforcement efforts,<sup>58</sup> but agents were

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49. Cooper, *supra* note 38, at 303-04.

50. H.R. REP. NO. 32-156, at 9 (1852); Cooper, *supra* note 38, at 304.

51. H.R. REP. NO. 32-156, at 3-6.

52. H.R. REP. NO. 31-150, at 4-5 (1850).

53. Edwin T. Layton, Jr., *Scientific Technology, 1845-1900: The Hydraulic Turbine and the Origins of American Industrial Research*, 20 *TECH. & CULTURE* 64, 68-70 (1979); Zebulon Parker, *Sketch of the Invention of Parker's Water Wheel*, 52 *J. FRANKLIN INST.* 48, 48-49 (1851).

54. See *Case v. Redfield*, 5 F. Cas. 258, 259 (C.C.D. Ind. 1849) (No. 2,494).

55. 1845 ANN. REP. COMMISSIONER PATENTS.

56. *Controversial.—Parker's Water Wheels*, *SCI. AM.*, Oct. 6, 1849, at 21; J.R. Lippincott, *Woodworth's and Parker's Renewal of Patents*, *SCI. AM.*, Apr. 24, 1852, at 251. Present-day amounts are based on an extended consumer price index. See Samuel H. Williamson, *Purchasing Power of Money in the United States from 1774 to Present*, MEASURINGWORTH.COM, <http://www.measuringworth.com/ppowerus> [<http://perma.cc/ND7X-2GT6>].

57. *Controversial.—Parker's Water Wheels*, *supra* note 56, at 21.

58. *Id.*; Lippincott, *supra* note 56, at 251.

reported as far afield as Vermont and New Hampshire.<sup>59</sup> Mill owners who resisted were haled into court. By 1849, a reporter's note on one case identified more than two hundred Parker cases then pending in Ohio alone.<sup>60</sup> The following year, the Parker brothers' relative Oliver H.P. Parker, who held the rights for the patent in five states, filed 150 suits in the federal court in Philadelphia.<sup>61</sup>

Not every notorious attempt to assert patent control was as successful. One prominent effort concerned the mechanical reaper. The first practical versions of this machine were invented in the early 1830s by Obed Hussey of Ohio and Cyrus McCormick of Virginia.<sup>62</sup> Hussey was the first to patent, in 1833, but was less commercially successful.<sup>63</sup> McCormick, on the other hand, became the leading manufacturer of reaping machines in a fast-growing and potentially vast market. Unfortunately, large-scale production began only in the late 1840s, just as McCormick's 1834 patent was reaching the end of its term.<sup>64</sup> McCormick then sought an extension of the patent – an attempt that prompted fierce resistance and became “*un cause célèbre*” in Congress around 1850.<sup>65</sup> An early historian reported that “an immense array of political, social, and commercial influence was brought to bear against it by a combination of patent attorneys, rival manufacturers, and agricultural interests; and in the end it was defeated.”<sup>66</sup> In the 1850s, McCormick renewed his campaign via litigation on his subsequent improvement patents, but despite his committing substantial resources to these suits, they were largely unsuccessful.<sup>67</sup>

Alongside the long-lived Parker, Blanchard, and Woodworth grants, a second group of major patent campaigns stamped their mark on midcentury

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59. *Parker and Re-Action Water Wheels*, SCI. AM., Mar. 20, 1852, at 211.

60. See *Parker v. Stiles*, 18 F. Cas. 1163, 1170 (C.C.D. Ohio 1849) (No. 10,749).

61. Author's Database, C.C.E.D. Pa., *supra* note 10; Bill of Complaint, *Parker v. Bell*, Equity Case No. 13 (Oct. Term 1849) (C.C.E.D. Pa. Jun. 1850) (on file with the National Archives at Philadelphia) (detailing assignment to Oliver H.P. Parker of territorial rights for the Eastern Districts of Pennsylvania, New Jersey, Connecticut, Rhode Island, and Massachusetts).

62. DAVID A. HOUNSHELL, *FROM THE AMERICAN SYSTEM TO MASS PRODUCTION, 1800-1932: THE DEVELOPMENT OF MANUFACTURING TECHNOLOGY IN THE UNITED STATES* 154 (1984).

63. *Id.*

64. *Id.* at 155-56.

65. REUBEN GOLD THWAITES, *CYRUS HALL MCCORMICK AND THE REAPER* 246-47 (1909).

66. *Id.* at 248.

67. See CARL B. SWISHER, *THE TANEY PERIOD, 1836-64*, at 505-10 (1974); GORDON M. WINDER, *THE AMERICAN REAPER: HARVESTING NETWORKS AND TECHNOLOGY, 1830-1910*, at 45 n.19 (2012).

America. These were for more recent inventions, patented under the 1836 Act: technologies such as the telegraph, vulcanized rubber, and the sewing machine.

Samuel F.B. Morse's telegraph invention was deeply entangled in patent politics from the beginning. Henry Ellsworth, the first Commissioner of Patents under the 1836 Act, had known Morse for years and sought to make Morse's invention and 1840 patent into an advertisement for Ellsworth's new patent administration.<sup>68</sup> On Morse's part, the bid for patent monopoly was part of a complex political and business strategy. The inventor and his associates originally planned to sell Morse's telegraph patent to the federal government, and most of their early publicity and construction efforts were directed to that end.<sup>69</sup> When the hoped-for congressional purchase failed to occur, Morse turned to licensing and promoting the construction of telegraph lines under the auspices of his patent.<sup>70</sup> Litigation followed, with a sequence of battles in Ohio, Kentucky, and Pennsylvania,<sup>71</sup> culminating at the Supreme Court in *O'Reilly v. Morse*.<sup>72</sup> In its famous decision on the law of patent scope, a divided Court upheld Morse's patent while invalidating its broadest claim, denying Morse what his opponents claimed would be a monopoly over the telegraph.<sup>73</sup>

Charles Goodyear's vulcanized rubber patent was similarly backed by aggressive litigation. In the late 1830s, Goodyear was a manufacturer in the struggling New England rubber industry. Through painstaking experimentation, he produced a number of new rubber goods and processes, including the vulcanization method that he began to develop in 1839 and patented in 1844.<sup>74</sup> Goodyear then began granting product-specific licenses to firms making particular rubber goods, shoes, and fabrics.<sup>75</sup> Goodyear's legal

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68. RICHARD R. JOHN, NETWORK NATION: INVENTING AMERICAN TELECOMMUNICATIONS 39-40, 47-49 (2010).

69. *Id.* at 53-64.

70. *Id.* at 66-68, 74-75.

71. See, e.g., *Smith v. Ely*, 22 F. Cas. 533 (C.C.D. Ohio 1849) (No. 13,043); *Morse v. O'Reilly*, 17 F. Cas. 871 (C.C.D. Ky. 1848) (No. 9,859); *Morse v. O'Reilly*, 17 F. Cas. 867 (C.C.E.D. Pa. 1847) (No. 9,858).

72. 56 U.S. (15 How.) 62 (1853).

73. *Id.* at 113 ("In fine he claims an exclusive right to use a manner and process which he has not described and indeed had not invented, and therefore could not describe when he obtained his patent. The court is of the opinion that the claim is too broad, and not warranted by law."); Adam Mossoff, *O'Reilly v. Morse* 41 (George Mason Law & Econ. Research Paper No. 14-22, 2014), <http://ssrn.com/abstract=2448363> [<http://perma.cc/Y8UU-SNSS>].

74. Cai Guise-Richardson, *Redefining Vulcanization: Charles Goodyear, Patents, and Industrial Control, 1834-1865*, 51 *TECH. & CULTURE* 357, 361-70 (2010).

75. *Id.* at 374.

and commercial success depended on two supplemental efforts. One was a reissue amendment to the patent that broadened its scope.<sup>76</sup> The other pillar of Goodyear's success was litigation. Relations with both licensees and unlicensed manufacturers were contentious, and Goodyear brought more than two hundred suits in the late 1840s and early 1850s.<sup>77</sup> These reached a peak in 1852, with Goodyear's victory in what was universally called the "Great India-Rubber Case" at Trenton, New Jersey.<sup>78</sup> Finally, notwithstanding his victory there, Goodyear was able to persuade the Commissioner of Patents to extend his patent for an additional seven years, on the grounds that "[n]o inventor probably ha[d] ever been so harassed, so trampled upon, so plundered by that sordid and licentious class of infringers known . . . as 'pirates.'"<sup>79</sup>

While Goodyear's campaign represented the dominance of a single patent over a new technology, the sewing machine produced a thicket of conflicting grants. During the 1850s, it was essentially impossible to manufacture a state-of-the-art sewing machine without running afoul of the overlapping patents covering different features of the device.<sup>80</sup> At the heart of the dispute was the 1846 grant to Elias Howe, a penurious independent mechanic who had made early progress toward a working sewing machine but had not achieved a commercially viable product.<sup>81</sup> Other crucial contributions to the technology were made and patented by a variety of inventors and manufacturers, including Allen B. Wilson and Isaac Merritt Singer.<sup>82</sup> Most companies submitted to Howe in the early 1850s, but costly litigation among the major firms continued to worsen, eventually becoming a "Sewing Machine War," in which suits and countersuits riddled the industry.<sup>83</sup> Eventually, in 1856, the leading manufacturers combined in a patent pool called the Sewing Machine

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76. *Id.* at 378-81. For the details of Goodyear's reissue, see *infra* notes 205-206 and accompanying text.

77. RICHARD KORMAN, *THE GOODYEAR STORY: AN INVENTOR'S OBSESSION AND THE STRUGGLE FOR A RUBBER MONOPOLY* 105-06 (2002); Guise-Richardson, *supra* note 74, at 360, 375-77.

78. See R.C. GRIER, *DECISION IN THE GREAT INDIA RUBBER CASE OF CHARLES GOODYEAR VS. HORACE H. DAY* (1852).

79. *Charles Goodyear*, 101 N. AM. REV. 65, 98 (1865) (citing *In re Goodyear Patent*, 1858 Dec. Comm'r Pat. 9).

80. Adam Mossoff, *The Rise and Fall of the First American Patent Thicket: The Sewing Machine War of the 1850s*, 53 ARIZ. L. REV. 165, 172-73 (2011) (describing the complementary technologies that made up the machine).

81. *Id.* at 176-77.

82. *Id.* at 177-80.

83. *Id.* at 184-86, 190-92.

Combination.<sup>84</sup> Litigation among the member firms was stilled, but suits against outsiders continued in large quantities.<sup>85</sup> The Combination's pool agreement provided for the maintenance of a litigation fund of over \$10,000, funded from license payments—an amount larger than the annual sales of most small manufacturers.<sup>86</sup> For his part, Howe's success in enforcing his patent across the industry ultimately brought him vast rewards: through licensing and his role in the Sewing Machine Combination, he claimed to have earned \$444,000 by 1860.<sup>87</sup> In that year, Howe secured a seven-year term extension, which brought his total royalty earnings to \$2 million by the time the patent expired.<sup>88</sup>

### B. Postwar Patent Campaigns

The last third of the nineteenth century saw patent rights and patented inventions emerge as a still greater force in America's industrial development. Over six hundred thousand patents were issued in the United States between 1865 and 1900, more than ten times the number created in the seventy-five years prior to the end of the Civil War.<sup>89</sup> The exploitation of these rights became a signature theme of the period. Sprawling legal campaigns accompanied not only the great high-technology inventions of the age, such as electric lamps and telephones,<sup>90</sup> but also less esoteric articles like baking powder<sup>91</sup> and barbed wire.<sup>92</sup> The battles over these technologies would equal

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84. Ryan L. Lampe & Petra Moser, *Do Patent Pools Encourage Innovation? Evidence from the 19th-Century Sewing Machine Industry* 8-9 (Nat'l Bureau of Econ. Research, Working Paper No. 15061, 2009), <http://www.nber.org/papers/w15061.pdf> [<http://perma.cc/JRU8-ZYUW>].

85. Mossoff, *supra* note 80, at 196; Lampe & Moser, *supra* note 84, at 15. The total number of suits is unknown, but, as an indicator of scale, Massachusetts alone saw more than 140 suits filed between 1857 and 1870. Author's Database, C.C.D. Mass (Nov. 20, 2015) (on file with author). The underlying data are based on docket information provided by the National Archives at Boston.

86. Lampe & Moser, *supra* note 84, at 9-10.

87. Mossoff, *supra* note 80, at 193.

88. *Id.*

89. 3 HISTORICAL STATISTICS OF THE UNITED STATES: EARLIEST TIMES TO THE PRESENT, *supra* note 25, at 3-425 to -27 tbl.Cg27-37.

90. See *infra* notes 132-133 and accompanying text.

91. See, e.g., Att'y Gen. *ex rel.* Hecker v. Rumford Chem. Works, 32 F. 608, 616 (C.C.D.R.I. 1876) (reporting the allegation that "the Rumford Chemical Works ha[s] instituted a large number of suits, in different circuits").

92. See *infra* notes 125-126 and accompanying text.

the midcentury patent wars in political intensity and would surpass them in number and scale.

Again, the litigation took place in a number of different sectors and settings. A few of the largest campaigns of the 1860s continued patent assertion efforts that had begun before the Civil War. Foremost among them was the litigation mounted by the Goodyear Dental Vulcanite Company, which grew out of the 1850s Goodyear rubber litigation while adding a new dimension of mass enforcement. This enterprise began as the American Hard Rubber Company (AHRC), which held exclusive rights for the dental use of rubber patents issued to Charles Goodyear's brother, Nelson Goodyear, in 1851.<sup>93</sup> The AHRC licensed dentists and dental-equipment retailers to mix and set rubber dentures, and filed a few suits against infringers in the late 1850s.<sup>94</sup>

In 1866, the dental vulcanite wars began in earnest. The patent lawyer and AHRC principal Samuel A. Duncan organized the Goodyear Dental Vulcanite Company and began a nationwide legal campaign to extract license payments from every dentist who provided rubber dentures.<sup>95</sup> License terms began at a minimum of thirty-five dollars per year (equivalent to around five hundred dollars in 2014), rising to fifty dollars if payments were not made promptly upon demand.<sup>96</sup> More than two thousand cases were reportedly filed in the federal courts in a campaign of extreme bitterness and great ruthlessness on the company's part.<sup>97</sup> According to the *New York Times*, "servants of dentists were bribed, next-door neighbors were questioned, and intimidation was often resorted to."<sup>98</sup> The company's signature method was allegedly

to employ a beautiful young lady, whom no dentist would suspect. She would call upon the dentist and have him take an impression, to be reproduced in rubber. She was liberal with her money, and only particular on the one subject of the rubber. This once obtained, she had all the evidence requisite to enable [the company] to bring suit.<sup>99</sup>

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93. See Bill of Complaint, *Goodyear Dental Vulcanite Co. v. Avery*, Equity Case No. 21 (Oct. Term) (C.C.E.D. Pa. Nov. 15, 1870) (on file with the National Archives at Philadelphia).

94. *Id.*

95. *Id.*

96. *Killing His Persecutor*, N.Y. TIMES, Apr. 24, 1879, at 5. Again, present value is calculated according to an extended consumer price index. See Williamson, *supra* note 56.

97. Notes, 11 ALB. L.J. 307, 307 (1875); *Killing His Persecutor*, *supra* note 96, at 5.

98. *Killing His Persecutor*, *supra* note 96, at 5.

99. *Id.*

Inflamed by both the Goodyear Dental Vulcanite Company's financial demands and its methods, dentists organized collective resistance through protective associations and pooled their legal efforts, but were largely unsuccessful in fighting off infringement suits. When Nelson Goodyear's (extended) patent expired in 1872, the company continued its practices using John Cummings's 1864 patent for hard-rubber dentures.<sup>100</sup> The Vulcanite Company's extraction of tribute from the dental profession ended only after the leader of its aggressive strategy, company treasurer Josiah Bacon, was murdered in San Francisco by a desperate dentist accused of patent infringement.<sup>101</sup>

Far from the urban setting of the dental-vulcanite litigation, patent battles also flourished in rural and extractive sectors. In the mid-1860s, Colonel E.A.L. Roberts developed a method of increasing oil-well capacity by blasting with an explosive "torpedo."<sup>102</sup> The effectiveness of the technique immediately placed it in high demand among well owners. As it happened, Roberts was a former dental-equipment inventor and manufacturer who had once been in litigation against the Goodyear Dental Vulcanite Company.<sup>103</sup> He had a number of patents already to his name and was likely all too well aware of the possibilities of large-scale patent enforcement. Roberts obtained a patent for his torpedo method in 1866 and set up factories manufacturing torpedoes and nitro-glycerin; he reportedly charged well owners "exorbitant prices," such as "two-hundred dollars for a medium shot."<sup>104</sup> In response, moonlighters sprang up across western Pennsylvania's oil country to engage in unlicensed blasting activities, often under cover of night. "The Roberts crowd hired a legion of spies to report operators who patronized the nocturnal well-shooters," recalled an unsympathetic journalist.<sup>105</sup> "The country swarmed with these emissaries. You couldn't spit in the street or near a well after dark without danger of

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100. See Transcript of Record at 1-4, *Smith v. Goodyear Dental Vulcanite Co.*, 93 U.S. 486 (1876) (No. 311) (describing Cummings's patent and attendant litigation).

101. *Killing His Persecutor*, *supra* note 96, at 5; Carmine Prioli, *Rubber Dentures for the Masses*, 7 AM. HERITAGE INVENTION & TECH. MAG. 28 (1991), <http://www.inventionandtech.com/content/rubber-dentures-masses-1> [<http://perma.cc/A8VE-KKKF>]; Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

102. J.T. HENRY, THE EARLY AND LATER HISTORY OF PETROLEUM 542-43 (Philadelphia, J.B. Rodgers Co. 1873).

103. *Goodyear v. Wait*, 10 F. Cas. 729, 732 (C.C.S.D.N.Y. 1867) (No. 5,587); HENRY, *supra* note 102, at 540-41.

104. JOHN J. MCLAURIN, SKETCHES IN CRUDE OIL: SOME ACCIDENTS AND INCIDENTS OF THE PETROLEUM DEVELOPMENT IN ALL PARTS OF THE GLOBE 334 (1898).

105. *Id.* at 386.

hitting one of the crew.”<sup>106</sup> In the face of organized resistance from a producers’ association of well owners,<sup>107</sup> Roberts filed more than two thousand suits in the Western District of Pennsylvania during the 1870s.<sup>108</sup>

Neither the Goodyear nor the Roberts patent fights, however, were the most expansive or controversial enforcement efforts taking place after the Civil War. That honor collectively went to several campaigns that asserted patents for staple agricultural devices against individual farmers, particularly in the Midwest. Perhaps the most notorious of these was the campaign asserting the “driven well” patent, issued in 1868 to Nelson W. Green.<sup>109</sup> Green was a somewhat unstable character. As the young commander of a wartime volunteer regiment in Cortland, New York, he had shot a captain in a disciplinary dispute, been relieved of his command, faced accusations of insanity, and become involved in litigation against his own pastor.<sup>110</sup> During his military service, however, he had instituted a method of drawing groundwater for his unit using a pointed pipe driven into the ground—a technique that was both easier and sometimes more effective than the standard well-digging approach.<sup>111</sup> Whether he had been the first to do so was a question open to much dispute, both at the time and later.<sup>112</sup> After the war, Green formed a relationship with the pump- and well-supply company Cowing & Co., of Seneca Falls, New York, which manufactured driven-well equipment under the patent and became a major source of distribution.<sup>113</sup> Many more wells were driven independently of Cowing or the patent. Thanks to its low cost and efficiency, the driven-well method spread rapidly in rural areas, with an estimated half-million or more such wells in use by the mid-1880s.<sup>114</sup>

Green assigned half his rights to the New York pipe-and-boiler manufacturers William and George Andrews in 1871,<sup>115</sup> and this group began a

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106. *Id.*

107. *Id.* at 229.

108. The Clerk of the U.S. Circuit Court for the Western District of Pennsylvania certified that “not less than two thousand and fourteen suits ha[d] been brought” on the Roberts patent in that district. Motion To Advance Cause for Hearing at 3, *Schreiber v. Roberts*, No. 1027 (C.C.W.D. Pa. Oct. 25, 1882).

109. See *Beedle v. Bennett*, 122 U.S. 71, 75 (1887).

110. *Id.* at 73-74.

111. See Earl W. Hayter, *The Western Farmers and the Drivewell Patent Controversy*, 16 *AGRIC. HIST.* 16, 18-20 (1942).

112. See, e.g., *Eames v. Andrews*, 122 U.S. 40, 63-69 (1887).

113. Hayter, *supra* note 111, at 20-21.

114. *Eames*, 122 U.S. at 48; Hayter, *supra* note 111, at 21.

115. See Transcript of Record at 4, *Eames*, 122 U.S. 40 (No. 120).

vast campaign of patent assertion stretching from Long Island to Oregon.<sup>116</sup> The minimum license fee was ten dollars per well (equivalent to roughly two hundred dollars in 2014), collected either by agents of the Andrews brothers working on commission or, in some locations, by assignees who had acquired the patent right on a county-by-county basis.<sup>117</sup> Predictably, resistance emerged, and it was met with large-scale litigation. How much is not clear, but the number of suits ran into the thousands. In some counties, as many as three hundred users were sued for refusing to take licenses.<sup>118</sup> More than eight hundred driven-well suits were filed in the Northern District of New York in the year 1883 alone.<sup>119</sup> Litigation on Green's patent seems to have peaked in the late 1870s and early 1880s.<sup>120</sup> Between 1883 and 1887, the agricultural historian Earl Hayter reported that "little actual litigation" took place—and yet *Scientific American* still estimated that some two thousand suits were pending in 1887.<sup>121</sup>

The other great patent assertion effort against farmers was over barbed wire. The first patents for crude forms of barbed wire appeared in the 1860s, and in the early 1870s several Illinois inventors came up with practical designs that would form the basis of commercial-scale production.<sup>122</sup> One of these men, J.F. Glidden, produced the form that would later become the pattern for most fencing wire.<sup>123</sup> In 1876, Glidden assigned his share of the patent rights to the Washburn & Moen Manufacturing Company, of Massachusetts, which began a campaign of enforcement in 1876.<sup>124</sup> Washburn & Moen targeted manufacturers, railroads, and individual farmers across the Midwest, principally in Iowa and in Illinois, where the invention was quickly becoming

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116. See Hayter, *supra* note 111, at 21-22, 22 n.36.

117. *Id.* at 20-21; see also Chauncey Smith, *A Century of Patent Law*, 5 Q.J. ECON. 44, 59-60 (1890) (describing the enforcement strategy for patent violations related to driven wells). Again, present value is calculated according to an extended consumer price index. See Williamson, *supra* note 56.

118. Hayter, *supra* note 111, at 22.

119. Author's Database, C.C.N.D.N.Y., *supra* note 12.

120. Hayter, *supra* note 111, at 21-26.

121. *Id.* at 22 n.36, 25.

122. Earl W. Hayter, *Barbed Wire Fencing—a Prairie Invention: Its Rise and Influence in the Western States*, 13 AGRIC. HIST. 189, 190-91 (1939).

123. *Id.* at 190.

124. *Id.* at 191 n.11; Earl W. Hayter, *An Iowa Farmers' Protective Association: A Barbed Wire Patent Protest Movement*, 37 IOWA J. HIST. & POL. 331, 334 (1939) [hereinafter Hayter, *An Iowa Farmers' Protective Association*].

an indispensable farming tool.<sup>125</sup> The total number of suits filed on the barbed-wire patents is unknown, but the strategy of mass patent assertion was highly visible. Congressman Nathaniel Deering of Iowa in 1879 cited a (likely overblown) newspaper report from Des Moines that “the attorneys for the patentee of the iron barbs for wire-fences are preparing . . . upward of four thousand cases in the Federal courts in our State.”<sup>126</sup>

None of this is to say that high-volume patent litigation escaped more urban, industrial, and high-technology sectors. Between the 1840s and the 1870s, litigation over railroad inventions was widespread, if never as prolific as the examples above. Here, the pattern of agrarian patent disputes was reversed: rather than organized enterprises pursuing small-scale infringers, railroad patent cases often involved individual inventors or independent equipment suppliers suing multiple railroad lines.<sup>127</sup> Thanks to the midcentury proliferation of lines, including urban-district railroads, these suits could be quite numerous. In Philadelphia in 1860, for example, around twenty local railroad and streetcar companies and their various equipment suppliers collectively faced forty-eight suits under Richard Imlay’s carriage patent, John Lightner’s axle-box patent, and David Matthew’s spark-arrester grant.<sup>128</sup> Thomas Sayles, the owner of a clutch of important brake patents, brought suits against major lines across the country in the 1860s and 1870s.<sup>129</sup> This type of litigation ebbed away in the 1880s, however, as lines consolidated and railroad companies organized into two giant collective defense associations, the Eastern Railroad Association and Western Railroad Association.<sup>130</sup> These groupings used their members’ ever-deepening pockets to stave off or buy off threats.<sup>131</sup>

Patent fights were also common in the new electrical industries of the late 1870s and 1880s. Charles Brush and Thomas Edison in electric lighting, for example, and the Bell Telephone Company in telephony, brought frequent

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125. Hayter, *An Iowa Farmers’ Protective Association*, *supra* note 124, at 336-38; Joseph M. McFadden, *Monopoly in Barbed Wire: The Formation of the American Steel and Wire Company*, 52 BUS. HIST. REV. 465, 466-70 (1978).

126. 8 CONG. REC. 1,371 (1879) (statement of Rep. Deering).

127. See STEVEN W. USSELMAN, *REGULATING RAILROAD INNOVATION: BUSINESS, TECHNOLOGY, AND POLITICS IN AMERICA, 1840-1920*, at 104-08 (2002) (describing railroads’ willingness to defy “[o]utside inventors”); *id.* at 110 (describing suits against multiple lines by holders of key brake patents).

128. Author’s Database, C.C.E.D. Pa., *supra* note 10.

129. See Steven W. Usselman & Richard R. John, *Patent Politics: Intellectual Property, the Railroad Industry, and the Problem of Monopoly*, 18 J. POL’Y HIST. 96, 105-06 (2006).

130. USSELMAN, *supra* note 127, at 114-17, 173-75.

131. *Id.*

suits against rival inventors and their licensees.<sup>132</sup> Bell Telephone, in particular, famously filed around six hundred suits under Alexander Graham Bell's basic patents of 1876 and 1877.<sup>133</sup> Patents were particularly central to the fledgling electrical industries because the pioneering companies were often organized around patent franchising: a patent holding company and/or equipment supplier, like the Edison Electric Light Company or American Bell, granted exclusive local licenses to promoters who established lighting networks and telephone exchanges.<sup>134</sup> These licensees then had a strong interest in enforcement of the patents against their local (non-Edison and non-Bell) competitors, leading to waves of litigation as the pioneers of the industry fought for leadership in the field.

### C. *The Dynamics of Mass Enforcement*

A few observations about the large-scale enforcement phenomenon are possible from this brief survey. First, the examples above, while only accounting for a tiny proportion of patentees and litigants, generated enough suits to have a substantial impact on the patent litigation system as a whole. Second, while this is admittedly an unsystematic sample of the highest-profile patent owners, some patterns emerge.

One is that the nature of the patent holders as licensing entities is complicated—or at least does not readily map onto modern tropes about practicing and nonpracticing entities.<sup>135</sup> Some of the patent owners were nonpracticing and devoted to assertion of their patents. The Woodworth planing machine syndicate falls into that category, as do Elias Howe,<sup>136</sup> the Goodyear Dental Vulcanite Company,<sup>137</sup> Charles Goodyear,<sup>138</sup> and perhaps

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<sup>132</sup>. Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10; *see also* Lea Shaver, *Illuminating Innovation: From Patent Racing to Patent War*, 69 WASH. & LEE L. REV. 1891, 1915-21, 1926-33 (2012) (discussing Edison's enforcement efforts).

<sup>133</sup>. CHRISTOPHER BEAUCHAMP, *INVENTED BY LAW: ALEXANDER GRAHAM BELL AND THE PATENT THAT CHANGED AMERICA* 12 (2015).

<sup>134</sup>. *Id.* at 173-74; W. BERNARD CARLSON, *INNOVATION AS A SOCIAL PROCESS: ELIHU THOMSON AND THE RISE OF GENERAL ELECTRIC, 1870-1900*, at 9-10 (1991).

<sup>135</sup>. *Cf.* Michael Risch, *Licensing Acquired Patents*, 21 GEO. MASON L. REV. 979, 988-99 (2014) (comparing some nineteenth-century patent owners to modern assertion entities, but suggesting that few such examples existed).

<sup>136</sup>. Mossoff, *supra* note 80, at 207-08.

<sup>137</sup>. AHRC, predecessor of the Goodyear Dental Vulcanite Company, did manufacture the patented compound for licensed distribution and sale to dentists. *Goodyear v. Wait*, 10 F.

Samuel Morse (though Morse was involved in promoting telegraph enterprises).<sup>139</sup> Yet others were active manufacturers: Cyrus McCormick in reapers,<sup>140</sup> Washburn & Moen in wire,<sup>141</sup> and E.A.L. Roberts in well-blasting equipment.<sup>142</sup> In the economic and organizational context of the nineteenth century, these patent owners' mixed manufacturing and licensing strategies made considerable sense. Before the advent of big manufacturing firms at the end of the century, it was difficult for any supplier to satisfy the regional market for his product, let alone the national market. Any major patent holder would thus depend on licensing to take full advantage of the national scope of the right. Perhaps the surprise is that so many of these firms and inventors chose to be practicing entities as well.

Another consideration prompted by modern concerns – and complicated by the historical setting – is the place of “end-user” suits in the patent litigation explosion. Much recent criticism has descended on the practice of asserting patents against large numbers of technology customers, rather than against their suppliers.<sup>143</sup> So far, the commentary has assumed that this is a new phenomenon, “relatively rare” until our own patent-addled times.<sup>144</sup> Nineteenth-century mass enforcement shows otherwise. The farmer suits in particular would seem to be striking cases of end-user litigation, and were understood as such: farmers were presented by their defenders as “innocent purchasers” of patented articles, unwittingly caught up in a patent system designed for industrial entities.<sup>145</sup> It was not unknown for patent holders to target downstream customers even where a suit against the supplier was available. For example, as part of its strategy to dissuade people from signing up for rival telephone services, the American Bell Telephone Company

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Cas. 729, 732 (C.C.S.D.N.Y. 1867) (No. 5,587). I have not found evidence of manufacturing activity by the Goodyear Dental Vulcanite Company.

138. KORMAN, *supra* note 77, at 175-76 (describing contested accounts of Goodyear's licensing revenue).

139. JOHN, *supra* note 68, at 74-78.

140. HOUNSHELL, *supra* note 62, at 154.

141. Hayter, *supra* note 122, at 191 n.11.

142. MCLAURIN, *supra* note 104, at 385-86.

143. See, e.g., Gaia Bernstein, *The Rise of the End User in Patent Litigation*, 55 B.C. L. REV. 1443, 1451-52 (2014); Colleen Chien & Edward Reines, *Why Technology Customers Are Being Sued En Masse for Patent Infringement and What Can Be Done*, 49 WAKE FOREST L. REV. 235, 235-36 (2014).

144. Chien & Reines, *supra* note 143, at 236.

145. USSELMAN, *supra* note 127, at 148-49.

periodically chose to sue en masse the individual subscribers to infringing exchanges.<sup>146</sup>

To some extent, though, the idea of a calculated “end-user” litigation strategy fits awkwardly in the nineteenth-century context. Widespread enforcement against individuals and small enterprises loomed large partly for the simple reason that most business operations consisted of individuals and small enterprises: the option of suing large manufacturers, retailers, or intermediaries was far less available than it would be today. Zebulon Parker’s suits targeted individual water-mill owners, for example, because no centralized suppliers of mill machinery existed in the 1840s.<sup>147</sup> Woodworkers, dentists, and farmers were similarly small-scale and independent producers. Where infringing activities took place in an essentially artisanal economy, enforcement was bound to sweep in large numbers of individual defendants.

On the other hand, in some ways the comparison stands. Large-scale litigation had the effect of stirring the public against particular patentees and against the patent system in general.<sup>148</sup> And suits against small actors did have one natural resonance with today’s concerns about patent enforcement. Patent holders were well able to exploit the gap between their license demands and the cost of defending an infringement suit. This was especially true in the farmer suits, in Western states, and for any other accused infringer who lacked resources or was geographically distant from a federal court. As Iowa’s U.S. Senator Samuel G. Kirkwood explained:

[A] patentee shall come along and say to each [farmer], “Sir, pay me so much a mile or so much a rod for the wire . . . or you must go to Des Moines . . . and defend a suit to be brought against you, the cost of which and the fees in which will in themselves be more than I demand of you.” . . . [O]ur people are paying day by day \$10, \$15, \$20, when they do not know a particle more whether they owe the man a dollar or a cent . . . but paying the money just because it is cheaper to do it than to defend a suit.<sup>149</sup>

Not all of the pressure for mass enforcement came from the plaintiffs’ side. One result of widespread litigation against individuals—and a fact that

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146. See, e.g., *Thirty Seven Telephone Suits*, N.Y. TIMES, Oct. 16, 1887, at 1 (describing suits against subscribers to infringing services in Elkhart and La Porte, Indiana).

147. There were itinerant millwrights (essentially professional mill engineers for hire) who designed and installed water-wheel systems. They were craftsmen who operated on a relatively small scale. Layton, *supra* note 53, at 69.

148. See *infra* Section III.C.

149. Hayter, *supra* note 111, at 17 (third, fourth, and seventh alterations in original).

ultimately explains much of the volume of mass-enforcement filings—was collective patent defense. Almost all of the largest campaigns described above were characterized by organized opposition to the patent. Lumbermen and carpenters mobilized to defy the Woodworth interests.<sup>150</sup> A United States dental protective union and a bevy of local dentists' associations collected subscriptions to confront the Goodyear Dental Vulcanite Company.<sup>151</sup> A "Producers' Association" gathered oil-well owners against the Roberts patent and reportedly raised between forty thousand and sixty thousand dollars for the cause.<sup>152</sup> Among farmers, antidrivewell associations raised funds and employed counsel to resist Nelson Green's patent. In Michigan, the State Grange (the leading farmers' organization) took over defense against the driven well.<sup>153</sup> Iowa farmers formed the Farmers' Protective Association to fight the barbed-wire patent.<sup>154</sup> Not all defendants in mass patent enforcement campaigns were affiliated with defense associations, and not all much-litigated patents attracted a response of that kind. But the quantity and geographical distribution of large-scale litigation reflected in part the location of organized resistance. These were the places where accused infringers decided to fight rather than take licenses, and also the places where patent owners launched blanket litigation against individuals *pour encourager les autres*.

As I will suggest below, the great patent campaigns would leave their mark on the law and politics of invention. But viewing patent litigation through its most visible events can give only a partial picture. To ground this account in a fuller description of the underlying patent litigation system, we have to turn to other sources.

## II. INSIDE THE PATENT LITIGATION EXPLOSION

To explore the content of the patent litigation explosion, this Article turns to an untapped source: the archives of the federal courts. The archives contain the contemporaneous court records kept by the clerk of each court, which are now held at the National Archives' regional facilities around the country. These records generally include the docket books in which case filings were recorded and in many instances preserve the actual documents filed with the court. The

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<sup>150</sup> Cooper, *supra* note 38, at 313-16.

<sup>151</sup> A HISTORY OF DENTAL AND ORAL SCIENCE IN AMERICA 32 (J.E. Dexter ed., Philadelphia, Samuel S. White 1876).

<sup>152</sup> HENRY, *supra* note 102, at 543.

<sup>153</sup> Hayter, *supra* note 111, at 22.

<sup>154</sup> Hayter, *An Iowa Farmers' Protective Association*, *supra* note 124, at 348.

retention rate of these materials is impressive: in the courts discussed below there is a surviving case file for almost every docketed case. Even so, individual case files vary in their contents. Some contain nothing more than a scrap of paper noting service of a subpoena or an appearance by a lawyer; others include bills of complaint, reports of examiners and special masters, handwritten transcripts of depositions, and even physical exhibits.<sup>155</sup> Where available, this information can be used to build a picture of actual caseloads and the particular features of the parties and patents involved in litigation.

Identifying patent suits from the mass of case files and dockets is no easy matter. Docket books rarely identified a case's subject matter, and courts kept no internal statistics or indices for type of action. For the most part, finding and counting patent cases means trawling through every case file in the law and equity records of the U.S. circuit courts, the federal trial courts with jurisdiction over patent matters.<sup>156</sup> "Read every case file" is dauntingly inefficient as a research method, especially when the documents in question are handwritten on fragile paper. It would be impractical for studying almost any other type of civil litigation in the nineteenth century. It is possible in the patent context only because the haystacks in question contain a *lot* of needles. In the leading jurisdictions, patent suits were one of the single largest categories of action before the circuit courts, and sometimes (particularly on the equity side of the court) completely dominated the caseload.<sup>157</sup> Even so, the search process overall is extremely labor intensive. Trade-offs are inevitable; the only way to cover a significant chronological period is to sample particular courts in particular years.

The data in this Part come from the archives of two very active courts: the U.S. Circuit Courts for the Southern District of New York, in New York City, and the Eastern District of Pennsylvania, in Philadelphia. The sample from those courts amounts to a little over two thousand total cases filed in eight sample years: 1840, 1850, 1860, 1870, 1880, 1890, 1900, and 1910. These jurisdictions were chosen not because they were representative of litigation

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155. See, e.g., *Hempel v. Obersteller, Frankenberg & Co.*, Equity Case No. 4-413 (C.C.S.D.N.Y. May 2, 1870) (on file with the National Archives at New York City) (containing a rubber-coated diaper as an exhibit).

156. For a description of the organization and jurisdiction of the circuit courts, see *supra* note 11 and accompanying text.

157. In the Circuit Court for the Southern District of New York, for example, patent suits made up between sixty percent and eighty-six percent of the equity cases in each of the sample years discussed below. Author's Database, C.C.S.D.N.Y., *supra* note 10. In the Circuit Court for the Eastern District of Pennsylvania, the number fluctuated between fifty-four percent and ninety-nine percent. The percentage of law cases that were patent matters was much lower, and in later years was negligible. Author's Database, C.C.E.D. Pa., *supra* note 10.

activity generally, but because of the generally complete state of their archived records and their particular economic and legal importance. The Southern District of New York and Eastern District of Pennsylvania were two of the leading patent jurisdictions. Their metropolitan centers, New York and Philadelphia, were two of the four largest cities in the United States throughout this period, together accounting for between two percent and seven percent of the country's total population.<sup>158</sup> New York and Pennsylvania were generally the top two states in terms of patents issued, and together accounted for a large share—between one-fifth and one-third—of all U.S. patents issued annually.<sup>159</sup> Finally, the Southern District of New York and Eastern District of Pennsylvania were among the most heavily trafficked judicial districts in the nation. After the Department of Justice began collecting caseload statistics in the early 1870s, these districts together routinely accounted for between ten percent and fifteen percent of the nonadmiralty civil suits between private parties filed in the federal courts nationwide.<sup>160</sup>

The two districts serve as microcosms in one sense. Both had extremely diverse economies—much more diverse, for example, than the industrial monocultures characteristic of New England manufacturing towns or the emerging economic specialization of Midwestern cities. New York was the premier city in both manufacturing and services, dominant in industries ranging from garment manufacturing to printing and publishing. Philadelphia and eastern Pennsylvania possessed a similarly varied economy, including heavy-industrial sectors such as steelmaking and locomotive building, as well as machine tools, textiles, clothing, brewing, sugar refining, furniture, chemicals, and farming. In 1909, Philadelphia reported manufacturing establishments in 211 of the Census Bureau's 264 industry classifications,

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158. 1 HISTORICAL STATISTICS OF THE UNITED STATES: EARLIEST TIMES TO THE PRESENT, *supra* note 25, at 1-28 to -29 tbl.Aa6-8; Campbell Gibson, *Population of the 100 Largest Cities and Other Urban Places in the United States: 1790 to 1990*, tbls.7-14 (U.S. Census Bureau Population Div., Working Paper No. 27, 1998), <http://www.census.gov/population/www/documentation/twps0027/twps0027.html> [<http://perma.cc/T6MN-QNYC>].

159. S. DOC. NO. 56-138, at iv (1901); S. MISC. DOC. NO. 51-58, at ix (1891); H.R. EXEC. DOC. NO. 41-89, at 6-7 (1871); S. EXEC. DOC. NO. 36-7, at v-lxvii (1861); H.R. EXEC. DOC. NO. 31-32, at 36-60 (1851); 1910 ANN. REP. COMMISSIONER PATENTS; 1880 ANN. REP. COMMISSIONER PATENTS; Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

160. H.R. DOC. NO. 62-117, at 186 (1911); H.R. DOC. NO. 57-9, at 76-77 (1901); H.R. EXEC. DOC. NO. 52-7, at 28-29 (1891); S. EXEC. DOC. NO. 47-4, at 28-29 (1881); H.R. EXEC. DOC. NO. 43-6, at 30-35 (1873); Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10. This number excludes admiralty cases, cases to which the United States was a party, and cases arising under federal bankruptcy law (for those years when such a thing existed).

second only to New York City's 217 and well ahead of Boston's 175 and Chicago's 131.<sup>161</sup>

These rough indicators of scale and diversity do not, of course, tell us whether the volume and/or composition of patent litigation in the Southern District of New York and Eastern District of Pennsylvania can be extrapolated across the rest of the country. On the one hand, if patent disputes were driven in part by the scale and clustering of economic activity and innovation, then few places in the country could equal these districts. On the other hand, this was a polycentric industrial economy and there were many other manufacturing hubs: all of New England, upstate New York and western Pennsylvania, northern New Jersey, Baltimore and Washington, D.C., Chicago, St. Louis, Cleveland, and Cincinnati.<sup>162</sup> And patent litigation also flourished outside urban centers, as described in Part I. While the Southern District of New York and Eastern District of Pennsylvania both included agricultural counties within their boundaries, they missed out on much of the mass enforcement against farmers that took place in the Midwest.

Fortunately, starting with these two districts has value either way: if they account for a large proportion of U.S. patent litigation, then the findings below tell us a lot about the overall patent litigation system; if they are only a small part of the national picture, then the scale of the litigation boom must have been genuinely huge.

#### A. *The Quantity of Litigation*

The Southern District of New York and Eastern District of Pennsylvania sample provides the first opportunity to measure directly the quantity of patent litigation in the nineteenth-century courts. Figure 3 describes the number of suits filed in each of the sample years and the number of patents at issue in those suits. Table 1 compares these numbers to the total number of U.S. patents in force in each year. Broadly speaking, these data offer three perspectives on the quantity of patent litigation during the period.

First, there was a late-nineteenth-century peak in the absolute volume of litigation in the two districts, followed by lower numbers of suits leading up to

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161. 9 U.S. BUREAU OF THE CENSUS, THIRTEENTH CENSUS OF THE UNITED STATES, TAKEN IN THE YEAR 1910: MANUFACTURES, 1909: REPORTS BY STATES, WITH STATISTICS FOR PRINCIPAL CITIES 265, 500, 815, 1052 (1912).

162. See, e.g., CENSUS OFFICE, U.S. DEP'T OF THE INTERIOR, REPORT ON MANUFACTURING INDUSTRIES IN THE UNITED STATES AT THE ELEVENTH CENSUS: 1890, PART II: STATISTICS OF CITIES, at xxx-xxxiv (1895) (listing the manufacturing output for principal U.S. cities in 1880 and 1890).

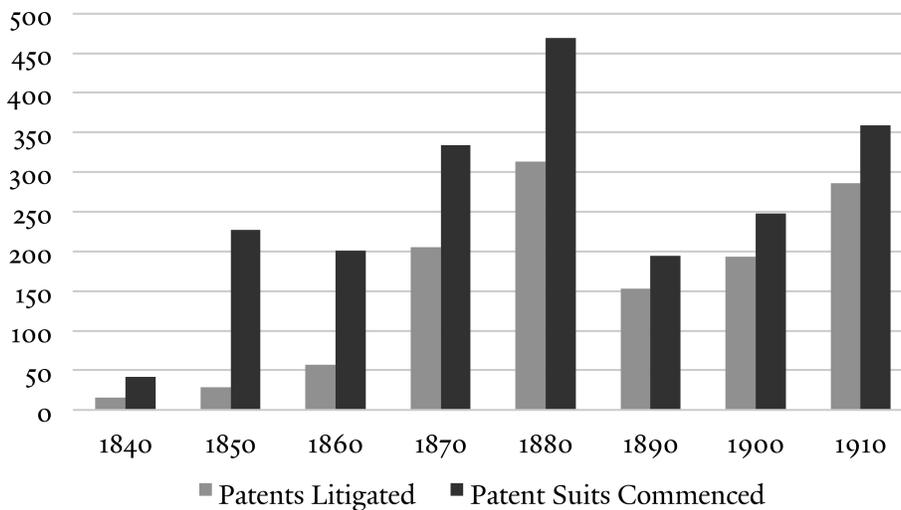
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THE FIRST PATENT LITIGATION EXPLOSION

the turn of the century. As Figure 3 shows, more than 200 patent suits were filed in 1850 and 1860, and more than 300 in 1870, before the amount of litigation reached its highest in 1880, with 469 suits brought under 313 patents. The number of suits then fell back into the 200-250 range in 1890 and 1900, climbing over 300 again in 1910. Looking at the raw numbers alone gives a picture of a patent litigation explosion that arose before the Civil War and reached its height in the postwar years.

**Figure 3.**  
PATENT LITIGATION, SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA, SAMPLE YEARS 1840-1910<sup>163</sup>



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<sup>163</sup>. Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

**Table 1.**

PATENT LITIGATION, SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA, SAMPLE YEARS 1840-1910, RELATIVE TO THE TOTAL NUMBER OF U.S. PATENTS IN FORCE, AND COMPARED TO SUITS IN ALL U.S. DISTRICTS IN 2013<sup>164</sup>

	<i>Estimated Total U.S. Utility Patents in Force</i>	<i>Suits in C.C.S.D.N.Y. and C.C.E.D. Pa. per 1,000 U.S. Patents in Force</i>	<i>Patents Litigated in C.C.S.D.N.Y. and C.C.E.D. Pa. per 1,000 in Force</i>
1840	7,074	5.9	2.1
1850	7,571	30.0	3.8
1860	22,294	9.0	2.6
1870	84,828	4.0	2.4
1880	186,235	2.5	1.7
1890	283,800	0.7	0.5
1900	369,887	0.7	0.5
1910	455,701	0.8	0.6
2013 (All U.S. Litigation)	2,239,231	2.7 (All Districts)	2.2 (All Districts)

Second, the quantity of litigation presents a different trajectory when judged in relation to the size of the patent system (Table 1). Relative to the total estimated number of U.S. patents in force, the numbers of suits brought and individual patents litigated were highest in 1850. At that time, the explosive midcentury growth of patent issues was only just beginning, but the explosion in the number of suits was already well under way. During the second half of the century, the growth of litigation did not keep up with the

164. 1836-1910 ANN. REP. COMMISSIONER PATENTS; OWEN BYRD & BRIAN HOWARD, LEX MACHINA, LEX MACHINA 2013 PATENT LITIGATION YEAR IN REVIEW, at i-ii (2014); 3 HISTORICAL STATISTICS OF THE UNITED STATES: EARLIEST TIMES TO THE PRESENT, *supra* note 25, at 3-426 to -27 tbl.Cg27-37; WORLD INTELLECTUAL PROP. ORG., WORLD INTELLECTUAL PROPERTY INDICATORS 83 (2013); Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10. Estimated numbers for 1840-1910 assume that all patents remained in force for the standard statutory fourteen- or seventeen-year term, adding where relevant the number of patents remaining in force under seven-year administrative extensions. The number of patents in force is given as of January 1 each year, except for the 2013 column, which shows patents in force at the end of 2012.

expansion of patenting, and the number of Southern District of New York and Eastern District of Pennsylvania suits per thousand U.S. patents trailed off, from thirty to less than one. The proportion of total U.S. patents that were involved in litigation in those districts slid less dramatically, from over 3.5 per thousand in force to around 0.5. As a matter of relative litigiousness, the patent explosion was at its height in midcentury.

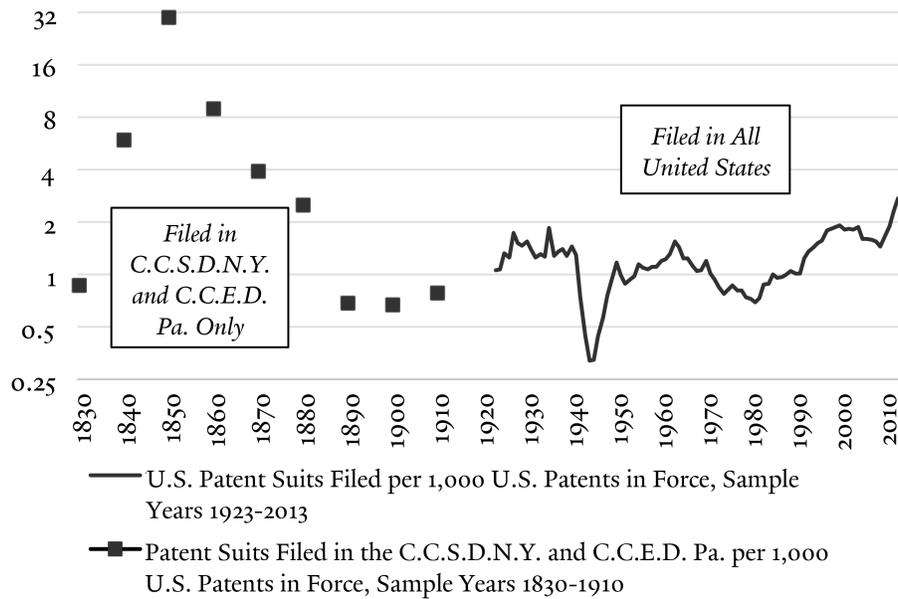
Third, as indicated to the right of Table 1, all of these numbers hold up in comparison to those at the peak of the modern patent litigation explosion. In 2013, the record number of cases filed nationwide (6,092) represented 2.7 suits per thousand U.S. patents in force.<sup>165</sup> That rate of litigation was exceeded in 1840, 1850, 1860, 1870, and nearly matched in 1880 by suits filed in the Southern District of New York and Eastern District of Pennsylvania alone. The amount of litigation per U.S. patent was fully ten times higher in those two districts *by themselves* in 1850 than it was across the whole country in 2013. In 1890-1910 the numbers in these two districts were lower, but still high enough to suggest that the national rate of litigation exceeded that of today.<sup>166</sup> Figure 4 puts these rates in their long-run context by comparing the Southern District of New York and Eastern District of Pennsylvania sample years with a complete series of annual patent suit filings from 1923-2013, compiled by Ron Katznelson.

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<sup>165</sup>. BYRD & HOWARD, *supra* note 164, at i; WORLD INTELLECTUAL PROP. ORG., *supra* note 164, at 83.

<sup>166</sup>. As long as the Southern District of New York and Eastern District of Pennsylvania made up no more than a quarter of all patent suits filed nationwide in 1890-1910, the national rate of suits relative to patents in force would have exceeded 2013 levels.

**Figure 4.**  
**RATES OF PATENT LITIGATION PER THOUSAND U.S. PATENTS IN FORCE,**  
**SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA,**  
**SAMPLE YEARS 1830-1910, AND ALL U.S. DISTRICTS, SAMPLE YEARS 1923-2013**  
**(LOG SCALE ON Y-AXIS)<sup>167</sup>**



In terms of the proportion of patents litigated: the 4,917 patents on which suit was filed nationwide in 2013 represented 2.2 litigated patents per thousand in force.<sup>168</sup> Filings in New York City and Philadelphia alone outstripped that pace in 1850, 1860, and 1870. The figures from these two districts again suggest that the national number would have comfortably cleared modern levels in 1840 and 1880 and perhaps done so in 1890, 1900, and 1910 as well. The nineteenth-century patent litigation explosion was not just a matter of mass enforcement on a few patents; a historically high proportion of grants were litigated as well.

<sup>167</sup>. Katznelson, *supra* note 9; Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

<sup>168</sup>. BYRD & HOWARD, *supra* note 164, at ii, 9; WORLD INTELLECTUAL PROP. ORG., *supra* note 164, at 83.

*B. Drivers of the Patent Litigation Explosion*

The Southern District of New York and Eastern District of Pennsylvania data offer a wealth of information on the parties and patents involved in litigation. Three notable drivers of the litigation boom stand out from the sample: patent stretching, multiple litigation, and the changing organization of business activity.

*1. Patent Stretching*

The notion that patent holders commonly stretch their rights beyond the proper scope of their exclusive grant is a perennial complaint about the patent system. Patent interpretation and enforcement are rife with uncertainty, thanks to the limitations of claim drafting, the vagaries of judicial interpretation, and the presence of penumbral doctrines such as infringement by equivalents and functional claiming.<sup>169</sup> The greater the uncertainty, the more litigation one would expect, and the more opportunities are available to patent owners to assert broad rights over a technology, including coverage of inventions and improvements far from the inventor's original conception. These aspects of patent law have been repeatedly and persuasively identified as engines of litigation from the early nineteenth century to the software patents of the present day.<sup>170</sup>

If the boundaries of patent rights are malleable today,<sup>171</sup> they were all the more so in the nineteenth century. The very act of claiming one's invention was open-ended. Modern patent law requires careful delineation of inventive scope in separately written claims, an approach known as "peripheral claiming" or "fence post" claiming, for its work in marking the outer limits of the right.<sup>172</sup> Nineteenth-century practice was characterized by a "central claiming" or "sign post" method, in which the description of the invention was read together with the claims to indicate the general nature of the protected invention and hence the scope of the patent, but those claims did not themselves define the

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<sup>169</sup>. BESSEN & MEURER, PATENT FAILURE, *supra* note 5, at 8-11.

<sup>170</sup>. See, e.g., *Winans v. Denmead*, 56 U.S. (15 How.) 330, 347 (1853) (Campbell, J., dissenting) (charging that "[n]othing, in the administration of this law, will be more mischievous, more productive of oppressive and costly litigation, of exorbitant and unjust pretensions and vexations [sic] demands" than the doctrine of equivalents announced in the case); BESSEN & MEURER, PATENT FAILURE, *supra* note 5, at 8-11.

<sup>171</sup>. See Jason Rantanen, *The Malleability of Patent Rights*, 2015 MICH. ST. L. REV. 895.

<sup>172</sup>. See, e.g., Dan L. Burk & Mark A. Lemley, *Fence Posts or Sign Posts? Rethinking Patent Claim Construction*, 157 U. PA. L. REV. 1743, 1744 (2009).

peripheral boundaries of the patentee's rights.<sup>173</sup> The earliest patents possessed no claims at all in the modern sense, only a specification of the invention; the practice of adding claims as a textually separate statement appeared organically during the first decades of the nineteenth century before gaining statutory recognition in the 1836 Patent Act.<sup>174</sup> Yet even with the claiming requirement in place, questions of scope and infringement were still not resolved solely, or even primarily, with reference to the text of the claim. Instead they were determined by comparing the accused infringing product to the invention described in the patent.<sup>175</sup> Stricter peripheral claiming gained growing official sanction in the later part of the century, especially from the 1870s onwards,<sup>176</sup> but its adoption was gradual and its hold incomplete.<sup>177</sup> In addition, judicial construction of patent scope contained its own degree of explicit flexibility. It was common at midcentury for judges to invoke "canons of liberal construction" toward patentees in the interpretation of patents.<sup>178</sup> Various doctrines embraced liberality, including the understanding that, when interpreting the patent from its specification and claims, the scope of the grant should extend to equivalents of the specific embodiment described.<sup>179</sup>

It is plausible that there were tides in judicial attitudes toward the scope of patents that help to account for the swell and ebb of litigation. Indeed, a *prima facie* case might be made from the conventional chronology, which has liberal

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173. See *id.* at 1766-70; William Redin Woodward, *Definiteness and Particularity in Patent Claims*, 46 MICH. L. REV. 755, 760 (1948) ("[T]he courts for a long time did not regard the particular formulations chosen by the inventor to express his claim and distinguish his invention from the prior art as the definitive measure of the scope of the patent.").

174. See, e.g., Karl B. Lutz, *Evolution of the Claims of U.S. Patents*, 20 J. PAT. OFF. SOC'Y 134, 134-43 (1938).

175. *Id.* at 472-74.

176. See Jeanne C. Fromer, *Claiming Intellectual Property*, 76 U. CHI. L. REV. 719, 731-35 (2009); Lutz, *supra* note 174, at 487-88 (noting the adoption after 1870 of Patent Office rules requiring greater specificity in claiming).

177. See John M. Golden, *Construing Patent Claims According to Their "Interpretive Community": A Call for an Attorney-Plus-Artisan Perspective*, 21 HARV. J.L. & TECH. 321, 348-63 (2008) (documenting "[t]he [s]low [e]volution of [m]odern [c]laims and [c]laim [i]nterpretation"); Woodward, *supra* note 173, at 760-64 (reviewing decisions from the late nineteenth century that continued to deemphasize the text of the claim).

178. See Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent "Privilege" in Historical Context*, 92 CORNELL L. REV. 953, 998-1001 (2007).

179. See, e.g., *Winans v. Denmead*, 56 U.S. (15 How.) 330, 343-44 (1853); see also Joshua Sarnoff, *The Historic and Modern Doctrines of Equivalents and Claiming the Future, Part I (1790-1870)*, 87 J. PAT. & TRADEMARK OFF. SOC'Y 371, 395-96 (2005) (discussing *Winans*). Another example—this one narrowing patent scope—was the principle that patents should be construed narrowly to save their validity. See, e.g., *Turrill v. Mich. S. & C. R.R. Co.*, 68 U.S. (1 Wall.) 491, 510 (1863).

claim construction and the doctrine of equivalents emerging by the 1850s and stricter peripheral claiming taking hold in the late nineteenth century.<sup>180</sup> However, there are reasons to be wary about attributing wider patterns of litigation to any particular doctrine of claim construction, still less to any purported clear trend toward generosity or strictness over time. For one thing, patent law was seen by its most expert participants as a branch of law that defied clear ordering. George Ticknor Curtis, the leading treatise writer of the 1850s and 1860s, admitted that “the Patent Law admits of less reduction to precise rules and axioms, than any other branch of jurisprudence,” with the case specificity of judicial decisions meaning that “a precise rule is rarely to be eliminated from them.”<sup>181</sup> Furthermore, the courts were persistently split over questions of broad and narrow construction.<sup>182</sup> Some of the doctrinal constructs at the heart of claim breadth, such as the boundary between a “principle,” a “process,” and an unpatentable abstract idea, remained thoroughly slippery throughout the second half of the century.<sup>183</sup> Finally, the shift to peripheral claiming was gradual and partial, with countervailing doctrines surviving alongside it.<sup>184</sup> Tempting though it might be to pick on subsequently famous waypoints of patent jurisprudence as facilitators of the litigation boom, using such markers in hindsight may radically overstate the coherence of nineteenth-century patent doctrine.

By contrast, there are some highly visible practices of patent stretching whose rise and fall coincide strikingly with the litigation explosion. During that period, litigated patents were persistently expanded in two ways: temporally, through term extension, and textually, by reissue. As Figure 5 shows, more

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180. Burk & Lemley, *supra* note 172, at 1769-70.

181. GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS IN THE UNITED STATES OF AMERICA, at x (Boston, Charles C. Little & James Brown 1st ed. 1849).

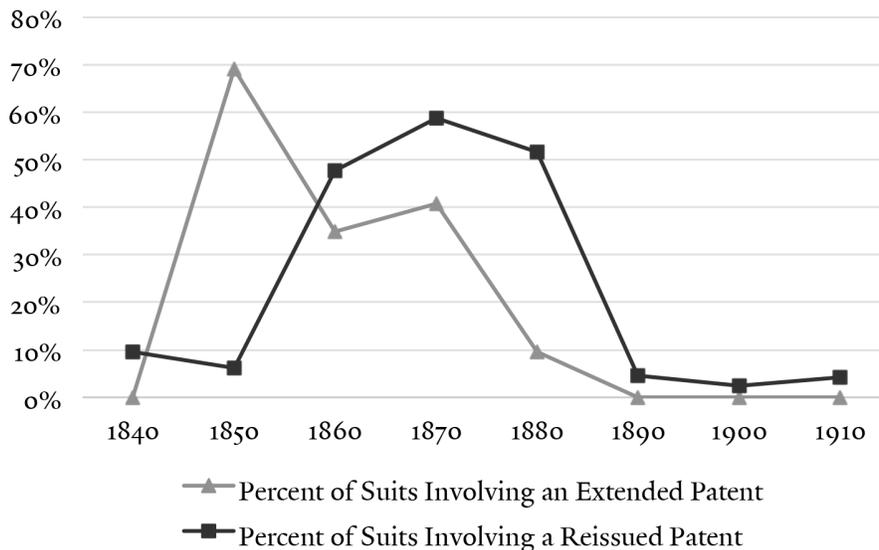
182. See Lutz, *supra* note 174, at 470-71 (describing divergent decisions in the 1870s); *infra* text accompanying notes 270-275 (describing divisions on the U.S. Supreme Court in the 1850s).

183. Oren Bracha, Owing Ideas: A History of Anglo-American Intellectual Property 448-88 (June 2005) (unpublished J.S.D. dissertation, Harvard Law School) (on file with author).

184. See J. Jonas Anderson & Peter S. Menell, *Informal Deference: A Historical, Empirical, and Normative Analysis of Patent Claim Construction*, 108 NW. U. L. REV. 1, 13-18 (2014). In addition to the continuing viability of infringement by equivalents, the patent law of the late nineteenth and early twentieth centuries embraced the concept of the “pioneer patent,” which received a broad construction on account of the technological significance of the invention. See, e.g., William K. Townsend, *Patents, 1701-1901*, in TWO CENTURIES’ GROWTH OF AMERICAN LAW, 1701-1901, at 391, 406 (Members of the Faculty of the Yale Law Sch. eds. 1901) (“The first inquiry is whether the patent is a primary one; that is, for a pioneer invention . . . . In the case of a primary patent greater liberality is shown in construing its claims so as to protect it against equivalents . . .”).

than two-thirds of suits in the 1850 sample involved a patent that had received at least one seven-year term extension either by act of Congress or from the board of executive branch officials (or, after 1848, from the Commissioner of Patents) empowered to grant such petitions. More than a third of the suits in 1860 and 1870 involved patents that had similarly been extended. These patents were always a minority, even among litigated grants: in no year sampled here did they exceed fifteen percent of the patents in suit. But they were predictable litigation magnets because of the rents they could extract from more mature technologies and because of the relatively greater interest in resisting them as a result.

**Figure 5.**  
PERCENT OF SUITS INVOLVING EXTENDED AND REISSUED PATENTS, SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA, SAMPLE YEARS 1840-1910<sup>185</sup>



Extensions were a notable aspect of patent management for several decades in the middle of the nineteenth century. Although extended patents made their greatest litigation impact at the beginning of the Southern District of New York and Eastern District of Pennsylvania sample, extension practice actually

<sup>185</sup> Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

reached its peak in the third quarter of the century. Famous examples like Woodworth and Blanchard aside, few expiring patents were extended before the 1850s. Between 1836 and 1851 only thirty-eight patents were extended by the Patent Office board and only a handful by Congress.<sup>186</sup> Generally, fewer than 1% of expiring patents received an additional term, and between 1844 and 1848, fewer than 20% of applications for an administrative extension were approved.<sup>187</sup> After the Commissioner of Patents gained sole authority to grant extensions in 1848, the approval rate rose above 50%.<sup>188</sup> By the late 1850s the doors had been flung open: between 1857 and 1877, around 80% of extension applications were approved. Many more patents were extended in that period: often around 5% to 8%, and sometimes as high as 11%, of the patents expiring each year.<sup>189</sup> Over two hundred extensions per year were granted in 1872 and 1873.<sup>190</sup> The welter of extensions came to an abrupt end soon thereafter, though, because the Patent Act of 1861 abolished administrative extensions for all grants made after that date.<sup>191</sup> The Commissioner of Patents granted the last extension in 1877.<sup>192</sup> After 1880 no suits on extended patents appear in the Southern District of New York and Eastern District of Pennsylvania sample.<sup>193</sup>

The blossoming of term extensions between the 1850s and mid-1870s reflected the emergence of a highly solicitous attitude at the Patent Office. During the 1840s, the Office had drawn its nascent examining staff from a cadre of accomplished “scientific men” who, for a time, imposed strict standards of examination.<sup>194</sup> This cohort proved notably stingy in granting patent applications; even as the number of applications took off around midcentury, the rate of approval rarely crept above fifty percent.<sup>195</sup> Under pressure from a growing patentees’ lobby of inventors and patent agents,

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186. 1844-1851 ANN. REP. COMMISSIONER PATENTS. The 1844 report states that seven extensions were granted by that date. 1844 ANN. REP. COMMISSIONER PATENTS.

187. 1844-1848 ANN. REP. COMMISSIONER PATENTS.

188. 1849-1851 ANN. REP. COMMISSIONER PATENTS.

189. 1857-1877 ANN. REP. COMMISSIONER PATENTS. The reports for 1854-1856 do not give numbers of extensions applied for or granted.

190. 1872-1873 ANN. REP. COMMISSIONER PATENTS.

191. Patent Act of 1861, ch. 88, § 16, 12 Stat. 246, 249.

192. See 1877-1881 ANN. REP. COMMISSIONER PATENTS.

193. Author’s Database, C.C.E.D. Pa., *supra* note 10; Author’s Database, C.C.S.D.N.Y., *supra* note 10.

194. See Robert C. Post, “*Liberalizers*” Versus “*Scientific Men*” in the Antebellum Patent Office, 17 TECH. & CULTURE 24, 31-33, 38-39 (1976) (describing the scientific accomplishments of this cohort).

195. *Id.* at 32.

however, the Office began to relent and embrace “liberalization.”<sup>196</sup> Charles Mason, who served as Commissioner of Patents from 1853 to 1857, noted with satisfaction that

[n]o small change has certainly been introduced since I have been at the head of the office. Some persons may doubt the propriety of allowing so large a proportion of patents. I am satisfied, however, that a liberal policy in this respect towards inventors is the right policy and most in accordance with the intention of the patent law.<sup>197</sup>

Mason’s successor, Joseph Holt, was still more patentee friendly. In one of his early decisions as Commissioner, Holt announced that the Office should find itself “taking [inventors] by the hand, as the benefactors of their race, and strewing, if possible, their pathway with sunshine and with flowers.”<sup>198</sup> Arriving as the appointee of incoming President Buchanan, Holt purged the old guard of examiners and replaced them with party men who proved much more receptive to inventors’ interests.<sup>199</sup> The new philosophy generally held through successive changes in leadership and administration, and the Patent Office did not revert to its erstwhile skepticism during the decades that followed.<sup>200</sup>

Extensions were not the only Patent Office-controlled practice that flourished beginning in the 1850s. In addition to the prevalence of extended patents, around half of the suits filed in 1860, 1870, and 1880 included at least one reissued patent (Figure 5). Reissues were much more common than extensions: more than a third of the unique patents in those three sample years had been reissued at some point before litigation,<sup>201</sup> and the Patent Office approved hundreds of reissues each year during the relevant decades.<sup>202</sup> Seeking a reissue during that period appears to have been a fairly standard tactic for patentees preparing for litigation.

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196. *Id.* at 32-35, 39-42, 46-47.

197. Charles Mason, Diary Entry (June 15, 1855), in 2 LIFE AND LETTERS OF CHARLES MASON, CHIEF JUSTICE OF IOWA, 1804-1882, at 138 (Charles Mason Remey ed., 1939); see also Post, *supra* note 194, at 47-48 (describing Mason’s tenure as Commissioner).

198. J. Holt, *Commissioner Holt’s Decision*, SCI. AM., Nov. 14, 1857, at 78.

199. Post, *supra* note 194, at 48-51.

200. *Id.* at 52.

201. Author’s Database, C.C.E.D. Pa., *supra* note 10; Author’s Database, C.C.S.D.N.Y., *supra* note 10.

202. Reissue grants rose from a few dozen a year before 1857 to an average of over 500 annually in the 1870s, before falling dramatically in the 1880s. 1850-1890 ANN. REP. COMMISSIONER PATENTS.

There are a number of reasons why this phenomenon would be expected to increase the number of suits. One is the aggravated uncertainty involved: parties wishing to operate a potentially patented technology had to contend not only with the original specification and claims, but also with reissued versions and with the potential of further reissues in the future. At a time when the information flows of the patent system were still developing, the problems of public notice created by constantly changing patents were acute.<sup>203</sup>

Moreover, applicants presumably sought reissues because they strengthened the hand of the patentee, either as to scope or validity. Evidence suggests that broadened claim scope was the prize frequently sought and sometimes obtained by patent owners.<sup>204</sup> Teasing out the scope effects of claim amendments on a case-by-case, invention-by-invention basis for a large number of patents is prohibitively difficult, but some of the most famous patents suggest a blueprint. Charles Goodyear's much-litigated 1844 patent for the process of vulcanizing rubber provides one example. By 1848, commercial rubber could be made by methods that fell outside the terms of Goodyear's claim, but the inventor's backers persuaded him to obtain a reissue that claimed in more abstract terms the application of heat in the curing process, and thus his patent continued to cover the later methods.<sup>205</sup> In 1860, a further reissue granted to Goodyear's heir added a product claim for "the new manufacture called 'vulcanized india-rubber,'" allowing the patentee to cover rubber goods directly rather than just the process of manufacture.<sup>206</sup> At around

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203. On the flow of patent information in the nineteenth century, see Lamoreaux & Sokoloff, *supra* note 31.

204. *But see* Lutz, *supra* note 174, at 152 (noting that during a "formative period" of claiming practice in the 1840s, "patents were often criticized [i.e., their validity was questioned] by the courts for failure to clearly point out the invention, whereupon the patents were reissued with more definite claims"); *id.* at 146 (describing a reissue following a judicial finding that the patent in question was invalid as asserted).

205. Goodyear had originally claimed "[t]he combining of the said gum with sulphur and with white lead, so as to form a triple compound," adding a dependent claim for "the process of exposing [the compound] to the action of a high degree of heat" to achieve vulcanization. U.S. Patent No. 3,633 (issued June 15, 1844). By 1848, commercial rubber could be made with rubber and sulfur only, omitting Goodyear's white lead. The reissued patent claimed "[t]he curing of caoutchouc or india-rubber by subjecting it to the action of a high degree of artificial heat, substantially as herein described, and for the purpose specified," adding a second claim for "the preparing and curing of the compound of india-rubber, sulphur and a carbonate or other salt or oxide of lead, by subjecting the same to the action of artificial heat, substantially as herein described." U.S. Patent No. RE156 (issued Dec. 25, 1849); *see also* Guise-Richardson, *supra* note 74, at 377-78 (outlining the purposes of the reissue and the role of Goodyear's investors).

206. U.S. Patent No. RE1,084 (issued Nov. 20, 1860); Kendall J. Dood, *Pursuing the Essence of Inventions: Reissuing Patents in the 19th Century*, 32 *TECH. & CULTURE* 999, 1002 (1991).

the same time that Goodyear received his first reissue, Samuel Morse received the second reissue of his basic telegraph patent, and it was this version that included what became his broadest and most famous claim: to “the use of the motive power of the electric or galvanic current . . . however developed for marking or printing intelligible characters, signs, or letters, at any distances . . . .”<sup>207</sup>

Reissues appealed to those who acquired patents as well as to inventor-owners. Former Commissioner of Patents Charles Mason, for example, followed his tenure in the office with a career as a prominent patent lawyer who periodically acquired an interest in promising grants.<sup>208</sup> In 1876, Mason noted in his diary that he had been

all day engaged in writing a specification in the case of Stephen Hull for the reissue of the patent in which we have a one half interest. I think we shall be so able to shape the patent and the claims as to subordinate most of the harvesting machines that are made in the United States . . . .<sup>209</sup>

On another occasion, Mason recorded his acquisition of a stake in the Atkins reaper patent. “It is a very ingenious invention, and led off into a new field of discovery,” Mason wrote, “[b]ut the patent was not what it ought to have been, and it has proved of very little advantage to the owner. We are to have one-half the patent for taking out the re-issue, and I hope to make it of value to us.”<sup>210</sup>

Even among patent lawyers, these practices seemed to reach untenable levels. Hubert Howson, one of Philadelphia’s (and the country’s) leading patent attorneys, wrote in 1878 of the “patent speculator,” who

takes an excursion to Washington, probably takes the advice of a solicitor there, to whom he explains what he wants, and together they go on a hunting expedition through the records and model halls, until they find some model of a patent which they think can be doctored by reissue to resemble a subsequent prominent patent . . . . A lot of these speculators, lawyers and patent solicitors sometimes among them, club

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207. U.S. Patent No. RE117 (issued June 13, 1848); Mossoff, *supra* note 73, at 9.

208. See KENNETH W. DOBYNS, *THE PATENT OFFICE PONY: A HISTORY OF THE EARLY PATENT OFFICE 156-64* (1997).

209. Charles Mason, Diary Entry (Apr. 20, 1876) (on file with the Manuscript Division, Library of Congress, Charles Mason Remy Family Papers, Box 17).

210. Charles Mason, Diary Entry (Dec. 28, 1863), in 5 *LIFE AND LETTERS OF CHARLES MASON, CHIEF JUSTICE OF IOWA, 1804-1882*, *supra* note 197, at 741.

together to buy up a patent or patents relating to something in general use in different parts of the country, subject their purchases to the reissuing process, establish headquarters, and, with a great flourish, proceed to levy on manufacturers who were ignorant of the existence of the patent which has been reissued, and which would doubtless have been forgotten, but for the keen eyes of these speculators.<sup>211</sup>

The heavy litigation of reissued patents reflected both the strengths and the weaknesses of such grants. On the one hand, the courts and the Patent Office in the mid-nineteenth century seem to have readily allowed broadening reissues and thus enabled patentees to enforce excessively powerful rights. As a contemporary observer noted,

For years it had been the accepted rule that the statutory provisions concerning reissues were to be liberally construed, so as to insure to the inventor the full enjoyment of his discovery. They were held to be intended to provide for the correction of whatever stood in the way of the broadest equity.<sup>212</sup>

On the other hand, changes in the law of reissues in the 1870s and early 1880s created growing incentives to litigate on the defendants' side. During that period, the courts began to apply greater scrutiny to the validity of reissues. A string of decisions in the 1870s began to rein in reissue practice and to cast doubt on broadened grants.<sup>213</sup> By 1880, the Supreme Court's disfavor was clear. Writing for a unanimous Court in a water wheel case, Justice Bradley assailed the apparently widespread practice of reissue abuse:

[A] change comes over the scene: the patent becomes the property of a corporation that manufactures wheels, a monopoly of the business is very desirable . . . . The usual remedy in such cases is resorted to. A reissue of the patent is sought, with expanded claims, sufficiently general and comprehensive to embrace a wide monopoly of structure, and to shut up competing establishments. In this way the patent laws have been made the instruments of great injustice and oppression. The

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211. H. HOWSON, *PATENTS AND THE USEFUL ARTS* 117-18 (1878).

212. Rowland Cox, *Reissued Patents. — the Position of the Supreme Court*, 15 AM. L. REV. 731, 731 (1881).

213. *Id.* at 732-36; Dood, *supra* note 206, at 1015-16 (1991).

real object and design of a reissue of a patent have been abused and subverted.<sup>214</sup>

In this new climate of judicial hostility to reissued grants, accused infringers may have been more willing to fight infringement cases on now-vulnerable reissued patents rather than submit to licenses. Two years later, in *Miller v. Brass Co.*, the Court held that a broadening reissue obtained after an unreasonable delay (for which the rule of thumb was two years) “may justly be declared illegal and void.”<sup>215</sup> Patentees evidently got the message: the number of applications for reissue received by the Patent Office fell from over six hundred per year in the late 1870s to under two hundred by 1884 and under one hundred by 1887.<sup>216</sup> By the end of the decade, patent owners appeared reluctant to bring reissued grants into court: only four percent of litigated patents in the 1890 Southern District of New York and Eastern District of Pennsylvania sample had been reissued, accounting for only five percent of suits in that year.<sup>217</sup>

Overall, the combination of extensions and reissues suggests that the patent litigation wave included many instances where patent holders were pursuing, rather than leading, the spread of the technology in question. Older patents were revived and frequently redrafted to extract rents from users of inventions that had already been diffused widely. The age of patents in litigation gives a good guide to the midcentury prevalence and later decline of these practices. The median suit by age in the 1850 sample involved a patent that was over twenty years old (Figure 6), at a time when the nominal term of a patent was just fourteen years.<sup>218</sup> With the demise of extensions and reissues after 1880, the pattern of old patents deployed against established technologies faded. By 1910, the median suit involved a patent that was little over five years old.

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214. *Mfg. Co. v. Ladd*, 102 U.S. 408, 411 (1880).

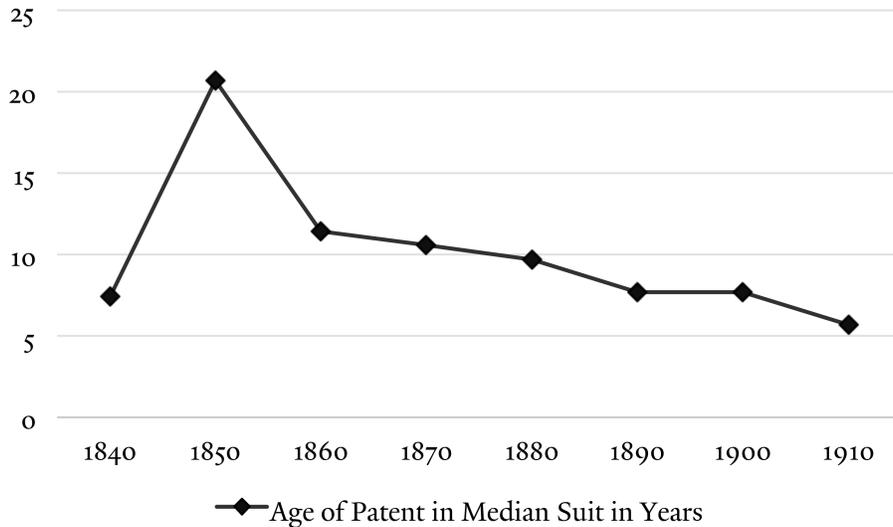
215. 104 U.S. 350, 355 (1882).

216. See 1887 ANN. REP. COMMISSIONER PATENTS, at xiv; 1884 ANN. REP. COMMISSIONER PATENTS, at iv; 1879 ANN. REP. COMMISSIONER PATENTS, at iii.

217. Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

218. This result was due to the large number of suits filed in the Eastern District of Pennsylvania on the extended Parker water wheel patent. For the history of this extended grant, see *supra* notes 33-41 and accompanying text.

**Figure 6.**  
**AGE IN YEARS OF PATENT IN THE MEDIAN SUIT, SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA, SAMPLE YEARS 1840-1910<sup>219</sup>**



While this pattern may appear suspect, we should be careful about applying hasty normative judgments to the practices involved in this situation. The informational problems involved in monitoring potentially infringing activity in nineteenth-century America were huge, especially across large distances. If patentees were often catching up relatively late with unknowing users and established markets, that should not be surprising or indeed evidence of gamesmanship. Likewise, what I have described as patent stretching was not *necessarily* mere opportunism. Patents that were extended and/or reissued may simply have been among the most valuable patents, and hence the most pirated. The fact that they were overrepresented in litigation does not automatically signal illegitimate practices by patentees. Moreover, taken at face value, the provisions for term extension and reissue contained explicit limitations meant to prevent abuse, and these were not total dead letters: some applications for extension were denied, and some reissued patents were struck down by the courts for impermissible broadening of scope.<sup>220</sup>

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219. Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

220. See L.D. Underwood, *Certain Phases of Reissues, Particularly Delay in Filing the Application, and Inadvertence, Accident, or Mistake*, 4 J. PAT. OFF. SOC'Y 564, 567-69 (1921) (describing

All that said, the heavy use of both extension and reissue, the details of particular high-profile cases, the constant refrains of contemporary commentators, and the rapid decline in reissue practice after courts cracked down on broadening reissues do all suggest that these patent-stretching tools had become both a driver of litigation and a subject of abuse. The Southern District of New York and Eastern District of Pennsylvania sample of suits in 1890-1910 contains no extended patents and only a handful of reissued grants; those years also saw a significantly lower rate of litigation relative to the number of U.S. patents in force. Cleaning up the practices of patent stretching likely played at least some part in dousing the litigation explosion.

## 2. *Multiple Litigation and Mass Enforcement*

Patent stretching did not take place in isolation. Much of the rise and fall of the litigation explosion may be explained by another set of litigation practices. As suggested by the survey of national campaigns in Part I, it is clear that repeat suits by certain patent owners went a long way toward driving quantitative trends in nineteenth-century patent litigation. This was especially true in the early part of the period sampled here. In 1850, just twenty-nine plaintiffs brought the 227 suits filed in the Southern District of New York and Eastern District of Pennsylvania. In later years the ratio was not as dramatic, but multiple litigation still accounted for a large share of all suits. Across the whole sample, nearly three-quarters of plaintiffs appearing brought only a single suit, while the twenty-nine plaintiffs filing the most suits accounted for a third of all the litigation (Table 2).

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Patent Office rules governing reissue practice); *supra* notes 186-191 and accompanying text (describing extension approval rates and courts' invalidation of reissued patents).

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THE FIRST PATENT LITIGATION EXPLOSION

**Table 2.**  
PROPORTION OF PLAINTIFFS FILING MULTIPLE SUITS, SOUTHERN DISTRICT OF  
NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA, SAMPLE YEARS 1840-  
1910<sup>221</sup>

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<i>Number of Plaintiffs Filing</i>	<i>Number of Plaintiffs</i>	<i>Percent of All Plaintiffs</i>	<i>Number of Suits</i>	<i>Percent of Total Suits</i>
1 Suit	618	71%	618	30%
2-4 Suits	177	20%	465	22%
5-9 Suits	46	5%	301	14%
10+ Suits	29	3%	697	33%

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The dataset almost certainly understates the incidence and scale of multiple litigation in this period. Major enforcement campaigns were lumpy, typically producing sudden bursts of litigation spread across two, three, or more adjacent years, meaning that sampling at decade intervals often captures only a slice of any given effort. For example, sixty-five suits brought by the Goodyear Dental Vulcanite Company appear in the sample years, but the company's overall footprint was still larger: docket entries show that it brought more than 400 suits in Philadelphia alone between 1867 and 1880.<sup>222</sup> In addition, such campaigns regularly spanned several states, so that what appear to be isolated suits in the sample were in fact part of larger operations. Thomas Blanchard, for example, appears here as a one-off plaintiff with a single suit in New York in 1850, when he was actually one of the more prolific patent enforcers of his generation.<sup>223</sup>

Even so, some of the mass enforcement of the age is captured by the sample. The plaintiffs appearing most frequently (Table 3) are familiar from the survey of large-scale litigation in Part I.

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221. Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

222. Author's Database, C.C.E.D. Pa., *supra* note 10.

223. See *supra* notes 38-41 and accompanying text.

**Table 3.**  
**MOST FREQUENT PLAINTIFFS, SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA, SAMPLE YEARS 1840-1910<sup>224</sup>**

<i>Plaintiffs</i>	<i>Suits Filed</i>	<i>Location of Plaintiff</i>	<i>Industry</i>	<i>Years Appearing</i>
Oliver H.P. Parker	150	Philadelphia, PA	Water Power	1850
Goodyear Dental Vulcanite Co.	65	New York, NY	Dental Rubber	1870, 1880
Charles Goodyear, Joined by Various Licensees	49	Connecticut	Rubber Goods	1850, 1860
American Bell Telephone Co. (with Local Licensees)	36	Boston, MA	Telephones	1880, 1890
George H. Wooster	33	New York, NY	Garments	1880
Farbenfabriken of Elberfeld Co.	26	New York, NY	Pharmaceuticals	1900, 1910
George C. Roberts	21	New York, NY	Refrigeration	1870
Columbia Motor Car Co. & George B. Selden	20	Hartford, CT & Rochester, NY	Automobiles	1910
George Gregerson, Assignee of John Lightner	20	Roxbury, MA	Railroad Equipment	1860
Richard Imlay	20	New York, NY	Railroad Equipment	1860
Cimiotti Unhairing Co. & John W. Sutton	19	New York, NY	Garments (Fur)	1900
Benjamin Urner, Trustee of George B. Arnold	18	New York, NY	Sewing Machines	1880
Edward M. Lowden & John Carr	17	Philadelphia, PA	Lamps	1880
Panayiotis Panoulis	16	New York, NY	Food (Candy)	1910
Samuel Bernstein	16	New York, NY	Textiles	1880
Jehyleman Shaw	15	Bridgeport, CT	Photography	1870
John Brown	15	Stonington, CT	Ship Design	1850

<sup>224</sup>. Author's Database, C.C.E.D. Pa., C.C.S.D.N.Y.

Oliver H.P. Parker (the Pennsylvania assignee of the Parker water wheel patent), the Goodyear Dental Vulcanite Company, Charles Goodyear, and American Bell were all engaged in national campaigns. These four plaintiffs collectively accounted for around fifteen percent of all the suits in the Southern District of New York and Eastern District of Pennsylvania sample. Beneath them, however, were a variety of other multiple litigants across a wide range of industries. The repeat-litigation pattern seems to have been a broad-based one.

If multiple litigation had a large impact on the aggregate number of suits, then what explains the frequency of such repeat enforcement? One way to get at this question is to look at the characteristics of the most- and least-litigated patents. Table 4 describes two groups: “high-volume” patents, meaning those appearing in ten or more suits in the sample, and “single-suit” patents that were litigated only once in the sample years. The former group is relatively small, comprising just thirty-nine patents, but accounts for a large share of the overall litigation in the sample.

At least two areas of systematic difference are visible between the two populations. First, multiple litigation during the boom was closely associated with practices of patent stretching. For as long as term extensions were available, the patents in the high-volume category were much more likely to have been extended than were the single-suit patents. A significant fraction of the single-suit patents had been reissued before litigation – around twenty-five percent to thirty-five percent in the 1840-1880 samples – but again, the high-volume patents were generally more likely to have been reissued. Overall, it was the high-volume group that accounted for the pattern, discussed above, of older patents being asserted over established technologies. The average age of once-litigated grants generally remained in the five- to seven-year range, while the average age of the high-volume patents stood at over ten years through 1890, before converging with that of the single-suit population in 1900 and 1910.

**Table 4.**  
**CHARACTERISTICS OF THE MOST- AND LEAST- LITIGATED PATENTS, SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA, SAMPLE YEARS 1840-1910<sup>225</sup>**

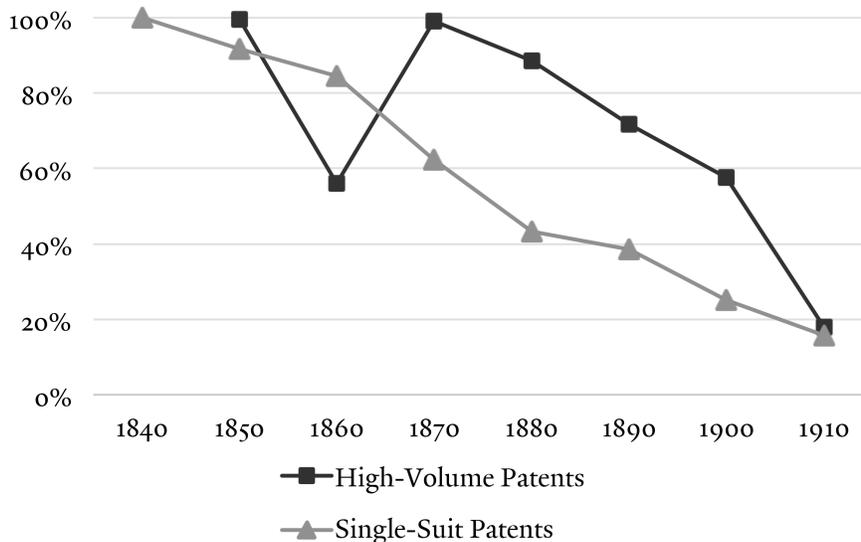
		1840	1850	1860	1870	1880	1890	1900	1910
<i>Number of Patents</i>	High Volume (10+)	0	4	6	3	11	4	3	8
	Single Suit	8	10	29	156	231	127	143	235
<i>Percent of All Litigations in Sample Year</i>	High Volume (10+)	n/a	77%	57%	24%	23%	25%	9%	19%
	Single Suit	19%	5%	15%	39%	37%	48%	49%	52%
<i>Percent Extended</i>	High Volume (10+)	n/a	50%	33%	67%	18%	0%	0%	0%
	Single Suit	0%	10%	0%	10%	3%	0%	0%	0%
<i>Percent Reissued</i>	High Volume (10+)	n/a	25%	50%	100%	55%	0%	0%	0%
	Single Suit	25%	30%	34%	29%	34%	3%	1%	5%
<i>Average Age of Patent at First Suit in Years</i>	High Volume (10+)	n/a	11.6	13.8	13.8	10.5	10.1	7.1	6.7
	Single Suit	5.3	6.6	3.4	5.7	7.2	5.9	7.0	5.8

Second, high-volume patent litigation seems to have reflected particular enforcement strategies. As with the nationwide mass-enforcement campaigns discussed in Part I, the sample high-volume patents suggest a tendency toward “end-user” litigation—that is, large numbers of suits directed against downstream users of the patented item, rather than against larger manufacturers or other intermediaries. Suits brought on high-volume patents were generally more likely than single-suit patent cases to name individuals as defendants, rather than naming partnerships or corporations (Figure 7). Case titles are an imperfect measure of defendants’ end-user or small-entity status—named individuals could be officers or agents of companies, for example—but

<sup>225</sup> Author’s Database, C.C.E.D. Pa., *supra* note 10; Author’s Database, C.C.S.D.N.Y., *supra* note 10. The term “litigations” counts every patent every time it was involved in suit. Because some suits involved more than one patent, this number is higher than the number of suits filed.

the most active litigants in the sample did indeed sue small-scale users. Oliver Parker sued individual millers and millwrights; the Goodyear Dental Vulcanite Company targeted dentists; American Bell sued users of infringing telephones and drugstore owners who provided pay-telephone services to the public. Further down the list of the most prolific plaintiffs: refrigerator-patent owner George C. Roberts sued infringing butchers; photography patentee Jehyleman Shaw sued individual photographers.<sup>226</sup>

**Figure 7.**  
**PERCENT OF PATENT LITIGATIONS ON HIGH-VOLUME AND SINGLE-SUIT PATENTS THAT NAMED ONLY INDIVIDUALS AS DEFENDANTS, SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA, SAMPLE YEARS 1840-1910<sup>227</sup>**



Two years in the sample presented an exception to this pattern of divergence between the high- and low-litigation patent groups. One anomaly occurred in 1860: that year saw a much higher rate of high-volume patent suits

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<sup>226</sup>. Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

<sup>227</sup>. Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10. The term "high-volume" patents refers to those litigated ten or more times in the Southern District of New York and Eastern District of Pennsylvania sample years (Table 4). No high-volume patents appeared in the 1840 sample year.

against companies, as a result of two patent owners suing clusters of railroad companies in Philadelphia. That episode serves as a reminder that multiple litigation against larger and more deep-pocketed infringers was a possibility, although it was less widespread at that time than downstream litigation against smaller users. 1910 presented a different situation. In that year, the two groups' respective rates of litigation naming individuals were almost identical at under twenty percent. End-user litigation had waned across the board by this point, and the most-litigated patents were now no more likely to target individuals than the least-litigated patents.

Distinguishing between repeatedly litigated and seldom-litigated patents highlights both differences within the patent litigation system and change over time. The most-litigated grants up until 1880 – that is, during the height of the boom – were qualitatively different from the bulk of litigated patents. They represented maximum exploitation of the patent-stretching tools available as well as highly aggressive strategies of public enforcement. To the extent that multiple litigation powered the patent litigation explosion, that explosion clearly grew in part from the law's willingness to provide expansive (and often self-expanding) patent rights. Conversely, the explosion ebbed when extension and reissue were curbed. By 1900 and especially by 1910, the patents involved in multiple litigation looked a lot more like those enforced only once in the sample: they were of similar age and were enforced against individuals and companies at more similar rates.

Why the practical strategy of mass enforcement flourished in midcentury and then diminished after the 1880s is a separate and more opaque question. Explaining why mass suits against small-scale infringers constituted an appealing enforcement strategy must turn in part on the business models of the patent holders that conducted that type of litigation. Unfortunately, it is unclear exactly why, or to what extent, suing small entities was profitable in and of itself. Data on monetary awards are spotty in the circuit court dockets and case files, and information about aggregate licensing revenues, either in litigation filings or elsewhere, is rare. Any changes in the financial return on suing, for example, hundreds of farm households, remain a little mysterious.

That leaves two more visible explanations for why the mass-enforcement model flourished. One, as mentioned in Section II.C,<sup>228</sup> is that litigation in the federal circuit courts was relatively cheap for patentees and relatively expensive for some defendants, thus establishing a balance of power that was crucial to the patentees' principal aim of selling licenses. As U.S. Senator William Windom of Minnesota explained,

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228. See *supra* note 149 and accompanying text.

[B]y the authority of the United States you may go to the capital of a State and for a claim of \$5 each you may send the United States marshal to a thousand men, or ten thousand . . . and compel them to travel hundreds of miles to defend against your claim, or, as more frequently occurs, to pay an unjust demand as the cheapest way of meeting it.<sup>229</sup>

This problem of distance was by no means an issue peculiar to patent law, but was a characteristic feature of litigation in the federal courts in the nineteenth century. Railroads fought for decades to remove accident cases and other conflicts with the general public to federal jurisdiction, largely in order to gain favorable settlements from individuals who could not easily travel to a federal court to pursue their claim.<sup>230</sup> Patent law happened to be a particularly stark example of the phenomenon: as an area of purely federal jurisdiction, there was no tug-of-war regarding removal from state court. And unlike the defensive litigation of the railroads involved in tort suits, patentees could actively seek out accused infringers for whom the time and cost of responding to a suit could be prohibitive.

The second crucial feature underpinning the large-scale patent enforcement effort was the organization of the campaigns themselves. One reason that certain patents generated widespread litigation may be that their enforcement operated on a franchise model. To pick the largest example: royalty collection and litigation under the Andrews brothers' driven-well patent was often handled by local agents and attorneys working on commission.<sup>231</sup> Similar arrangements appeared elsewhere. One of the high-volume patents litigated in the Southern District of New York and Eastern District of Pennsylvania sample belonged to Richard Imlay, a pioneering early railroad car designer.<sup>232</sup> Thanks to the irascible Imlay's repeated and litigious fallings-out with his own lawyers, we know more than usual about the arrangements he made to assert his patents.<sup>233</sup> Imlay subcontracted enforcement of his most valuable car patent to a series of attorneys, giving these agents full authority to demand royalties and to file and settle suits in his name in specified territories in return for between twenty percent to fifty percent of gross receipts. In between fighting nasty

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229. 8 CONG. REC. 303 (1878) (statement of Sen. Windom).

230. EDWARD A. PURCELL, JR., *LITIGATION AND INEQUALITY: FEDERAL DIVERSITY JURISDICTION IN INDUSTRIAL AMERICA, 1870-1958*, at 45-49 (1992).

231. Hayter, *supra* note 111, at 20-21; Smith, *supra* note 117, at 59.

232. JOHN H. WHITE, JR., *THE AMERICAN RAILROAD PASSENGER CAR 12-13* (1985).

233. See, e.g., Report of Examiner & Master, *Imlay v. Williams*, Equity Case No. 10 (Apr. Term) (C.C.E.D. Pa. Nov. 15, 1862) (on file with the National Archives at Philadelphia); Bill of Complaint, *Gregerson v. Imlay*, Equity Case No. 2-97 (C.C.S.D.N.Y. Nov. 12, 1860) (on file with the National Archives at New York City).

contract disputes with Imlay himself, these attorneys filed dozens of patent suits against railroad companies and private car owners.<sup>234</sup> Logistical details like this help to explain how patent owners in the mid-nineteenth century could mount litigation on such a sprawling scale, and also perhaps how the incentives of the agents handling enforcement pointed toward ready litigation.

Why did large-scale enforcement go away? One blunt consideration, which might eventually be testable from docket information, relates to patentees' win rates. Given the politics of end-user patent litigation in areas such as the Western states, it is possible that judges started on an ad hoc basis to disfavor patents that were widely asserted against individuals. Various commentary during the 1880s suggested that judicial hostility had become an important factor for patentees to consider.<sup>235</sup> Whether reversals in court dissuaded litigants from pursuing mass enforcement remains an open question for now.

Absent clear changes in the legal viability of multiple enforcement, the drivers of its decline may have been primarily organizational. Among patentees, the territorial assignments that created local licensing-and-litigation entrepreneurs started to wane in the late nineteenth century, while patentees focused more on retaining national rights or selling to larger industrial firms.<sup>236</sup> On the defendants' side, it is possible that individuals and other end users were increasingly indemnified by manufacturers and suppliers, and thus removed from the litigation crosshairs. I have not found any evidence of this to date. However, there are other reasons why patent holders may have found it preferable to license and litigate further up the supply chain. The bigger picture contains a number of structural reasons why the model of patent contestation might have changed over the second half of the nineteenth century. These are discussed in the Section that follows.

### 3. *From the Artisanal to the Corporate Economy*

Broadly speaking, the sample of suits under discussion begins in an artisanal world of individual traders and small-scale business units, and ends in an economy that—if not yet fully corporatized—was more organized, more

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<sup>234</sup>. See sources cited *supra* note 233.

<sup>235</sup>. See *infra* notes 407-411 and accompanying text (noting the perceived judicial reaction to mass enforcement).

<sup>236</sup>. Naomi R. Lamoreaux & Kenneth L. Sokoloff, *Inventors, Firms, and the Market for Technology: U.S. Manufacturing in the Late Nineteenth and Early Twentieth Centuries*, in *LEARNING BY DOING IN FIRMS, MARKETS, AND COUNTRIES* 19, 27-29 (Naomi R. Lamoreaux et al. eds., 1999).

consolidated, and featured a growing number of large firms.<sup>237</sup> The 1880s and 1890s were the “critical decades” during which leading firms made the investments in organization, production, and marketing that launched the era of managerial capitalism.<sup>238</sup> An even more dramatic consolidation occurred around the turn of the century, in the form of the “great merger wave.”<sup>239</sup> More than one thousand eight hundred manufacturing enterprises merged in the decade after 1895 to form fewer than 150 industrial combinations, of which more than half controlled forty percent or more of their respective markets and perhaps as many as a third controlled seventy percent.<sup>240</sup> While these changes did not reach evenly across the economy, and indeed left many sectors largely untouched,<sup>241</sup> it would be surprising if crossing this threshold of industrial organization had no effect on the patent litigation system. One would expect the setting of small-scale proprietary capitalism to provide more opportunities for litigation: it featured more entities in the potentially infringing population, as well as greater information asymmetries between parties. Independent inventors may have had a greater personal incentive (either economic or psychological) to enforce their own patents. Conversely, as industries become more concentrated and organized, having larger firms on both sides of a patent dispute should reduce the likelihood of litigation. Bigger enterprises would presumably be more evenly matched as parties, have better information about the patented invention and its market value, and might be in possession of conflicting patents or patent portfolios—all factors making successful bargaining and litigation avoidance more likely.

Several measures from the Southern District of New York and Eastern District of Pennsylvania sample illustrate the shift from an atomized to a more corporatized litigation environment. Figures 8 and 9 show the percentages of plaintiffs and defendants identified in the case title as individuals (Figure 8) and companies (Figure 9). Again, this is an imperfect proxy for the identity of the actual parties to the dispute: plaintiffs listed by their individual names may

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237. See generally ALFRED D. CHANDLER, JR., *SCALE AND SCOPE: THE DYNAMICS OF INDUSTRIAL CAPITALISM* (1990) [hereinafter CHANDLER, *SCALE AND SCOPE*]; ALFRED D. CHANDLER, JR., *THE VISIBLE HAND: THE MANAGERIAL REVOLUTION IN AMERICAN BUSINESS* (1977); HOUNSHELL, *supra* note 62; NAOMI R. LAMOREAUX, *THE GREAT MERGER MOVEMENT IN AMERICAN BUSINESS, 1895-1904* (1985).

238. CHANDLER, *SCALE AND SCOPE*, *supra* note 237, at 62-63.

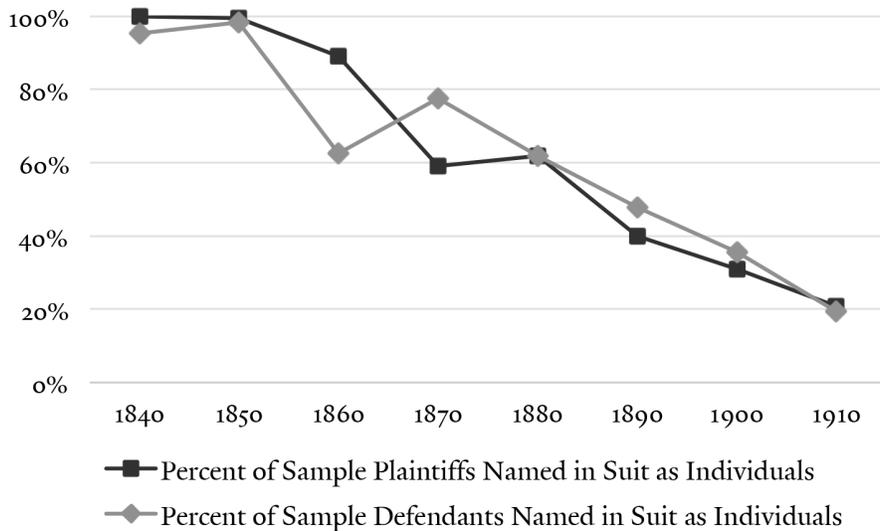
239. See LAMOREAUX, *supra* note 237.

240. *Id.* at 2.

241. See PHILIP SCRANTON, *ENDLESS NOVELTY: SPECIALTY PRODUCTION AND AMERICAN INDUSTRIALIZATION, 1865-1925* (1997) (emphasizing that during the Second Industrial Revolution, many localities and industries remained dominated by smaller enterprises engaged in specialty and batch production).

have been inventors who were also principals of their own companies, whereas individual defendants may have been officers or agents of companies that were not named in the complaint or docket.<sup>242</sup> Nevertheless, it is a suggestive indicator. The percentages of suits brought by and against individuals fell steadily from nearly one hundred percent to barely twenty percent, while the percentages naming companies as parties rose to seventy percent to seventy-five percent.<sup>243</sup>

**Figure 8.**  
PERCENT OF PLAINTIFFS AND DEFENDANTS NAMED IN SUIT AS INDIVIDUALS,  
SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA,  
SAMPLE YEARS 1840-1910<sup>244</sup>



<sup>242</sup> Where a suit was brought by or against an individual and a company together, I categorized the party as a company.

<sup>243</sup> Not every party was clearly an individual (or group of individuals) or a company. Some titles that suggested partnerships or involved government entities or charities were categorized separately.

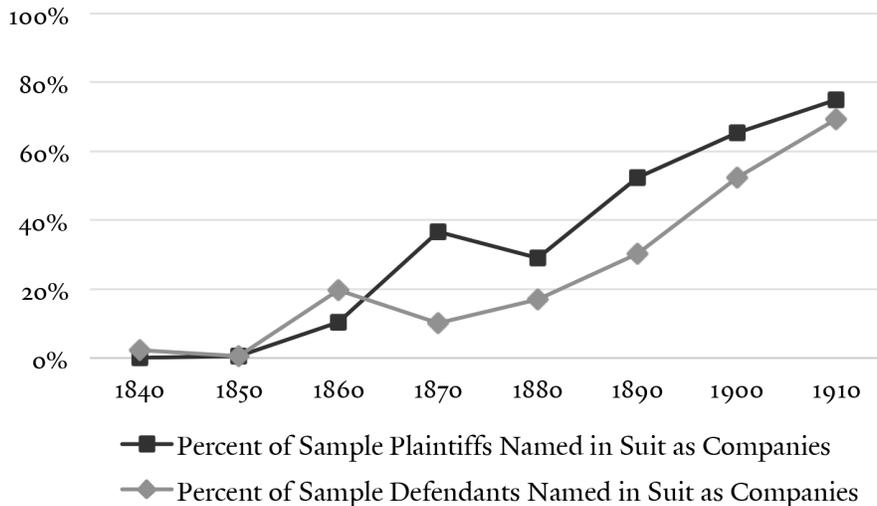
<sup>244</sup> Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

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THE FIRST PATENT LITIGATION EXPLOSION

**Figure 9.**  
PERCENT OF PLAINTIFFS AND DEFENDANTS NAMED IN SUIT AS COMPANIES,  
SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF PENNSYLVANIA,  
SAMPLE YEARS 1840-1910<sup>245</sup>



The changing corporate basis of the economy went hand-in-hand with changes in the context of invention and patent ownership. Inventive activity throughout the nineteenth century was dominated by what we would now think of as independent inventors: entrepreneurs, freelancers, or contractors who retained their patent rights or sold them on the open market, rather than employee-inventors inventing for hire and automatically assigning their patent rights to their employers.<sup>246</sup> The market for patent rights was active from an early date.<sup>247</sup> Those who received patents commonly obtained a return either by selling them outright or by using the grants to commercialize their inventions in a variety of ways. Some assigned territorial rights to producers in different geographic markets; others attracted capital by assigning partial

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<sup>245</sup>. Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

<sup>246</sup>. See CATHERINE FISK, *WORKING KNOWLEDGE: EMPLOYEE INNOVATION AND THE RISE OF CORPORATE INTELLECTUAL PROPERTY, 1800-1930* (1st ed. 2009); Lamoreaux & Sokoloff, *supra* note 236.

<sup>247</sup>. See KHAN, *THE DEMOCRATIZATION OF INVENTION*, *supra* note 21, at 96 (noting that antebellum patents were assigned and resold for large sums).

shares to investors.<sup>248</sup> Toward the end of the nineteenth century, invention began to occur more frequently under the sponsorship and direction of established firms. According to data gathered by Naomi Lamoreaux and Kenneth Sokoloff, the proportion of patents assigned on or before the date of issue—generally an indicator of a pre-patenting financing or employment relationship between the inventor and the assignee—rose from 18% in 1870-71 to 29% in 1890-91 and 31% in 1910-11.<sup>249</sup> Within that group, inventors became less likely to assign to entities in which they were themselves principals, and became more likely to assign all of their rights, rather than just a portion.<sup>250</sup>

The assignment profile of patents in litigation changed in keeping with these developments. Most patent suits in the Southern District of New York and Eastern District of Pennsylvania sample were not brought by the inventors themselves, or at least not by inventors acting alone. The proportion of litigated patents that had never been assigned before suit fell steadily from just over 60% in 1840 to under 20% in 1910 (Figure 10). To be sure, that means a fair amount of litigation by purely independent inventors was still occurring in the early twentieth century. But the overall decline is another data point suggesting that patent owners who litigated were tied into an increasingly organized financial or corporate setting as time went on. Likewise, the proportion of litigated patents assigned on or before issue rose to around 45% by 1910 (Figure 10), a rate considerably higher than the 31% of all issued patents that Lamoreaux and Sokoloff found were assigned by the time of issue.<sup>251</sup>

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248. Lamoreaux & Sokoloff, *supra* note 236.

249. *Id.* at 28.

250. *Id.*

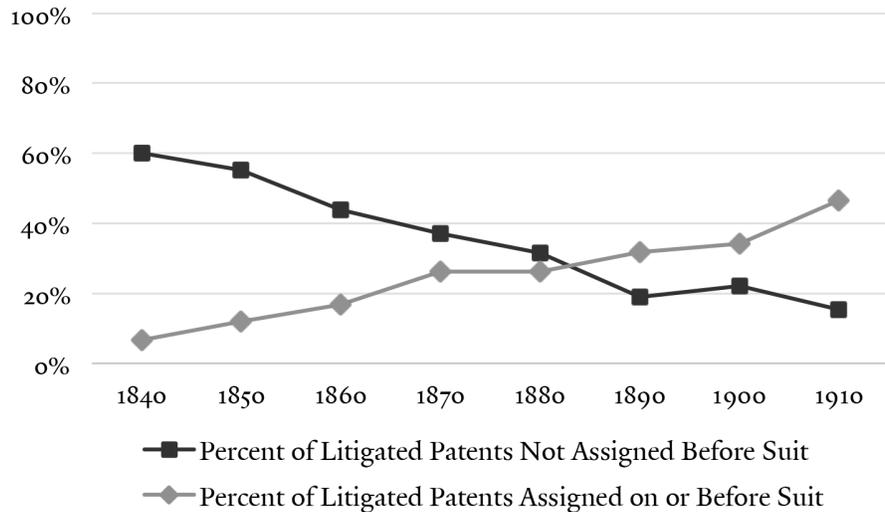
251. *Id.*

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THE FIRST PATENT LITIGATION EXPLOSION

**Figure 10.**  
PERCENT OF LITIGATED PATENTS NEVER ASSIGNED AND ASSIGNED BEFORE  
ISSUE, SOUTHERN DISTRICT OF NEW YORK AND EASTERN DISTRICT OF  
PENNSYLVANIA, SAMPLE YEARS 1840-1910<sup>252</sup>



For the record, it is not clear whether we should think that lone inventors who did not assign would be more likely to litigate. One would expect them to have a stronger personal stake in their patents, potentially increasing their desire to litigate, in which case their relative decline in the sample would contribute to the falling litigiousness of the patent system. On the other hand, inventors who did not assign to their own or others' companies or grant partial rights in return for investment probably had fewer assets to bring to bear on enforcement. Looking at the high-volume and single-suit patent subsamples, there were years in which the former featured more independent never-assigning inventors and years in which the balance was reversed.<sup>253</sup>

It is unsurprising that patent litigation reflected the growing corporatization of the industrial economy over time. Without a control group of nonlitigating patent owners, it is hard to gauge the extent to which either the type of entity or the relationship between inventor and assignee affected the

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252. Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

253. Author's Database, C.C.E.D. Pa., *supra* note 10; Author's Database, C.C.S.D.N.Y., *supra* note 10.

propensity to litigate. But it remains likely that the drop-off in litigiousness in 1890, 1900, and 1910 resulted in part from the changing scale of business. At the very least, it is possible to trace the development of arrangements by which formerly litigious actors turned away from using the courts. Around the end of the century, the electrical-manufacturing sector consolidated around a few corporate giants, whose size and dominance made litigation among themselves undesirable and suits against smaller operators far less necessary.<sup>254</sup> The Bell Telephone enterprise (later AT&T), prodigious enforcers of Alexander Graham Bell's controlling patents in the 1880s and early 1890s, possessed similarly fundamental patents on long-distance telephony in the 1900s—but almost never brought suit after 1908, preferring to seek market power by financial and organizational means.<sup>255</sup> Elsewhere—and to be sure, often after a burst of litigation—other industries began to form large-scale patent pooling arrangements: in automobiles, aviation, explosives, and film projection equipment, to name a few examples.<sup>256</sup> As the twentieth century progressed, firms' ability to incorporate patents into broader schemes of industrial control pushed litigation to the margins.

The patent litigation explosion had no single explanation: characteristics of the patents issued, the identity and strategies of the parties in suit, and changes in the overall economy all contributed to its rise and fall. As today, though, the experience of a boom in aggregate patent suits made its mark on the law.

### III. CASES, CONTROVERSIES, AND THE DEVELOPMENT OF PATENT LAW

The nineteenth-century patent litigation explosion has been largely out of sight in histories of American patent law. This final Part suggests that the sheer volume of suits and the political and legal controversies surrounding them shaped the development of the law, both in the context of particular foundational cases and more broadly in patent law's shift from law to equity. It also argues that the volume of litigation produced a backlash against the patent system that threatened the existing statutory framework.

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254. See, e.g., HAROLD C. PASSER, *THE ELECTRICAL MANUFACTURERS, 1875-1900*, at 331 (1975) (describing the formation of the General Electric-Westinghouse Board of Patent Control in 1896).

255. FED. COMM'NS COMM'N, *INVESTIGATION OF THE TELEPHONE INDUSTRY IN THE UNITED STATES*, H.R. DOC. NO. 76-340, at 213-14 (1939).

256. Jonathan Barnett, *The Anticommons Revisited*, 28 *HARV. J.L. & TECH.* (forthcoming 2016) (manuscript at 21-25, 32-35, 57-58) (on file with author).

A. *The Formation of Patent Law*

Large-scale, repeat-player litigation must have shaped the development of patent jurisprudence in general. For one thing, the litigation explosion coincided with the formative period of patent doctrine. Based on citation counts, John Duffy identifies “what is almost certainly the golden age of the Supreme Court’s patent jurisprudence—the decade from 1850 to 1859, during which the Court decided at least a half dozen cases articulating fundamental principles of patent law.”<sup>257</sup> Craig Nard and Andrew Morriss posit a period of “judicial evolution of patent law” in between the two Patent Acts of 1836 and 1870, locating the “key developments” in the case law of the 1850s.<sup>258</sup> Adam Mossoff has gone into still finer detail, offering the Supreme Court’s eight patent decisions of the 1853 Term as a peak of judicial engagement “with the working details of the American patent system.”<sup>259</sup> When one looks at the formative cases in question, they are disproportionately drawn from the major-litigation efforts.

Take, for example, the eight cases of the Supreme Court’s 1853 Term. They did not all represent separate controversies. Two concerned the Morse telegraph patent;<sup>260</sup> two the Woodworth planing machine patent;<sup>261</sup> and two involved suits brought by Henry Burden, a noted inventor and ironworking magnate, against one of the country’s leading industrialists, the iron and railroad entrepreneur Erastus Corning.<sup>262</sup> The remaining cases concerned patents to Cyrus McCormick, of the mechanical reaper, and to Ross Winans, a

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257. John F. Duffy, *The Festo Decision and the Return of the Supreme Court to the Bar of Patents*, 2002 SUP. CT. REV. 273, 289. Duffy names as key cases *Kendall v. Winsor*, 62 U.S. (21 How.) 322 (1858), which discusses abandonment; *Brown v. Duchesne*, 60 U.S. (19 How.) 183 (1856), which discusses extraterritoriality; *Winans v. Denmead*, 56 U.S. (15 How.) 330 (1853), which discusses the doctrine of equivalents; *O’Reilly v. Morse*, 56 U.S. (15 How.) 62 (1853), which discusses abstract ideas; *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248 (1850), which discusses nonobviousness; and *Gayler v. Wilder*, 51 U.S. (10 How.) 477 (1850), which discusses novelty. Duffy, *supra*, at 289 n.52.

258. Andrew P. Morriss & Craig Allen Nard, *Institutional Choice and Interest Groups in the Development of American Patent Law: 1790-1865*, 19 SUP. CT. ECON. REV. 143, 160-67 (2011).

259. Adam Mossoff, *Exclusion and Exclusive Use in Patent Law*, 22 HARV. J.L. & TECH. 321, 322 (2009).

260. *Smith v. Ely*, 56 U.S. (15 How.) 137 (1853); *O’Reilly*, 56 U.S. (15 How.) 62.

261. *Livingston v. Woodworth*, 56 U.S. (15 How.) 546 (1853); *Brooks v. Fiske*, 56 U.S. (15 How.) 212 (1853).

262. *Corning v. Troy Iron & Nail Factory*, 56 U.S. (15 How.) 451 (1853); *Corning v. Burden*, 56 U.S. (15 How.) 252 (1853); see also *Mammoth Patent Lawsuit*, SCI. AM., June 4, 1859, at 325.

pioneering (and extremely wealthy) railroad engineer and manufacturer.<sup>263</sup> In every case, leading industrial interests of the country were involved. Most of the patents had come to the Supreme Court after widespread campaigns of litigation in the lower courts. Burden's and Woodworth's patents had appeared in the Supreme Court before—Woodworth's no less than six times since 1846.<sup>264</sup>

This clutch of cases suggests in miniature what was more broadly true of patent law at the time. Case law, like litigation, was dominated by contests over high-profile patents. Once one starts reconstructing the judicial evolution of patent law, the same patents and parties are everywhere. An inveterate reader of treatise footnotes might notice particular names repeating in the case citations—for example, *Parker v. Haworth*, on the strict liability of infringement;<sup>265</sup> *Parker v. Stiles*, on infringement by “mechanical equivalents”;<sup>266</sup> *Parker v. Hulme*, on protecting the “principle” of an invention<sup>267</sup>—without appreciating that these cases formed part of a single legal campaign.<sup>268</sup> At the very least, multiple litigation and mass enforcement were jurisgenerative, in the sense of creating many opportunities for the courts to create doctrine in an area of law dominated by judge-made rules.

There is also something to be gained from knowing the baggage that the most controversial patents brought with them into court: the interests and alliances represented; the strategies tested; and the sectional, political, and economic stakes involved.<sup>269</sup> During the Supreme Court's celebrated 1853 Term, for example, the Justices were repeatedly divided even as they decided a

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263. *Seymour v. McCormick*, 57 U.S. (16 How.) 480 (1853); *Winans v. Denmead*, 56 U.S. (15 How.) 330 (1853).

264. Woodworth's patent appeared in *Bloomer v. McQuewan*, 55 U.S. (14 How.) 539 (1852); *Wilson v. Sandford*, 51 U.S. (10 How.) 99 (1850); *Wilson v. Simpson*, 50 U.S. (9 How.) 109 (1850); *Wilson v. Barnum*, 49 U.S. (8 How.) 258 (1850); *Barnard v. Gibson*, 48 U.S. (7 How.) 650 (1849); and *Wilson v. Rousseau*, 45 U.S. (4 How.) 646 (1846), which was argued with *Wilson v. Turner*, 45 U.S. (4 How.) 712 (1846); *Woodworth v. Wilson*, 45 U.S. (4 How.) 712 (1846); and *Simpson v. Wilson*, 45 U.S. (4 How.) 709 (1846). Burden's patent had been argued in the 1852 Term. See *Troy Iron & Nail Factory v. Corning*, 55 U.S. (14 How.) 193 (1852).

265. 18 F. Cas. 1138, 1141 (C.C.E.D. Pa. 1849) (No. 10,740).

266. 18 F. Cas. 1135, 1136 (C.C.D. Ill. 1848) (No. 10,738).

267. 18 F. Cas. 1163 (C.C.D. Ohio 1849) (No. 10,749).

268. See, e.g., Bracha, *supra* note 183, at 439 n.144, 443 n.162, 453-54.

269. See Brian J. Love, *Bad Actors and the Evolution of Patent Law*, 101 VA. L. REV. ONLINE 1, 5-7 (2015) (arguing that much confounding case law in patent jurisprudence can be explained by courts' ad hoc needs to discipline perceived bad actors in the patent system).

cluster of cases later considered foundational in the law of patent scope.<sup>270</sup> In *Winans v. Denmead*, a slim majority of the Court led by Justice Curtis applied and reaffirmed the liberal approach to claim construction, including its application to cover what would later be called “mechanical equivalents” of the claimed invention.<sup>271</sup> Four dissenting Justices insisted, to the contrary, on “exactness, preciseness, and particularity in the description of the invention, its principle, and of the matter claimed.”<sup>272</sup> However, the same Term saw the strict constructionists in the majority in *O’Reilly v. Morse*, which held the broadest claim of Morse’s telegraph patent “illegal and void” over a three-Justice dissent.<sup>273</sup> (Justice McLean joined the dissenters from *Winans* to form the majority in *O’Reilly*, while the liberal-constructionist Justice Curtis was recused).<sup>274</sup> And in *Brooks v. Fiske*, a Woodworth patent case, the strict-constructionist wing prevailed again, this time joined by Justice Grier.<sup>275</sup>

It is not difficult to find language in these opinions that reflects the controversies in the patent system more generally. Justice Campbell, dissenting in *Winans*, noted that patents were “very frequently employed to obstruct invention, and to deter from legitimate operations of skill and ingenuity,” and protested that “[n]othing, in the administration of this law, will be more mischievous, more productive of oppressive and costly litigation, of exorbitant and unjust pretensions and vexations [sic] demands” than a loose approach to patent scope.<sup>276</sup> The voting blocs themselves are suggestive of political fault lines. The reliable group of four strict constructionists consisted of Southern Democrats led by the arch-Jacksonian, Chief Justice Taney.<sup>277</sup> Jacksonian antimonopoly politics were likely part of the backdrop to decisions against powerful patent interests.<sup>278</sup> Conversely, in *Winans*, Justice Curtis—a Massachusetts jurist who had represented Morse in the telegraph litigation,

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270. See Lutz, *supra* note 174, at 384.

271. 56 U.S. (15 How.) 330 (1853); see also Duffy, *supra* note 257, at 311-12 (noting that the decision in *Winans* followed established practice in construing the scope of the patent); Sarnoff, *supra* note 179, at 393-97 (discussing *Winans*).

272. *Winans*, 56 U.S. (15 How.) at 347 (Campbell, J., dissenting).

273. 56 U.S. (15 How.) 62, 120 (1853).

274. See *id.*

275. 56 U.S. (15 How.) 212 (1853).

276. *Winans*, 56 U.S. (15 How.) at 347 (Campbell, J., dissenting).

277. For the Justices’ biographical details, see TIMOTHY S. HUEBNER, *THE TANEY COURT: JUSTICES, RULINGS, AND LEGACY* 31-114 (2003).

278. See Mossoff, *supra* note 73, at 64-71.

and whose brother was the leading patent treatise writer of the day—led a wing of the Court that included all of its Northern- and Whig-appointed Justices.<sup>279</sup>

The Woodworth cases of the 1840s and early 1850s give a further sense of the doctrinal reach of highly contested patent campaigns. These cases returned repeatedly to questions of licensees' and users' rights, including whether licensees under the original term of the patent retained permission to use under the extended term, and whether authorized users of the patented planing machine had any rights to repair or reconstruct the device as it wore out. The Supreme Court made important law on these issues, deciding in favor of users in decisions that explicitly grappled with the balance between the rights of inventors and the public.<sup>280</sup> These cases have been conceptually influential as well. Chief Justice Taney's opinion for the Court in one of these cases, *Bloomer v. McQuewan*,<sup>281</sup> would later be hailed as a notable statement of the idea that a patent grant is a mere "franchise" conveying a right to exclude, rather than a right founded in the inventor's natural property.<sup>282</sup> If we were to take seriously the political context within which these ideas and doctrines developed, then the fact that they emerged from battles over the most notorious patent monopoly of their day is highly relevant.

The same sensitivity to political background applies even where more innocuous suits provided the vehicles for new lawmaking, because their context was inescapable: judges do not make law in a vacuum, and the political economy of patent law, in both Congress and the courts, was overshadowed by the existence of high-profile clashes over invention. On the other hand, tying the great patent campaigns to *particular* doctrinal moves is generally difficult and may be beyond the scope of this Article. The major exception might be the shift to equity.

### B. *The Rise of Equity*

The nineteenth-century shift of patent litigation from common law to equity was deeply important to the evolution of patent law. On an institutional level, it began the first of two great swings in the role of the jury that have characterized American patent adjudication. Jury trials at common law initially dominated, only to all but die out in favor of bench trials in equity during the

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279. HUEBNER, *supra* note 277, at 97-101.

280. See *Bloomer v. McQuewan*, 55 U.S. (14 How.) 539 (1852); *Wilson v. Rousseau*, 45 U.S. (4 How.) 646 (1846); Mark D. Janis, *A Tale of the Apocryphal Axe: Repair, Reconstruction, and the Implied License in Intellectual Property Law*, 58 MD. L. REV. 423, 433-43 (1999).

281. 55 U.S. (14 How.) at 549.

282. See Mossoff, *supra* note 178, at 966 n.58.

late nineteenth and twentieth centuries. For more than a century, patent contests in court were almost all before judges, until jury proceedings returned in the 1980s and 1990s; they now feature in the majority (over seventy percent) of patent trials today.<sup>283</sup> The long period of equity dominance also had consequences for the substance of patent law. Much of the overall body of patent jurisprudence was developed within the equity framework. As a result patent law is riddled with equitable approaches to judicial reasoning and lawmaking – not only in the law of remedies, but also in such explicitly equity-based doctrines as patent misuse, inequitable conduct, and laches, as well as other essentially equitable judge-made contributions such as the doctrine of equivalents,<sup>284</sup> the experimental use exception to the statutory public use bar, and the nonstatutory bar to patentability created by secret commercial sales.<sup>285</sup>

For such an important watershed, the original movement to equity has remained surprisingly obscure. Conventional wisdom in patent scholarship holds that patent suits migrated from the common law to the equity jurisdiction of the federal courts after 1870, when statutory reform allowed patentees to receive both damages and injunctions in equity actions.<sup>286</sup> This is inaccurate though. The shift to equity as patent law's forum of choice

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283. See Mark A. Lemley, *Why Do Juries Decide if Patents Are Valid?*, 99 VA. L. REV. 1673, 1705-06 (2013).

284. See Donald R. Dunner & J. Michael Jakes, *The Equitable Doctrine of Equivalents*, 75 J. PAT. & TRADEMARK OFF. SOC'Y 857 (1993); Harold C. Wegner, *Equitable Equivalents: Weighing the Equities To Determine Patent Infringement in Biotechnology and Other Emerging Technologies*, 18 RUTGERS COMPUTER & TECH. L.J. 1 (1992).

285. See Dmitry Karshedt, *Did Learned Hand Get It Wrong?: The Questionable Patent Forfeiture Rule of Metallizing Engineering*, 57 VILL. L. REV. 261 (2012) (discussing the admittedly complicated role of equitable reasoning and precedent in the formulation of the *Metallizing Engineering* rule); see also Lemley, *supra* note 283, at 1702-04 (noting that the period of equity dominance included the courts' construction of the 1870 Patent Act, which "made a number of modifications to the patent system, from solidifying the PTO bureaucracy to the establishment of various requirements for novelty, statutory bars, enablement, and inventorship that continue in much the same language to this day" (footnote omitted)).

286. See, e.g., *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1567 (Fed. Cir. 1995) (Nies, J., dissenting) ("[T]he Act of 1870 changed the way patent cases were thereafter tried. Jury trials virtually disappeared, not to be seen again in any numbers for over a century."); Lemley, *supra* note 283, at 1702-04 ("After 1870, the use of juries in patent cases essentially disappeared, and judges took over not only the role of invalidating patents in revocation proceedings but also the job of deciding personal defenses in patent infringement suits."); Lutz, *supra* note 174, at 470 ("After 1870 patentees resorted to actions at law with decreasing frequency until finally the jurisdiction of equity over infringement suits became for all practical purposes exclusive."). *But see* KHAN, *THE DEMOCRATIZATION OF INVENTION*, *supra* note 21, at 100-02 (discussing the growing use of equity during the 1840s); Lubar, *supra* note 30, at 955-58 (locating the rise of equity in the 1850s).

happened earlier, in the 1850s and 1860s, and was closely linked to the rise of large-scale patent litigation.

Some background is in order here. Common law and equity jurisdiction existed in parallel in the federal courts until 1938.<sup>287</sup> Cases filed at law or in equity were heard in the same courts before the same district and circuit judges, but occupied separate dockets and possessed distinct features. The central difference, at least to begin with, related to remedies: actions at law allowed for damages, whereas suits in equity yielded injunctions and other equitable remedies.<sup>288</sup> Yet law and equity also represented quite different doctrinal traditions, procedural practices, and sources of decision making (equity having no jury).<sup>289</sup> Of the two, equity was the latecomer to patent practice. The earliest patent acts provided for suits to be filed at common law in the federal courts to recover damages for infringement, but did not make similar provision for equity actions, meaning that patent holders could sue in equity only where the courts' diversity jurisdiction applied.<sup>290</sup> This anomaly was remedied in the Patent Act of 1819, after which patent cases could be readily brought under either the common law or equity jurisdictions of the federal courts.<sup>291</sup>

Equity was initially the secondary forum, however. Courts took the position that any case that tested the validity of a patent (as opposed to turning on questions of infringement alone) should first be tried at law to a jury before any equitable remedy could be granted. Under the English rule, associated with Lord Chancellor Eldon and widely cited by judges and treatise writers, injunctions were allowed only where validity was uncontested or had been presumptively established by prior litigation or long acquiescence.<sup>292</sup> According

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287. See generally SURRENCY, *supra* note 11, at 232-46 (detailing the operation of equity jurisdiction in parallel with common law and describing the eventual merger of the two jurisdictions).

288. See, e.g., 1 JOSEPH STORY, COMMENTARIES ON EQUITY JURISPRUDENCE: AS ADMINISTERED IN ENGLAND AND AMERICA § 25, at 26 (Boston, Charles C. Little & James Brown 2d ed. 1839) (distinguishing law and equity with reference to remedies and noting that "Equity Jurisprudence may, therefore, properly be said to be that portion of remedial justice, which is exclusively administered by a Court of Equity").

289. See *id.* §§ 26-33, at 26-33 (detailing the remedial, procedural, and functional distinctions between courts of common law and courts of equity); SURRENCY, *supra* note 11, at 229-38 (describing the early development of equity law and its procedural departures from common law).

290. See 3 WILLIAM C. ROBINSON, THE LAW OF PATENTS FOR USEFUL INVENTIONS § 1083, at 392-93 (Boston, Little, Brown, & Co. 1890).

291. See *id.* §§ 1083-1084, at 393; Patent Act of 1819, ch. 19, 3 Stat. 481.

292. See, e.g., GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS §§ 324-329, at 429-34 (Boston, Little, Brown, & Co. 2d ed. 1854).

to a leading treatise on patent law published in 1837, this approach rendered a bill for an injunction “ancillary, merely, to the action at law for damages.”<sup>293</sup> It also created a frequently cumbersome interplay of separate law and equity actions relating to the same disputes. In equity cases where the validity of the patent was doubtful or contested, judges would require the patent holder to re-file his suit as a common-law action, before returning to the equity side if successful to seek an injunction.<sup>294</sup> As an alternative the court might formulate a “feigned issue” to be referred to a jury. This old equity practice employed a legal fiction—traditionally a dispute over a fictitious wager—to allow chancery courts to refer specific questions of fact to a jury for a special advisory verdict.<sup>295</sup> The use of feigned issues waned generally in the nineteenth century, but judges used the practice intermittently to resolve evidentiary conflicts in patent disputes as late as the 1850s.<sup>296</sup>

During the middle of the century, both the law and the usage of equity shifted. Courts became more liberal in allowing validity issues to be resolved directly through hearings in equity, and patentees sought the equity jurisdiction more often. Crucially, cases involving large-scale litigation were central to the change in judicial treatment, and the patent litigation explosion generally lurked in the background of these developments. The key moment came in the late 1840s and early 1850s, just as large-scale patent enforcement began to pose difficult questions of consistency and cost for patentees and administrative economy for the courts. As Judge Kane of Philadelphia, whose court had lately been swamped by cases on the Woodworth, Parker, and Morse patents, explained in 1849: any plaintiff victorious at law had merely

triumphed—in one cause—against one defendant—in one judicial district. Each new defendant, each new cause, opens anew the whole question of originality of his invention;—and for each succeeding trial, in each of the thirty odd judicial districts of the United States . . . the patentee is to come prepared, with all his testimony, to encounter the same vexations, and abide the same hazard.<sup>297</sup>

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293. WILLARD PHILLIPS, *THE LAW OF PATENTS FOR INVENTIONS: INCLUDING THE REMEDIES AND LEGAL PROCEEDINGS IN RELATION TO PATENT RIGHTS* 452 (Boston, Am. Stationers Co. 1837).

294. See CURTIS, *supra* note 292, §§ 325-343, at 430-48.

295. See Stephen E. Sachs, *The Feigned Issue in the Federal System* (Nov. 26, 2007) (unpublished manuscript), <http://ssrn.com/abstract=1032682> [<http://perma.cc/Y7YW-TYEB>].

296. See *Silsby v. Foote*, 61 U.S. (20 How.) 378 (1857); Sachs, *supra* note 295, at 31 n.124.

297. John K. Kane, *Address Delivered at the Close of the Nineteenth Exhibition of American Manufactures* (Oct. 1849); see also *Parker v. Sears*, 18 F. Cas. 1159, 1160 (C.C.E.D. Pa. 1850)

Equity at least allowed for the imposition of preliminary injunctions, for the use and reuse of written-testimony evidence, and for the operation of judicial comity in enforcing patents that had previously been sustained elsewhere.

Gradually, large-scale patent enforcers and their judicial supporters began to put pressure on assumptions about the respective roles of equity and law. One salient example of this tendency is *Motte v. Bennett*, a Woodworth case in South Carolina in 1849.<sup>298</sup> Defendants sought to bring the validity of Woodworth's patent before a jury, while the Woodworth interests, represented by former New York Governor William Seward, insisted that the suit be disposed of in equity. In a lengthy opinion, Justice Wayne, riding circuit, reviewed English and American practice and explained that neither required a trial at law in order to grant injunctive relief where the right had been well established.<sup>299</sup> After years of successful litigation around the country, Justice Wayne declared, the originality and integrity of Woodworth's grant was "almost a universally received opinion," duly deserving a permanent injunction without additional jury fact finding.<sup>300</sup> Opponents of the Woodworth syndicate greeted this decision as a dangerous erosion of the jury principle in patent law.<sup>301</sup>

The real turning point, however, was *Goodyear v. Day (The Great India Rubber Case)* heard in Trenton, New Jersey, in 1852.<sup>302</sup> Defendant Horace Day, a rubber manufacturer and longtime antagonist of Goodyear, retained the renowned orator Rufus Choate to present his defense. The Goodyear interests responded by recruiting legendary advocate (and sitting U.S. Secretary of State) Daniel Webster for an enormous fee.<sup>303</sup> These two eminent figures joined battle over whether Goodyear's claim could be resolved in equity alone, or whether the case and its four-thousand-page record should be put to a jury before equitable relief could be considered.<sup>304</sup> Choate argued the overwhelming weight of authority for his cause, lining up English and American cases and

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(No. 10,748) (noting that "[t]he terms of this court are almost wholly occupied in the trial of patent cases").

298. 17 F. Cas. 909 (C.C.D.S.C. 1849) (No. 9,884).

299. *Id.* at 911-16.

300. *Id.* at 916.

301. See Lubar, *supra* note 30, at 957 & n.89 (noting hostile editorials in *Scientific American*).

302. 10 F. Cas. 678 (C.C.D.N.J. 1852) (No. 5,569).

303. KORMAN, *supra* note 77, at 129-30.

304. GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS § 429, at 459 (Boston, Little, Brown, & Co. 3d ed. 1867); DANIEL WEBSTER, SPEECH OF THE HON. DANIEL WEBSTER IN THE GREAT INDIA-RUBBER SUIT, at v (New York, Arthur & Burnet 1852).

treatises in support of a trial at law.<sup>305</sup> Webster appealed to practicality and judicial discretion. He noted that a court of equity had the power to disregard jury fact finding after a directed trial—and if the court was not bound by the outcome, then it must not be bound to require the jury in the first place.<sup>306</sup> Webster argued that the court, having “listened with great patience” to a week’s worth of evidence and argument, was left with only

[t]he necessity of expediting business, and the fact which everybody knows, that a court of enlightened judges is not only as competent, but more competent to settle questions arising under the construction of a patent, so often mixed of law and facts . . . a combination of them leads courts not uselessly to send patents to law, to be tried by a jury.<sup>307</sup>

In a decisive move for equity jurisdiction, Justice Grier declined to have the case tried at law. Grier acknowledged the English rule, but stated:

[E]ven there the rule is not absolute or universal; it is a practice founded more on convenience than necessity. It always rests on the sound discretion of the court. A trial at law is ordered by a chancellor to inform his conscience; not because either party may demand it as a right, or that a court of equity is incompetent to judge of questions of fact, or of legal titles.<sup>308</sup>

“In the courts of the United States,” Justice Grier further noted, “the practice is by no means so general as in England.”<sup>309</sup> He supported his preference for equity by referring to the limited capacities of juries in the face of modern patent litigation:

Cases involving inquiries into the most complex and difficult questions of mechanics and philosophy, are becoming numerous in the courts . . . . It is no reflection on trial by jury to say, that cases frequently occur, in which ten out of twelve jurors do not understand the principles of science, mathematics, or philosophy, necessary to a correct judgment of the case.<sup>310</sup>

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305. *The Great India Rubber Case*, 10 F. Cas. at 681.

306. *Id.* at 682.

307. *Id.*

308. *Id.* at 683.

309. *Id.*

310. *Id.*

Furthermore, “[i]t would require three or four weeks at least, to try this case before a jury, if this library of testimony were read to them; and at least as many months, if the witnesses were examined viva voce, as they probably would be . . . .”<sup>311</sup> Based on his reading of the record and on the Goodyear patent’s earlier victories in other circuit courts, Justice Grier was content to proceed without using a jury to “inform his conscience.”<sup>312</sup>

These decisions and a few others<sup>313</sup>—but *Goodyear* especially—broke down the procedural obstacles to hearing patent cases entirely in equity. The leading treatise writer, George Ticknor Curtis, noted in 1867 that his earlier editions on patents had repeated the English rule of trials at law before a jury, and then quoted Grier’s decision at length “in direct opposition to such opinion.”<sup>314</sup> By 1881, the Supreme Court was asserting that “[w]hatever question may have existed in reference to [the rule] previously was settled in the courts of the United States by *Goodyear*, a case argued by Webster and Choate, and decided by Mr. Justice Grier in 1852.”<sup>315</sup> Progressively, if not overnight, “this doctrine [had] gained additional importance, and was applied to such advantage that trials at law upon the merits of the controversy slowly disappeared.”<sup>316</sup>

Equity jurisdiction had compelling attractions for plaintiffs and judges alike. Cases like *Goodyear* and *Motte* show what the large-scale patent litigants wanted from equity: credit for their earlier victories in long enforcement campaigns, preliminary and permanent injunctive relief against infringers, quicker resolution of cases that went to a hearing without the time and expense

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311. *Id.*

312. *Id.*; DECISION IN THE GREAT INDIA RUBBER CASE OF CHARLES GOODYEAR VS. HORACE H. DAY 7 (New York, 1852). Justice Grier may have been influenced by his previous experience in adjudicating Goodyear’s claims. *See, e.g., Day v. Goodyear*, 7 F. Cas. 240 (C.C.N.D.N.Y. 1850) (No. 3,678) (finding Goodyear’s reissued patent not invalid and denying Day’s motion to enjoin Goodyear’s infringement action).

313. *See, e.g., Sickles v. Gloucester Co.*, 22 F. Cas. 92, 94 (C.C.E.D. Pa. 1856) (No. 12,840) (“In many questions of originality and infringement of patents, the concurrent opinion of twelve men, with little knowledge of the principles of science and philosophy which affect the case, may give but little satisfaction to the conscience of a chancellor: Hence it is becoming more common to examine these questions in courts of equity, without the aid of a jury.”); *Nevins v. Johnson*, 18 F. Cas. 28, 29 (C.C.S.D.N.Y. 1853) (No. 10,136) (sustaining equity jurisdiction in a case where the patent had expired and no injunction was possible, on the grounds that “[t]he manifest purpose of [C]ongress [was] to give to the circuit courts in equity every power requisite to the entire protection of patent rights”); *Parker v. Hatfield*, 18 F. Cas. 1127, 1133 (C.C.D. Ohio 1845) (No. 10,736) (referring the factual questions on validity to a special master in equity, rather than to a jury).

314. CURTIS, *supra* note 304, § 429, at 459.

315. *Root v. Ry. Co.*, 105 U.S. 189, 205 (1881) (citation omitted).

316. ROBINSON, *supra* note 290, § 1085, at 396.

of oral courtroom testimony, and perhaps especially—though tacitly—avoidance of juries who might be hostile to their reputedly monopolistic grants. Not all patent plaintiffs were repeat players or large-scale litigants, but the promise of repeatable enforcement, quicker process, and injunctive relief apparently had appeal beyond the multiple-litigation setting.<sup>317</sup> In addition, equity jurisdiction did include facilities for securing monetary recovery alongside injunctive remedies. Successful plaintiffs in equity could seek an accounting and award of the infringer’s profits on use or sale of the patented invention.<sup>318</sup> The significance of equity courts acquiring a damages remedy in the 1870 Patent Act has been overstated,<sup>319</sup> but it is true that the two jurisdictions’ remedies were asymmetrical even before 1870: equity offered injunctions and infringers’ profits, while suits at law offered only money damages.<sup>320</sup>

For their part, judges gained procedural efficiency, more control over the direction and disposition of patent law, and more ability to vindicate the rights of those whom they considered deserving patentees.<sup>321</sup> Zorian Khan has argued

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317. See *infra* Table 5 (showing the use of equity by almost all plaintiffs in the Eastern District of Pennsylvania in the sample years after 1865).

318. CURTIS, *supra* note 304, §§ 434-436, at 465-70. Profits included only the actual monetary profits or savings made by the infringer. *Id.* § 436, at 469. As such they were a narrower kind of recovery than damages at law, which offered the possibility of triple damages and could be calculated on a range of metrics of the patentee’s loss and/or infringer’s gain. *Id.* §§ 337-338, at 343-48. The relative potential of equitable profit awards and damages at law depended on the identity of the infringer and the nature of the use: commercial sellers or industrial users of the patented invention could produce very large awards in an accounting of profits; individual (or financially unsuccessful) infringers might offer none, whereas at least in law the latter could have been subjected to damages based on the royalty demanded. One might have thought that this would create an advantage for actions at law in end-user litigation, although that does not seem to have played out in practice.

319. See, e.g., *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1567 (Fed. Cir. 1995) (Nies, J., dissenting) (“The 1870 Act gave equity courts in patent infringement suits the special power to award common law damages. Since most patentees wanted an injunction available only in equity, as well as the equity discovery procedure to aid in proof of infringement, the equity court became the forum of choice.” (citation omitted)); Lemley, *supra* note 283, at 1704 (“[B]ecause under the 1870 Act a patentee who wanted both an injunction and damages had to proceed in a court of equity, virtually none of the patent cases decided in this period were tried to a jury.”).

320. ROBINSON, *supra* note 290, §§ 1085-1087, at 395-99.

321. See, e.g., *Motte v. Bennett*, 17 F. Cas. 909, 917 (C.C.D.S.C. 1849) (No. 9,884) (“Woodworth’s planing machine . . . now does, in every part of the civilized world, that which could not be done before with the same efficiency by machinery, and which is not here done in any degree by any machine which has been before the courts of the United States, unless by piracy of Woodworth’s combination.”); Kane, *supra* note 297, at 4 (“I have seen men, over and again, who had grown grey in litigation and penury, by seeking to

that judges embraced equity as part of a reaction against the patent monopolization efforts of the 1840s and 1850s, preferring equitable jurisprudence because it gave them more flexibility in balancing the rights of patentees against the interests of the public.<sup>322</sup> Yet judicial skepticism of large-scale patent enforcement seems an unlikely reason for the liberalization of equity. Khan underestimates the role of patentees in pushing for equity liberalization: parties like Goodyear and Woodworth actively sought equity decision making, suggesting that it was not a forum chosen to constrain them. This suggests that whatever judges gained in terms of discretion to rein in monopolies was far outweighed by the advantages to mass enforcers of having equity procedure and bench (rather than jury) trials at their disposal.

This is not to say that the courts lacked overarching institutional agendas of their own. To the extent that broader judicial aims guided the shift to equity, those aims likely reflected the strain of legal and economic nationalism that held sway on the federal bench.<sup>323</sup> Famously, in 1842, the Supreme Court ruled in *Swift v. Tyson*<sup>324</sup> that federal courts were not required to follow the decisions of state courts in commercial cases, opening the way for the development of a general federal common law.<sup>325</sup> If anything, equity was an even greater repository of hopes for centralization and consistency at a time when both Congress and the courts were preoccupied with disuniformity in the administration of federal justice.<sup>326</sup> Well before *Swift*, federal judges created a nonstate body of equity principles to govern procedures, remedies, and in some

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vindicate for themselves the rights, which the faith of the Government was pledged that they should enjoy. I have known a patent, among the most meritorious that have done honor to our country, which, after the lapse of more than twenty years, had produced nothing to the inventor but barren praise and substantial wretchedness.”).

322. KHAN, THE DEMOCRATIZATION OF INVENTION, *supra* note 21, at 101-03 (“In the absence of antitrust statutes, equity provided a more flexible channel for mediating between the inventor’s exclusive rights and a general monopoly.”).

323. See TONY FREYER, HARMONY & DISSONANCE: THE SWIFT AND ERIE CASES IN AMERICAN FEDERALISM 18-22 (1981) (describing a widespread attachment to federal law as a source of uniformity in commercial law); MORTON J. HORWITZ, THE TRANSFORMATION OF AMERICAN LAW, 1780-1860, at 250-51 (1979) (detecting “an attempt to impose a procommercial national legal order on unwilling state courts”).

324. 41 U.S. (16 Pet.) 1 (1842).

325. See FREYER, *supra* note 323, at 4-43; PURCELL, *supra* note 230, at 24.

326. See Kristin A. Collins, “A Considerable Surgical Operation”: Article III, Equity, and Judge-Made Law in the Federal Courts, 60 DUKE L.J. 249, 255-56 (2010) (arguing that “the Supreme Court’s insistence that lower federal courts apply a uniform body of equity principles is best understood as a response to contemporary concerns about disuniformity and institutional incapacity in the federal judicial system—concerns shared by many jurists and legislators with otherwise substantially different views regarding the proper scope of federal power”).

cases substantive rights on the equity side of the court.<sup>327</sup> Midcentury found the Supreme Court continuing to insist that federal equity was a distinct and uniform body of law, independent of state laws and procedures.<sup>328</sup> Patent law, as an exclusively federal domain, did not possess the tensions with state law that animated the Court's use of equity in other areas.<sup>329</sup> But as the number of patent suits they heard on circuit grew rapidly, the justices' recurrent concerns about disuniformity and unpredictability in the federal courts would have applied equally to patent decision making.<sup>330</sup>

In any event, the dramatic pull of the liberalized equity jurisdiction for patent law was clear on the ground. In the Southern District of New York in 1850, nine patent suits were filed in equity compared to twenty-seven filed at law.<sup>331</sup> By 1860 the balance was reversed: eighty suits commenced in equity and only thirty at law. By 1870 cases at law had largely disappeared.<sup>332</sup> Slightly more granular numbers are obtainable for the Eastern District of Pennsylvania, and are shown in Table 5.

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327. *Id.* at 265-91 (tracing this development throughout the first half of the nineteenth century and locating its emergence as an established norm in the 1810s).

328. SWISHER, *supra* note 67, at 324-25; Collins, *supra* note 326, at 285-87.

329. *See* Collins, *supra* note 326, at 285-89 (describing the applications of federal equity as part of a complex "vertical choice-of-law regime").

330. *See id.* at 330-32 (noting that circuit riding gave the justices firsthand experience of disuniformity in the federal courts).

331. Author's Database, C.C.S.D.N.Y., *supra* note 10.

332. *Id.*

**Table 5.**  
**SUITS FILED IN LAW AND EQUITY, EASTERN DISTRICT OF PENNSYLVANIA, SAMPLE YEARS 1840-1910<sup>333</sup>**

<i>Year</i>	<i>Patent Suits Filed at Law</i>	<i>Patent Suits Filed in Equity</i>	<i>Number of Those Suits Appearing in Both Law and Equity</i>
1840	28	9	8
1850	36	157	3
1860	43	50	4
1865	4	39	0
1870	4	102	0
1880	1	87	1
1890	2	82	0
1900	0	66	0
1910	1	63	0

Common law was clearly the forum of choice in the Eastern District of Pennsylvania in 1840: only nine suits were filed in equity, eight of them by the railroad inventor Isaac Cooper, and all eight of Cooper's cases were filed at law as well.<sup>334</sup> Equity made its breakthrough by 1850, when the wave of Parker water wheel suits dominated the equity docket.<sup>335</sup> In 1860 the court's caseload was still mixed, but the suits filed on the law side had taken on a distinct cast: almost all were filed against railroads, relatively deep-pocketed defendants against whom a damages judgment might be quite lucrative, and almost half were filed under Richard Imlay's railroad-car patent, which had already expired and so had nothing to gain from an injunction.<sup>336</sup> Between 1860 and 1865, filings at common law collapsed, with only scattered suits appearing thereafter.

<sup>333</sup>. Author's Database, C.C.E.D. Pa., *supra* note 10.

<sup>334</sup>. Author's Database, C.C.E.D. Pa., *supra* note 10. Cooper's eight suits at law were all filed in March 1840, the equity suits in March and April. I do not have the exact dates of filing, but this plausibly suggests that filings in equity, designed to access preliminary injunctive relief, quickly followed filings at law.

<sup>335</sup>. *Id.*

<sup>336</sup>. *Id.*

Philadelphia's 1860s farewell to common law patent suits is consistent with contemporary commentary. Prominent patent lawyers testifying before Congress in the late 1870s agreed that jury trials in infringement cases had largely disappeared, with one attorney ruminating that he had "tried an important case at law, I think, in 1865, and I believe that is the last one."<sup>337</sup> These leading lights of the bar explained the development in terms of "the mental superiority of the court over a jury," and couched their continuing preference for equity in terms of judicial expertise.<sup>338</sup>

Patent law's shift to equity is probably best described as both a cause and a consequence of the nineteenth-century litigation boom. The pressure of large-scale enforcement and the volume of patent business in the courts pushed judges to overcome the traditional impediments and concentrate patent decision making in equity. In turn, the patentees who engaged in multiple litigation were the greatest beneficiaries of all-equity litigation. The shift to equity enabled them to undertake enforcement campaigns that they might not have been able to sustain—or to get past hostile juries—under common-law procedures. Soon after the shift of the 1850s and 1860s, the equity orientation of patent law was locked in by the 1870 Patent Act. Contra modern conventional wisdom, this was the ratification, rather than the beginning, of the all-equity phase. The Act gave the first statutory authorization for equity courts to rule on all defenses and issues available in patent litigation at law,<sup>339</sup> but this was "rather a recognition of what had already been established than its introduction."<sup>340</sup> The provision to allow damages in equity did break new ground, but it did so as a way of restoring the traditional range of remedies to a patent litigation system that had left common law behind. Once equity was established as the near-universal forum for patent suits, the law simply reshaped around that assumption.

### *C. The Politics of the Patent System Under Pressure*

Finally, the history of the patent litigation explosion reveals a rich politics of the patent system. Today we tend to assume that patent law is not particularly "political," in the sense of popular protest or factional mobilization. The whole area has a relatively technocratic air. In the nineteenth century, though, patent conflicts were not mere intramural disputes among inventors

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<sup>337</sup>. S. MISC. DOC. NO. 45-50, at 140 (1878).

<sup>338</sup>. *Id.* at 141.

<sup>339</sup>. Patent Act of 1870, ch. 230, § 61, 16 Stat. 198, 208.

<sup>340</sup>. *Root v. Ry. Co.*, 105 U.S. 189, 205 (1881).

and manufacturers; they were often highly public matters, bound up in the heated politics of monopoly, and regular fodder for political agitation and congressional intervention.

The middle nineteenth century has historically been portrayed as a judicially driven period in patent law, during which Congress remained on the sidelines.<sup>341</sup> While it is true that there was little general patent legislation of great consequence between 1836 and 1861, this view misses the extent of Congress's involvement. Congressional interventions, above all in the form of private bills extending patents, were highly influential and highly controversial in the politics of patents. Vast sums were reputedly poured into extension battles by the owners of the Woodworth,<sup>342</sup> McCormick,<sup>343</sup> and various rubber patents.<sup>344</sup> In 1854, a congressional committee, appointed to investigate charges of bribery surrounding the attempted extension of Samuel Colt's revolver patent, painted a lurid picture of the "[a]gents, attorneys, and letter-writers" employed to bombard legislators in patent extension cases.<sup>345</sup> "[C]ostly and extravagant entertainments" were laid on for "ladies and Members of Congress and others" in support of extension bills.<sup>346</sup> The "most efficient agents" available for hire were the credentialed correspondents of the daily press, whose access to the House floor was supposedly contingent on a pledge not to lobby, but who in practice were employed in large numbers by the backers of "railroad, patent, and other schemes."<sup>347</sup>

On the other side, opposition to patent extensions produced genuine popular mobilizations. In Philadelphia, a "mass meeting" of lumbermen and carpenters was held in 1850 to arrange resistance to the proposed Woodworth

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341. See, e.g., Morriss & Nard, *supra* note 258, at 160 ("The federal courts again became the forum of choice from the 1836 Patent Act until after the Civil War, with only lesser statutory changes occurring in the interim.").

342. See, e.g., *The Woodworth Patent Extension*, SCI. AM., Feb. 14, 1852, at 170 ("Money can do anything with some men, and the Woodworth patent power has the most potent influence.").

343. See, e.g., *The "Patent" Lobby in the Field—the Different Interests at Work, &c.*, SCI. AM., Jan. 30, 1858, at 166 ("McCormick, the reaper patentee, is also here . . . . He has plenty of money to prosecute his matter, but so far he has had but meager success.").

344. See, e.g., James Parton, *Log-Rolling at Washington*, ATLANTIC MONTHLY, Sept. 1869, at 369 ("The head of the Chaffee-patent lobby was that most indomitable of all the india-rubber men,—Horace H. Day, owner of the Chaffee patent, a man capable of spending seventy thousand dollars upon an election. Both of these lobbies spent money, both before and after the junction, as freely as it is ever spent for such purposes.").

345. H.R. REP. NO. 33-353, at 3 (1854).

346. *Id.* at 4.

347. *Id.* at 6.

planing machine patent extension. The Pennsylvania legislature was subsequently one of a number that passed resolutions against congressional approval (which was ultimately denied).<sup>348</sup> “Remonstrance after remonstrance” was sent to Congress against a further extension of the Parker water wheel patent in 1854.<sup>349</sup> They came “from Maryland, and Pennsylvania, and New York, and Maine, and Indiana, and indeed from almost every state in which mills are used,” and each was “signed by hundreds of individuals.”<sup>350</sup> The successful campaign against extension of McCormick’s reaper patent saw petitions pour into Congress from counties, towns, and state legislatures in New York, Wisconsin, Illinois, Indiana, Pennsylvania, Michigan, and Vermont.<sup>351</sup> Similar agitation greeted the extension lobbying of Goodyear and Howe. Given the bitterness of these battles, it is unsurprising that the principal forum for patent extensions shifted from Congress to the much more friendly confines of the Patent Office.<sup>352</sup> Here too, though, anger with selectively protracted patent rights eventually led to the abolition of administrative extensions in the 1861 Patent Act. At that time the Commissioner’s power to extend grants by seven years was ended, and the standard patent term was lengthened to seventeen years instead.<sup>353</sup>

After the Civil War, the most active politics of patents took place in Western states. The Midwest and West were the heartland of antimonopoly politics during that period, much of it associated with the so-called granger movement—an agrarian social and political movement that fought to secure state regulation of railroads and other monopoly services in the early 1870s.<sup>354</sup> Yet hostility to patents did not start out as an inherent feature of generalized antimonopoly or anticorporate sentiment. Instead, it emerged as a reaction to the leading campaigns of large-scale patent assertion. As reported by the agricultural historian Earl Hayter, farmers began to encounter the patent system with increasing frequency in the 1870s.<sup>355</sup> With new farm machinery

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348. Cooper, *supra* note 38, at 313.

349. H.R. REP. NO. 33-297, at 2 (1854).

350. *Id.*

351. SALEM G. PATTISON, *THE MCCORMICK EXTENSION CASE OF 1848*, at 83-162, 269-310 (1900).

352. *See supra* Section II.B.1.

353. Patent Act of 1861, ch. 88, § 16, 12 Stat. 246, 249.

354. *See* SOLON JUSTUS BUCK, *THE GRANGER MOVEMENT: A STUDY OF AGRICULTURAL ORGANIZATION AND ITS POLITICAL, ECONOMIC, AND SOCIAL MANIFESTATIONS, 1870-1880* (1913); GEORGE H. MILLER, *RAILROADS AND THE GRANGER LAWS* (1971).

355. *See* Earl W. Hayter, *The Patent System and Agrarian Discontent, 1875-1888*, 34 *MISS. VALLEY HIST. REV.* 59, 61 (1947) [hereinafter Hayter, *The Patent System and Agrarian Discontent*]; Hayter, *supra* note 111; *see also* Gerard N. Magliocca, *Blackberries and Barnyards: Patent Trolls*

proliferating and the patent system growing rapidly, the countryside began to fill with “patent sharks” – agents of the various patent interests who demanded license fees directly from users.<sup>356</sup> Many farmers were themselves drawn into schemes that involved purchasing local patent rights for assertion.<sup>357</sup> By the late 1870s, Minnesota’s U.S. Senator William Windom declared that

there is not a farmer in this country to-day who is not liable to a score of suits or more for the infringement of patents on his farming implements . . . . There are a dozen things in your kitchen, your library, your dining room, your workshop . . . [on] which you must pay or be subjected to harassing suits.<sup>358</sup>

The largest of these campaigns provoked grassroots mobilization and political response. Various fronts sprang up against the driven-well patent. In Michigan, for example, the State Grange coordinated resistance to the driven-well patent, soliciting a dollar from every willing well user for collective defense.<sup>359</sup> Farmers’ associations in Iowa and Minnesota raised thousands of dollars to fight Green’s patent as far as the U.S. Supreme Court.<sup>360</sup> Ohio had county-level antidrivewell associations with hundreds of dues-paying members.<sup>361</sup> State political representatives were soon drawn in: Minnesota’s legislature appropriated \$7,500 for its citizens’ defensive efforts.<sup>362</sup> Similarly, resistance to the barbed-wire patents took a political turn. Iowa farmers held a state convention in 1881 and formed the Farmers’ Protective Association to fight the Washburn & Moen syndicate and its Glidden patent.<sup>363</sup> The Association established a “free factory” in Des Moines to supply wire at well below the patent holder’s prices, and the state legislature provided \$5,000 for legal defense.<sup>364</sup> Agrarian activism played out in other cases as well. A much-

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*and the Perils of Innovation*, 82 NOTRE DAME L. REV. 1809, 1819-25 (2007) (discussing patent trolls in the late nineteenth century).

356. Magliocca, *supra* note 355, at 1819-25.

357. Hayter, *The Patent System and Agrarian Discontent*, *supra* note 355, at 63.

358. *Id.*

359. Hayter, *supra* note 111, at 22.

360. BENJAMIN F. GUE, 3 HISTORY OF IOWA: FROM THE EARLIEST TIMES TO THE BEGINNING OF THE TWENTIETH CENTURY 141 (1903); Hayter, *supra* note 111, at 22.

361. Hayter, *supra* note 111, at 26 n.59.

362. GUE, *supra* note 360, at 142.

363. *Id.* at 104; *see also* Hayter, *An Iowa Farmers’ Protective Association*, *supra* note 124, at 336 (describing the proliferation of “protective societ[ies]” organized to fund litigation efforts).

364. GUE, *supra* note 360, at 106; *see also* *Merchs.’ Union Barb-Wire Co. v. Brown*, 20 N.W. 434 (Iowa 1884) (upholding the state’s appropriation against constitutional challenge).

loathed patent for a simple form of farm gate aroused opposition from granges in Michigan, Wisconsin, and Illinois, before being invalidated by the courts in 1879.<sup>365</sup> Granger organizations also fought attempts by the sewing machine patent pool to extend some of its more important grants. In response to a congressional extension of one sewing-machine patent in 1872, the rural press demanded the defeat of representatives who had voted for the measure.<sup>366</sup>

During the 1870s and 1880s, these collective defense efforts coalesced into a broader movement for reform of the patent laws. The National Grange and the state granges of Iowa and Wisconsin formed committees to consider patent reform as early as 1874.<sup>367</sup> Calls for revision began with the elimination of extensions and “indiscriminate . . . re-issuing of patents” before moving on to encompass more fundamental changes in patent enforceability.<sup>368</sup> Demands for outright abolition of the patent system flared here and there, but made little or no headway within the (generally technologically enthusiastic) major farmers’ organizations.<sup>369</sup> Farmers’ representatives were quick to deny that they disfavored inventors: as one granger leader stated, “[N]o one has been found simple minded enough not to give credit to inventive genius, for much of our improved system of agriculture. It is not ‘inventors’ nor just laws protecting them that we oppose.”<sup>370</sup> Instead, the 1870s and early 1880s saw a flood of petitions and memorials to Congress from state legislatures, granges, and ad hoc citizens’ groups calling for changes in the law or protesting particular patents or patent extensions.<sup>371</sup> By one account, the frequency of such

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365. *Wright v. McMillan*, 30 F. Cas. 679 (C.C.W.D. Mo. 1877) (No. 18,083); R.C. Carpenter, *Our Patent System*, in EIGHTEENTH ANNUAL REPORT OF THE SECRETARY OF THE STATE BOARD OF AGRICULTURE OF THE STATE OF MICHIGAN 209, 217-20 (1880); Hayter, *The Patent System and Agrarian Discontent*, *supra* note 355, at 74.

366. HAL S. BARRON, *MIXED HARVEST: THE SECOND GREAT TRANSFORMATION IN THE RURAL NORTH, 1870-1930*, at 172 (1997); *see also* BUCK, *supra* note 354, at 119 (noting that “the claim is made that the influence of the Grange prevented the extension of patents on sewing-machines”).

367. BUCK, *supra* note 354, at 119.

368. Hayter, *The Patent System and Agrarian Discontent*, *supra* note 355, at 77; *see also* *Fifth Day, Evening Session*, 8 J. PROC. ANN. SESSION NAT’L GRANGE PATRONS HUSBANDRY 62 (1874) (urging reform to a system that rewarded “plain and simple inventions by the prolonged continuance of letters patent”).

369. *See, e.g., Seventh Day, Morning Session*, 9 J. PROC. ANN. SESSION NAT’L GRANGE PATRONS HUSBANDRY 67, 72 (1875) (failing to adopt an abolition resolution and expressing “doubt as to the policy of Congress abolishing the system of patents entirely”).

370. *First Day*, 16 J. PROC. ANN. SESSION NAT’L GRANGE PATRONS HUSBANDRY 12 (1882).

371. Hayter, *The Patent System and Agrarian Discontent*, *supra* note 355, at 78.

remonstrances in the pages of the *Congressional Record* was second only to that of petitions concerning Civil War pensions.<sup>372</sup>

Grappling with the problems of patent litigation was central to the reform agenda. Above all, the farmers and their political representatives protested the practices of end-user litigation, many of which they alleged amounted to “legalized blackmailing and robbery.”<sup>373</sup> The sheer distance of most Western farmers from a U.S. circuit court forced accused infringers “to submit to . . . blackmailing extortions, or travel several hundred miles to put in an answer” to a ten-dollar complaint.<sup>374</sup> The impracticality of defending such suits only made it easier for “patent-rights sharpers”<sup>375</sup> to assert “trivial,”<sup>376</sup> “spurious,”<sup>377</sup> or “worthless”<sup>378</sup> grants. Acting on behalf of home-state legislatures and granges, Western and Midwestern senators proposed a variety of statutory changes designed to eliminate litigation of this type. The favorite of the grangers was an “innocent purchaser” provision that would exempt from liability any defendant who had purchased the infringing article “for his own private use” without knowledge of the patent.<sup>379</sup> Another proposal, similarly radical in placing end users beyond the reach of patent law, was to hold only manufacturers and vendors of patented articles liable for infringement, while exempting both users and parties who manufactured for their own personal use without knowledge of the patent.<sup>380</sup> One amendment aimed to make farmer suits uneconomical by requiring even victorious patentees to pay defendants’ costs in cases where less than fifty dollars was recovered.<sup>381</sup>

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372. *Id.*

373. 8 CONG. REC. 303 (1878) (statement of Sen. Windom).

374. *Id.*

375. 8 CONG. REC. 1371 (1879) (statement of Rep. Deering).

376. 8 CONG. REC. 303 (1878) (statement of Sen. Windom).

377. Carpenter, *supra* note 365, at 212.

378. *Id.*

379. 8 CONG. REC. 296 (1878) (discussing the amendment offered by Senator Windom); *see also* USSELMAN, *supra* note 127, at 148–50 (relaying the background and rationale for “innocent purchaser provisions,” but noting that such bills carried baggage that transcended the immediate issue of patents).

380. 10 CONG. REC. 102 (1880) (discussing the amendment offered by Senator Butler).

381. 8 CONG. REC. 303 (1878) (discussing the amendment offered by Senator Windom). The granger proposals presented cost shifting principally as a means to place the costs of farmer suits on plaintiffs, but a more modern conception of cost shifting as a remedy for unfounded litigation positions was also aired during the 1870s. *See, e.g.*, S. MISC. DOC. NO. 45–50, at 138 (1878) (“If we could find any way by which the court should be authorized to make a handsome allowance for expenses and counsel-fees against the party, either a vexatious plaintiff or a vexatious defendant, who had made a frivolous and vexatious claim or a

These measures aimed at curtailing particular classes of litigation were joined by proposals to rein in certain kinds of heavily litigated patents. Reformers sought a system of periodical maintenance fees that would do away with the problem of “old and worthless” patents being dredged up for reissue and enforcement.<sup>382</sup> Meanwhile, complaints about the number of trivial grants were answered by a call to enforce more meaningful standards of utility.<sup>383</sup> The statute already required that a patent issue only for inventions deemed “sufficiently useful and important,”<sup>384</sup> but many by the 1870s saw the restriction as a dead letter. “The whole country, every branch of business, every conceivable thing,” lamented Michigan Senator Isaac Christiancy, “is infested with these nuisances, as numerous and annoying as the frogs or the lice of Egypt.”<sup>385</sup> The same lawmaker spoke ardently of his desire to limit patent-eligible subject matter, cutting off problematic branches of the patent system by eliminating protection for clothing, toys, and “any patents for medicines or medical compositions.”<sup>386</sup>

At its peak, the agrarian patent reform movement stood a real chance of imposing dramatic statutory reform on the patent system. What made the farmers particularly dangerous to the established patent law was the emergence of an improbable ally: the railroads. As heavy consumers of invention (and possessors of the deepest pockets in the industrial economy), the major railroad companies had spent the 1870s battling a series of suits by the patentees of indispensable railroading technologies.<sup>387</sup> Railroad lobbyists in Congress chiefly targeted the doctrines of recovery in equity that had begun to subject them to enormous monetary awards for infringement,<sup>388</sup> but they also made common cause with the grangers on matters such as reissue abuse, statutes of limitations, the introduction of patent maintenance fees, and the

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frivolous and vexatious defense, it seems to me that would be a step in the right direction. We have considered that matter somewhat.”).

382. 8 CONG. REC. 271 (1878) (statement of Sen. Hoar). The United States would eventually adopt maintenance fees in 1980. See Act of Dec. 12, 1980, Pub. L. No. 96-517, 94 Stat. 3015 (codified as amended at 35 U.S.C. § 41(b) (2012)).

383. 8 CONG. REC. 306-07 (1878) (statement of Sen. Christiancy).

384. Patent Act of 1870, ch. 230, § 31, 16 Stat. 198, 202.

385. *Id.* at 307. Similarly, the Senator opined, “It is to be regretted that the Commissioners and examiners have not more liberally exercised this power [to deny insufficiently useful patents] . . . . No patent should be issued, unless the invention contains some new and important principle.” *Id.*

386. *Id.* at 308.

387. Usselman & John, *supra* note 129, at 103-09.

388. USSELMAN, *supra* note 127, at 110-13, 145-46.

need to reduce the profusion of “insignificant” patents.<sup>389</sup> Nor were the railroads the only elite supporters of patent reform. The critiques mounted by the farmers and the railroads attracted a number of New England congressmen, most from the faction styled as “liberal reformers” or (more mockingly) as “Mugwumps.”<sup>390</sup> This group approached patent reform as a good-government problem, and was advised on the shortcomings of the system by the cream of the Boston patent bar.<sup>391</sup>

Despite the combination of powerful constituencies for some kind of patent reform, major statutory changes did not occur. Several bills passed the House of Representatives between 1877 and 1884, some of them by wide margins.<sup>392</sup> These included radical, granger-inflected measures: in 1882, for example, the House voted 155-49 for a bill providing that no user, innocent or otherwise, would be liable for infringement “when it shall appear on the trial that the defendant . . . purchased said article for a valuable consideration in the open market.”<sup>393</sup> These products of the more populist, farmer-influenced House were unable to pass the more conservative Senate.<sup>394</sup> A number of industrial-state senators, some of whom had been lawyers in patent cases themselves, allied with vocal advocates of inventors’ rights to block the moderate and radical reform bills alike.<sup>395</sup> The result was legislative stasis during the 1880s. Patent reform remained a live issue in agrarian politics: various populist third parties such as the Greenback Party and American Prohibition Party included patent planks in their electoral platforms.<sup>396</sup> Meanwhile an uneasy stalemate reigned in Congress. The two major parties were said to forbear from taking affirmative positions on patent matters “for fear of losing farmers’ votes.”<sup>397</sup> As late as 1888 the National Electric Light Association withdrew its plan to petition Congress for a commission of inquiry into patent reform, having been

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389. See, e.g., S. MISC. DOC. NO. 45-50, at 108-11, 123 (1878). J.H. Raymond was the lead lawyer for the Western Railroad Association, the industry’s main collective patent defense organization. *Id.* at 225-26.

390. USSELMAN, *supra* note 127, at 150; Usselman & John, *supra* note 129, at 111-14.

391. See, e.g., S. MISC. DOC. NO. 45-50, at 13 (including the statements of Chauncey Smith and J.J. Storrow, testifying in support of the proposed bills).

392. Hayter, *The Patent System and Agrarian Discontent*, *supra* note 355, at 80-81.

393. H.R. 6018, 47th Cong. (1882); 13 CONG. REC. 3952, 3955 (1882).

394. Hayter, *The Patent System and Agrarian Discontent*, *supra* note 355, at 81.

395. Usselman & John, *supra* note 129, at 114-16.

396. Hayter, *The Patent System and Agrarian Discontent*, *supra* note 355, at 78.

397. *Id.* at 81 n.84 (first quoting 22 W. RURAL & AM. STOCKMAN 668 (1884); then quoting 12 W. MANUFACTURER 194 (1884); and then quoting 13 W. MANUFACTURER 35 (1885)).

warned by patent lawyers that doing so might invite an attempt to sweep away the entire system.<sup>398</sup>

Stymied in Congress, the political pressure on the patent system leaked out in other ways. One was in the states, where legislatures focused on curtailing the frauds that accompanied rampant peddling of patent rights. Farmers were targets not only for infringement suits but also for schemes that involved the sale of territorial patent assignments. As dispensed by “patent swindlers” and “note-shavers,” these sometimes involved dubious rights, hidden obligations to purchase machinery or take on debt, or outright forgery.<sup>399</sup> In response, states passed, and courts regularly upheld, statutes that regulated the format of promissory notes given for patent rights—and even, in the case of Indiana, required any seller of a patent right to file copies of the patent with the local county clerk and to swear out an affidavit confirming his authority to sell.<sup>400</sup>

Another, more irregular outlet for patent politics ran through the federal executive. The catalyst for these efforts was an 1871 Supreme Court decision, *Mowry v. Whitney*, which decreed that a judicial proceeding for the cancellation of a fraudulent patent could only be instituted by the U.S. government or its officers.<sup>401</sup> The 1870s and 1880s then saw repeated attempts to draw the executive branch into ad hoc actions against the most unpopular mass-enforced patents. Opponents of the barbed wire and Roberts oil torpedo patents, among others, gained the Attorney General’s permission to bring fraud suits against their respective patentees in the name of the United States.<sup>402</sup> Those suits gained little traction, but the practice broke through into all-too-public view in 1885, when a rival of the Bell Telephone monopoly secured a government suit to cancel Bell’s controlling patent for fraud and other misconduct.<sup>403</sup> The fact that the U.S. Attorney General was a major shareholder in the anti-Bell company in question triggered a scandal, plunging both President Cleveland’s

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398. See C.A. Brown, *Revision of the Patent Law*, W. ELECTRICIAN, Jan. 21 1888, at 31 (describing the National Electric Light Association’s proposal to Congress); *Reform of the Patent System*, ELECTRICAL WORLD, Apr. 14, 1888, at 186 (reporting the National Electric Light Association’s decision to abandon its plan in the face of the “great opposition that was expressed to it among many of [its] legal brethren”).

399. See Hayter, *supra* note 355, at 68-73.

400. See *Brechbill v. Randall*, 1 N.E. 362, 363 (Ind. 1885) (upholding the Indiana statute); ROBINSON, *supra* note 290, § 1242, at 680-81 (collecting state-court decisions).

401. 81 U.S. (14 Wall.) 434, 439 (1871).

402. See BEAUCHAMP, *supra* note 133, at 92-93.

403. See *id.* at 88-91.

Administration and the already-notorious Bell patent into a further humiliating round of newspaper headlines and congressional inquiries.<sup>404</sup>

The extent to which this political climate affected judicial treatment of patents is an intriguing and, at this point, still open question. It is certainly possible to trace some lines of response to the crisis of patent law and litigation in the decades after the Civil War. The clearest example is the reaction against opportunistic reissues, which the Supreme Court—especially in the person of Justice Bradley—led in the later 1870s and early 1880s.<sup>405</sup> Elsewhere, in *Atlantic Works v. Brady*, Justice Bradley sought to reinvigorate the invention (now “nonobviousness”) requirement while offering a famous statement of disgust for speculative patent assertion:

It was never the object of those laws to grant a monopoly for every trifling device, every shadow of a shade of an idea . . . . Such an indiscriminate creation of exclusive privileges tends rather to obstruct than to stimulate invention. It creates a class of speculative schemers who make it their business to watch the advancing wave of improvement, and gather its foam in the form of patented monopolies, which enable them to lay a heavy tax upon the industry of the country, without contributing anything to the real advancement of the arts.<sup>406</sup>

Among those engaged in patent litigation, judicial sensitivity to patent politics was a constant concern. The barbed-wire patentees chose courts and judges carefully, while privately expressing fear that “[t]he political agitation of demagogues in inciting the farmer, is beginning to tell upon the Court.”<sup>407</sup> The Bell telephone interests lived in fear of a judge with “any taint of grangerism or any political bee in his bonnet.”<sup>408</sup> Henry Wallace, a leading agricultural journalist and organizer of the Farmers’ Protective Association against the barbed-wire patent, opined in 1888:

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<sup>404</sup>. See *id.* at 89–90.

<sup>405</sup>. See *supra* notes 213–217 and accompanying text.

<sup>406</sup>. 107 U.S. 192, 200 (1883); see also Usselman & John, *supra* note 129, at 117–19 (placing Justice Bradley’s opinion in the context of ongoing patent reform campaigns as well as Justice Bradley’s history of creative engagement with questions of monopoly).

<sup>407</sup>. Hayter, *supra* note 355, at 80 (quoting Letter from Benjamin F. Thurston to Isaac L. Ellwood (Apr. 29, 1881) (on file with Ellwood Estate, DeKalb, Illinois)).

<sup>408</sup>. ARTHUR S. PIER, *FORBES: TELEPHONE PIONEER* 149 (1953) (quoting Letter from William Forbes, President, Bell Co., to James Storrow, Lead Patent Counsel, Bell Co. (Sept. 13, 1884)).

Slowly and yet surely the highest courts are voicing what is known as “granger” sentiment. Twenty years ago almost any patent would be sustained and any kind of robbery could be practiced under the plea of a “Patent;” now the courts discriminate and the people get their rights if they will but fight for them.<sup>409</sup>

*Scientific American*, a close watcher of all things patent law, detected in 1885 a “recent tendency of the courts to destroy patents,”<sup>410</sup> and in 1887 depicted a Supreme Court “much more vigorous in its treatment of patents than were the old school of judges.”<sup>411</sup> In that same year, the Supreme Court invalidated the driven-well patent it had previously upheld.<sup>412</sup>

Both the “granger sentiment” and the litigation explosion that had provoked it faded from patent law in the last decade of the nineteenth century. Whether caused by judicial disfavor or something else, the decline of mass-farmer suits after the 1880s took much of the sting out of populist antagonism toward the patent system. Attempts to impose major reform of the law ceased. Meanwhile the end of extensions and the crackdown on reissues mitigated some of the most pungent criticisms of patent practice and likely contributed to lowering the litigation pressure as well. Gradually the growing organization of the American economy changed the context in which most suits were contested. Patent litigation by the 1900s was much more of a tournament between companies than the individual free-for-all that it had been during the Gilded Age.<sup>413</sup> That did not mean that patent politics ceased, just that it refocused toward questions of corporate behavior and antitrust.<sup>414</sup>

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409. RICHARD KIRKENDALL, *UNCLE HENRY: A DOCUMENTARY PROFILE OF THE FIRST HENRY WALLACE* 55 (2d ed. 2002) (quoting an editorial by Henry Wallace).

410. *The Reis Telephones*, *SCI. AM.*, Aug. 22, 1885, at 113.

411. *The Bell Telephone Suits*, *SCI. AM.*, Feb. 5, 1887, at 80.

412. See *Andrews v. Hovey*, 123 U.S. 267 (1887) (invalidating the driven-well patent); *Beedle v. Bennett*, 122 U.S. 71 (1887) (finding the driven-well patent valid); *Eames v. Andrews*, 122 U.S. 40 (1887) (finding the driven-well patent valid).

413. See *supra* Section II.B.3.

414. See generally FLOYD L. VAUGHAN, *THE UNITED STATES PATENT SYSTEM: LEGAL AND ECONOMIC CONFLICTS IN AMERICAN PATENT HISTORY* (1956) (tracing the abusive uses of patents throughout American history up to 1941).

**CONCLUSION**

Although long past, the patent crisis of the nineteenth century still seems to hang in the air. It is striking how many themes of the 1870s and 1880s find echoes in responses to the modern patent litigation explosion. As detailed above, those years featured fierce reactions against aggressive patent enforcement, a familiar picture today.<sup>415</sup> Then, as now, the backlash against patent abuse summoned forth a broad range of legal and regulatory initiatives, including some from actors not usually involved in patent matters. Thus new state-level actions adopting a “consumer protection” stance against patent abuses<sup>416</sup> and atypical ventures by the executive branch in combatting notorious patent enforcers<sup>417</sup> took their place alongside incremental but noticeable judicial moves to curb excessive patent assertion.<sup>418</sup> On the level of patent doctrine and procedure, the late nineteenth century also saw moves to limit end-user patent suits,<sup>419</sup> proposals for cost shifting in litigation,<sup>420</sup>

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415. For the modern reaction to “patent trolls,” see sources cited *supra* note 7.

416. Compare *supra* text accompanying notes 399-400 (describing state antifraud statutes), with Consumer Protection Complaint, *State v. MPHJ Tech. Invs., LLC*, 2013 VT Super. Ct. 282U (enforcing a state consumer protection statute).

417. Compare *supra* text accompanying notes 401-404 (describing attempts to encourage the executive branch to take action against mass-enforced campaigns), with Press Release, Federal Trade Commission, FTC Settlement Bars Patent Assertion Entity from Using Deceptive Tactics (Nov. 6, 2014), <http://www.ftc.gov/news-events/press-releases/2014/11/ftc-settlement-bars-patent-assertion-entity-using-deceptive> [<http://perma.cc/C8LU-8ZPA>] (“[T]he FTC has taken action using its consumer protection authority against a patent assertion entity.”).

418. Compare *supra* text accompanying notes 405-412 (describing doctrinal changes), with *Alice Corp. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014) (subject-matter eligibility), and *Octane Fitness, L.L.C. v. ICON Health & Fitness, Inc.*, 134 S. Ct. 1749 (2014) (attorney’s fees), and *Highmark Inc. v. Allcare Health Mgmt. Sys., Inc.*, 134 S. Ct. 1744 (2014) (same), and *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 396 (2006) (Kennedy, J., concurring) (injunctions).

419. Compare *supra* text accompanying note 380 (describing a proposal to limit patent litigation to vendors and manufacturers), with Innovation Act, H.R. 9, 114th Cong. § 5 (2015) (providing for partial stays in patent litigation between patentees and consumers), and Brian J. Love & James C. Yoon, *Expanding Patent Law’s Customer Suit Exception*, 93 B.U. L. REV. 1605 (2013) (proposing expansion of the consumer-suit exception).

420. Compare *supra* text accompanying note 381 (describing a proposal for fee shifting in cases where the defendant’s costs exceeded fifty dollars), with H.R. 9 § 3(b)(1) (proposing mandatory fee shifting “unless the court finds that the position and conduct of the nonprevailing party or parties were reasonably justified in law and fact or that special circumstances . . . make an award unjust”).

concern about the number of minor or low-quality patents,<sup>421</sup> suggestions that maintenance fees might be used to reduce the assertion of older patents,<sup>422</sup> and at least a little discussion of restricting patent-eligible subject matter to reduce purportedly low-quality grants.<sup>423</sup> Many of these proposals emerged from strange-bedfellow reformist coalitions of large high-tech firms and grassroots antipatent cultures; instead of the sometimes-awkward alliance between Silicon Valley giants and hacker activists, the nineteenth century offered railroad companies and farmers.<sup>424</sup> Finally, private ordering efforts arose within sectors of industry particularly affected by large-scale litigation. Patent pooling and other defensive arrangements, increasingly popular in recent years as a buffer against patent assertion, had their forerunners in organizations such as the Sewing Machine Combination and the railroad associations.<sup>425</sup> Everything old is new again.

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421. Compare *supra* text accompanying notes 383-385 (describing support for a stronger utility standard), with R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. PA. L. REV. 2135, 2136 (2009) (noting that “the need to improve patent quality is essentially undisputed”).

422. Compare *supra* text accompanying note 382 (describing a proposed system for maintenance fees that would discourage late-term litigation of old patents), with Brian J. Love, *An Empirical Study of Patent Litigation Timing: Could a Patent Term Reduction Decimate Trolls Without Harming Innovators?*, 161 U. PA. L. REV. 1309 (2013) (arguing that the current system of maintenance fees does not do enough to discourage high volumes of late-term patent litigation by trolls).

423. Compare *supra* text accompanying note 386 (describing a proposal to exclude some inventions from patent eligibility), with *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 126-28 (2006) (Breyer, J., dissenting) (“Patent law seeks to avoid the dangers of overprotection just as surely as it seeks to avoid the diminished incentive to invent that underprotection can threaten. One way in which patent law seeks to sail between these opposing and risky shoals is through rules that bring certain types of invention and discovery within the scope of patentability while excluding others.”).

424. Compare *supra* text accompanying notes 387-391 (describing the alliance between agrarian patent reformers and railroads), with Florian Mueller, *U.S. Patent Reform Movement Lacks Strategic Leadership, Fails To Leverage the Internet*, FOSS PATENTS (May 20, 2014, 10:27 AM), <http://www.fosspatents.com/2014/05/us-patent-reform-movement-lacks.html> [<http://perma.cc/EE2A-WK74>] (describing the alliance between anti-software-patent activists and “companies like Google, Facebook, and Twitter”), and Consumer Elecs. Ass’n, *One Year Since the Innovation Act, and Still No Patent Reform*, TECHDIRT (Dec. 1, 2014, 12:04 PM), <http://www.techdirt.com/articles/20141126/12052129261/one-year-since-innovation-act-still-no-patent-reform.shtml> [<http://perma.cc/JGQZ-KGWF>] (promoting “grassroots advocacy tools” on behalf of a trade association lobbying effort).

425. Compare *supra* text accompanying note 84 (describing the Sewing Machine Combination), and *supra* text accompanying note 131 (describing the railroad patent defense organizations), with Colleen V. Chien, *Reforming Software Patents*, 50 HOUS. L. REV. 325, 386-88 (2012) (describing market-based and collective self-help approaches to patent defense), and *Google Patent Programs*, GOOGLE <http://www.google.com/patents/licensing> [<http://perma.cc>

To take the old on its own terms for a moment: this Article has suggested a number of inputs to the rise and fall of the first patent litigation explosion. The defining feature of this wave of suits was the advent of large-scale patent enforcement, which began in the 1840s and continued, in the form of massive regional and national litigation campaigns, in the decades after the Civil War.<sup>426</sup> Spanning a broad range of technologies, such efforts reveal several factors driving patent litigation to a historic peak. One was the state of patent law and administration, which proved especially susceptible to maximizing rights. Patent owners made full use of—indeed, stretched the limits of—tools such as term extensions and reissues, along with central claiming and mostly liberal treatment by the courts and the Patent Office.<sup>427</sup> Patentee resourcefulness of this type combined with envelope pushing of another kind, in the form of multiple suits and enforcement against large numbers of defendants.<sup>428</sup> Strategies of mass enforcement were supported by structures of litigation management (territorial assignments, networks of agents, and lawyers working on contingency) that made them possible.<sup>429</sup> Crucially, plaintiffs from midcentury onwards were able to take full advantage of equity, a jurisdictional option that was both procedurally more efficient for large-scale patent litigation and more politically insulated by the lack of juries.<sup>430</sup> And contributing to the numerical proliferation of suits were two other factors related to the profile of defendants: first, the disaggregated nature of most economic activity, which made a multiplicity of suits somewhat inevitable,<sup>431</sup> and second, the tendency of defendants in the most notorious mass-enforcement actions to defy the patent en masse and to organize collective resistance.<sup>432</sup>

As to the causes of the decline in patent litigation at the end of the nineteenth century, the evidence presented here is more indirect. A study of the parties and patents that did go to court can never give a completely satisfying

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/HT8Y-BHVS] (describing Google's cross-licensing and license-on-transfer programs), and Adi Kamdar, *Troll-Proofed Defensive Patent License Launches with 23 Patents from EFF Cofounder*, ELECTRONIC FRONTIER FOUND. (Dec. 9, 2014) <http://www.eff.org/deeplinks/2014/12/troll-proofed-defensive-patent-license-launches-23-patents-eff-cofounder> [<http://perma.cc/P74Z-5YDG>] (introducing the Defensive Patent License program).

426. See *supra* Part I.

427. See *supra* Section II.B.1.

428. See *supra* Sections I.C, II.B.2.

429. See *supra* Part I, Section II.B.2.

430. See *supra* Section III.B.

431. See *supra* Sections I.C, II.B.3.

432. See *supra* Section I.C.

explanation of those that did not. However, it is possible to demonstrate the reversal of earlier conditions that had underpinned the litigation explosion. Patents became less promising instruments of rent seeking when Congress and the courts quashed extensions and reissues as tools of patent stretching.<sup>433</sup> Meanwhile the changing politics of patent law may have curdled judicial support into judicial hostility—a hard-to-quantify but potentially influential factor in patentees’ decisions about whether, whom, and how to sue.<sup>434</sup> By the end of the century, economic changes diminished the supply-side pressures for litigation. The rise of large-scale business organization, the consolidation of the manufacturing economy, and the increasingly corporate basis of invention all favored fewer disputes: patent owners and potential infringers were less interested in pursuing litigation as a business strategy, better able to bargain around it, and less inclined or required to sue large numbers of end users.<sup>435</sup>

As a history of the development of American patent law, this account is an advance over the prior art in several respects. By identifying the great patent enforcement battles of the period as a collective phenomenon, and by quantifying patent litigation through actual case filings rather than reported decisions, this Article uncovers the hitherto hidden scale of the first patent litigation explosion. From this vantage point, we can observe common dynamics that have remained buried in earlier views of the past, such as the role of equity as a cause and consequence of large-scale litigation, as well as cross-cutting issues of organizational context such as the prevalence of multiple litigation in patent enforcement. These variables make it easier to understand the development of American patent law from a practical and procedural perspective, rather than having to try and explain the principal changes in the field solely through the lens of (or worse, as a function of) the limited corpus of judicial opinions. In a predominantly judge-made system such as American patent law,<sup>436</sup> a generational flood of cases in the courts is a highly formative phenomenon. It is no exaggeration to say that the nineteenth-century litigation wave helped to shape the foundations of modern patent jurisprudence, both by providing the cases and controversies for our foundational decisions and through the fateful jurisdictional shift that it propelled from common law into equity. The role of economic change as a background matter also becomes somewhat clearer: with the data available from case filings, we can see how

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433. See *supra* Section II.B.1.

434. See *supra* Sections II.B.2, III.C.

435. See *supra* Section II.B.3.

436. See John F. Duffy, *Inventing Invention: A Case Study of Legal Innovation*, 86 TEX. L. REV. 1 (2007); Craig Allen Nard, *Legal Forms and the Common Law of Patents*, 90 B.U. L. REV. 51 (2010).

patent litigation reflected the dramatic transformations taking place in innovation and economic organization in the nineteenth and early twentieth centuries.

Part of the value of identifying a “first” patent litigation explosion, of course, is in asking how it might inform our understanding of modern conditions. Two questions follow: first, whether the nineteenth-century peak tells us anything about the drivers of patent litigation in our own time; and second, whether it can illuminate current debates over patent reform. As to the first of these, I would urge a healthy caution. Some variables and institutional settings are meaningfully comparable; others are not. In the latter category would go most factors relating to economic scale and organization: the capabilities of firms in the present day are worlds apart from those of nineteenth-century plaintiffs and defendants, when the very act of traveling to a distant federal court might pose substantial costs. More pointedly, there are both economic and procedural reasons why “patent suits” might not be truly comparable between eras. We cannot assume that the purposes or costs of suing were similar, and it is demonstrably true that what counts as a suit is a measure that changes over time. Modern joinder rules—which developments since the America Invents Act have made clear are a major determinant of current suit-filing numbers<sup>437</sup>—make the number of disputes per case potentially quite different between the nineteenth century and today.

As a result, comparative observations about the drivers of patent litigation are possible only at a fairly high level of generality. One simple point that deserves nuanced inquiry is the relationship between the rapid growth of litigation and the growth rate of patenting. The first patent litigation explosion coincided with the highest growth rate of patent grants in U.S. history;<sup>438</sup> the current expansion of litigation with the highest absolute year-on-year growth of applications and issuances.<sup>439</sup> The sheer number of patents available for enforcement surely drives much of the increase in suits, but the relationship between the two is not constant, as the changing ratio of suits to patents in force shows.<sup>440</sup> There is room to ask whether sudden periods of intense litigation are propelled by some of the same background forces that drive episodes of heightened patenting. Dramatic technological change would be one contender. The willingness of the Patent Office to issue (and reissue) broader

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<sup>437</sup>. See sources cited *supra* note 4.

<sup>438</sup>. See Marco et al., *supra* note 24, at 31 fig.5.

<sup>439</sup>. *Id.* at 30 fig.4.

<sup>440</sup>. Katznelson, *supra* note 9, at 11; see also *supra* Table 1.

or lower-quality patents would be another.<sup>441</sup> Others would be more cultural or institutional (or both): the existence of a “gold rush” mentality toward patents, for example,<sup>442</sup> or the rise of new intermediaries in the patent space that are able and willing to create markets for patents and their enforcement.<sup>443</sup>

Focusing on such features of the patent industry reveals perhaps the most resounding echo between past and present. During these periods of exploding patent litigation, *the enforcement system itself became entrepreneurial*. The prominence of committed patent-assertion ventures<sup>444</sup>—whether they are the Acacia Research Corporation or the Goodyear Dental Vulcanite Company—and the rise of contingency-fee patent litigation<sup>445</sup> reflect more than just the presence of opportunities for rent seeking; they also imply entrepreneurs, lawyers, and business models that are peculiarly attached to patent litigation and creative in pursuing it. This sector, in the nineteenth century and today, tends to generate the most aggressive enforcement strategies at the margin, including suits against small-scale users.<sup>446</sup> Furthermore, the hard core of assertion-focused actors helps account for the skewed nature of overall litigation: the spiritual heirs of the twenty-nine plaintiffs who brought a third

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441. Compare *supra* Section II.B.1, with U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 4, at 28-29 (citing stakeholders on the connection between patent quality and litigation).

442. Compare, e.g., *Atl. Works v. Brady*, 107 U.S. 192, 200 (1883) (deploring “a class of speculative schemers who make it their business to watch the advancing wave of improvement, and gather its foam in the form of patented monopolies”), with KEVIN G. RIVETTE & DAVID KLINE, *REMBRANDTS IN THE ATTIC: UNLOCKING THE HIDDEN VALUE OF PATENTS* 13, 176 (2000) (referring to developments in the late 1990s as a “patent gold rush”), and Arti Rai, *Addressing the Patent Gold Rush: The Role of Deference to PTO Patent Denials*, 2 WASH. U. J.L. & POL'Y 199 (2000) (describing a “patent gold rush” in computing and biotechnology following the Federal Circuit’s relaxation of limits on patentable subject matter), and EXPstocktrader, *Global Patent Wars Intensify in 2012*, SEEKING ALPHA (June 21, 2012, 4:21 AM), <http://seekingalpha.com/article/673871-global-patent-wars-intensify-in-2012> [<http://perma.cc/66Q2-V6SB>] (declaring that “[t]his is really the year for the global ‘Gold Rush’ in patent litigation”).

443. Compare Lamoreaux & Sokoloff, *supra* note 31 (tracing the nineteenth-century appearance of patent agencies and attorneys as intermediaries in the market for patented inventions), with Chien, *supra* note 6 (describing the roles currently played by patent assertion entities and other intermediaries in the market for patented inventions).

444. See, e.g., Cotropia et al., *supra* note 4; *supra* Part I (recounting the campaigns of the Woodworth syndicate, the Goodyear Dental Vulcanite Company, and the driven well patent interests).

445. See, e.g., David L. Schwartz, *The Rise of Contingent Fee Representation in Patent Litigation*, 64 ALA. L. REV. 335 (2012); *supra* text accompanying notes 231-234 (describing the franchise model of enforcement).

446. See Bernstein, *supra* note 143, at 1455-58; *supra* Sections I.C, II.B.2.

of the litigation in the nineteenth-century sample described above<sup>447</sup> are the thirty-five patentees who sued twenty-five percent of unique defendants in 2012.<sup>448</sup> It is worth reflecting on the impact of these factors on the politics of the patent system. The prominence of the “patent troll” motif in reform debates is not so much about the quantity of suits as it is about the displacement of previous norms and expectations regarding how, and against whom, patents are asserted.<sup>449</sup> Aggressive litigation and end-user suits are problems relating to the cultures and business models of enforcement—phenomena that this Article suggests have their own history.

What about technological revolutions? Given modern transformations in sectors such as biotechnology and computing, it is not surprising that changes in technology or innovation practices are periodically invoked to explain rising patenting and litigation.<sup>450</sup> Similarly, the sweep of the nineteenth century captures an enormous amount of economic and technological change. In the aggregate, this growth is too diffuse to be meaningful: one cannot point to any given decade or region and say this one featured an industrial revolution and this one did not. Instead, matching phases of technological change to patent litigation has to be the province of more focused industry studies, which can meaningfully trace the relationships between legal disputes and measurable technical change.<sup>451</sup> From the less granular perspective of this Article, I would suggest only that the most-litigated patents offer a mixed picture. Some, like Thomas Blanchard’s, Samuel Morse’s, Charles Goodyear’s, Thomas Edison’s, or Alexander Graham Bell’s grants, offer a plausible case as struggles prompted by new breakthrough technologies—industrial revolutions brought into court.<sup>452</sup> Yet other, even more heavily represented inventions, such as driven

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447. See *supra* Table 2.

448. Cotropia et al., *supra* note 4, at 684.

449. See, e.g., Chien, *supra* note 425, at 341 (pointing out that “PAEs and patent speculators don’t have to abide by industry norms, which have traditionally favored patent stalemate rather than war”).

450. See, e.g., Katznelson, *supra* note 9, at 14; Samuel Kortum & Josh Lerner, *Stronger Protection or Technological Revolution: What Is Behind the Recent Surge in Patenting?* (Nat’l Bureau of Econ. Research, Working Paper No. 6204, 1997), <http://www.nber.org/papers/w6204.pdf> [<http://perma.cc/YNA7-MFNM>].

451. See, e.g., Barnett, *supra* note 256 at 22-23 (patent litigation in the early automobile industry); Mossoff, *supra* note 80 (sewing machines); Shaver, *supra* note 132 (electric lamps); Lampe & Moser, *supra* note 84 (sewing machines).

452. I make no claim that these men were the sole authors of their respective “Great Inventions.” To the extent that they are regarded as such, it probably has much to do with their successful patent litigation. See BEAUCHAMP, *supra* note 133, at 32; Mark A. Lemley, *The Myth of the Sole Inventor*, 110 MICH. L. REV. 709, 710-11 (2012). Note that there is a circularity problem here: if the reputation of many Great Inventors was built on their patent

wells, oil torpedoes, and rubber dentures, were neither technically complex nor particularly revolutionary; they were just widely adopted and aggressively targeted for patent enforcement. Moreover, as suggested above, multiple litigation as a strategy was widespread and technologically agnostic, featuring inventions ranging from lamps to candy machines.<sup>453</sup> Rapid technological change is an intuitive contributor to patent litigation explosions, but not a necessary one.

Do the events of yesteryear provide lessons for current patent reform efforts today? The current appetite for stories about the past would seem to suggest that the answer to this question is yes. Recent years have seen growing attention to historical patent debates, especially those that accompanied the 1870s and 1880s patent reform movement. Commentary has focused above all on the two case studies that have broken through from historical scholarship: Earl Hayter's accounts of agrarian patent litigation and Steven Usselman's history of patent struggles involving the railroads.<sup>454</sup> Reasoning from these episodes, observers of modern patent reform have derived several principles. One is a bias toward incrementalism. Since agrarian patent wars and railroad conflicts were soothed without sweeping statutory measures, the argument goes, "reformers would be well-advised to focus on incremental court and market-based reforms."<sup>455</sup> Another conclusion is that sector-specific solutions prevailed. By one account, farmers' patent woes arose when the courts made it easier to gain utility patents on minor design changes in farming tools, and ameliorated when the standards were raised again to prohibit such grants.<sup>456</sup> Elsewhere, the railroads' troubles were purportedly addressed by self-help

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campaigning, then our historical canon of major technological breakthroughs will be defined in part by the inventions that produced the largest patent victories, and we will then tend to overidentify dramatic technological change with the patent system.

453. See *supra* Table 3.

454. See, e.g., EXEC. OFFICE OF THE PRESIDENT, PATENT ASSERTION AND U.S. INNOVATION 13 (2013); Chien, *supra* note 425, at 333-50; Magliocca, *supra* note 355; Robert P. Merges, *The Trouble with Trolls: Innovation, Rent-Seeking, and Patent Law Reform*, 24 BERKELEY TECH. L.J. 1583, 1592-95 (2009).

455. Chien, *supra* note 425, at 390; see also Merges, *supra* note 454, at 1598 (arguing that history "shows that less drastic legal changes can be effective").

456. Magliocca, *supra* note 355, at 1820-32; see also Gerard N. Magliocca, *Ornamental Design and Incremental Innovation*, 86 MARQ. L. REV. 845, 878-79 (2003) (tracing the reappearance of stricter patentability requirements in this area). Having not yet surveyed the court records of the Midwestern farm states, I cannot verify the role played by such patents in the litigation explosion. But the largest mass-enforcement campaigns, such as those for the driven well and barbed wire, did not fit that particular category of grant.

defensive arrangements<sup>457</sup> and by the Supreme Court's "surgical" intervention" to reform the law of patent damages.<sup>458</sup>

The existence of the first patent litigation explosion suggests that we should broaden the picture beyond these few case-studies. Sector-specific factors such as farm-tool patentability and railroad damages calculations would seem to have less explanatory power given that large-scale enforcement erupted and declined in a much wider range of industries. Incrementalism and court-centered proposals, on the other hand, still make sense, albeit with an additional set of precedents: the judicial turn against reissues should be added to the list of remedial actions. At the big-picture level, this Article also suggests a need to direct greater attention to some of the broader background factors at work, many of which may be beyond the reach of patent reform: the relative fragmentation of the high-technology economy, the underlying structures of federal litigation, and the choice between judges and juries.

Balancing out the reform-minded commentators is another set of historically informed scholars, for whom the commotions of the past provide reason to be sanguine about the present. In this view, "historical amnesia" has contributed to an unjustified sense that the travails of the current patent system are unprecedented and frightening.<sup>459</sup> The long history of patent struggles and even their association with technological progress should counsel us against legislative or judicial overreaction.<sup>460</sup> This is especially so given that the level of litigation does not seem unduly high by past standards.<sup>461</sup> Moreover, the bugbears of present debate are not condemned by history: nonpracticing entities, for example, have a long lineage that includes admired inventors like Goodyear and Edison.<sup>462</sup> And the record of older patent pools reminds us that

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457. Chien, *supra* note 425, at 389-90.

458. Merges, *supra* note 454, at 1598.

459. B. Zorina Khan, *Trolls and Other Patent Inventions: Economic History and the Patent Controversy in the Twenty-First Century*, 21 GEO. MASON L. REV. 825, 856 (2014) ("Those who advocate the introduction of new legislation justify the call for remedial measures by contending that the problems they discuss are largely of recent origin and threaten industrial progress or national competitiveness.").

460. *See id.* at 842.

461. Katznelson, *supra* note 9 (comparing litigation rates from 1923 to 2013 relative to federal-court caseloads, gross-domestic product, and the number of patents in force); Mossoff, *supra* note 20 (stating that "patent litigation rates were *higher* than today's litigation rate," though relying on Khan's problematic ratio between reported patent cases per decade and patents filed in that decade).

462. *See* Adam Mossoff, *Patent Licensing and Secondary Markets in the Nineteenth Century*, 22 GEO. MASON L. REV. 959 (2015).

firms can adapt successfully to even the most ill-tempered patent environments.<sup>463</sup>

This Article certainly agrees that exploding patent litigation is not new. For some observers, that may diminish the shock value of recent events. However, I would not stretch this insight into a claim about social costs. Gauging the economic and technological consequences of the golden age of patent litigation is a subject for future work; hopefully this outline of the legal phenomenon will be useful in conducting it. In the meantime, it remains unclear whether we should see the nineteenth-century experience as ominous, because it shows the inevitable rot of opportunism and rent seeking lurking within the patent system, or as reassuring, because it did not break the high-technology economy, which delivered a “golden era of . . . independent inventors”<sup>464</sup> and the beginnings of the “second industrial revolution.”<sup>465</sup>

Perhaps the last enduring mystery is how we could have forgotten such a dramatic origin tale for so long. At some point in the early twentieth century, patent litigation became boring—at least by comparison with its own earlier standards. The number of suits filed each year rarely cracked one thousand between the 1920s and the creation of the Federal Circuit in 1982.<sup>466</sup> The politics of patent law, such as they were, centered not on spectacular trials or mass popular resistance but on the activities of large corporations; the leading public controversies took the form of complex antitrust battles and investigations into the corporate control of invention.<sup>467</sup> Patent law as a practice area became rigorously specialized and was seen as a highly technical, often impenetrable discipline. Against this background, the world of the patent lawyer in the gray flannel suit became the predominant frame of reference both within the field and among lawyers more broadly. The spectacle of the nineteenth century was forgotten. In 1955, former New York Federal Judge

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463. Barnett, *supra* note 256, at 3 (arguing that this analysis “casts doubt on normative recommendations in favor of weakening IP rights to preclude [anticommons] effects”); Mossoff, *supra* note 80, at 209 (suggesting that “it is possible for private-ordering solutions to be formed in the face of patent thickets, and that it is unnecessary to eliminate or ‘creatively adapt[] property rights’ secured to inventors by the patent system”).

464. THOMAS P. HUGHES, *AMERICAN GENESIS: A CENTURY OF INVENTION AND TECHNOLOGICAL ENTHUSIASM, 1870-1970*, at 15 (1989).

465. CHANDLER, *SCALE AND SCOPE*, *supra* note 237, at 62.

466. Katznelson, *supra* note 9, at 10 fig.1.

467. See, e.g., STAFF OF TEMP. NAT’L ECON. COMM., 76TH CONG., *PATENTS AND FREE ENTERPRISE* 158-63 (Comm. Print 1941); FLOYD L. VAUGHAN, *THE UNITED STATES PATENT SYSTEM: LEGAL AND ECONOMIC CONFLICTS IN AMERICAN PATENT HISTORY* 43-50 (1956); Steven Wilf, *The Making of the Post-War Paradigm in American Intellectual Property Law*, 31 *COLUM. J.L. & ARTS* 139, 191-203 (2008).

Simon Rifkind gave a generously spirited account of patent litigation entitled *The Romance Discoverable in Patent Cases*.<sup>468</sup> Judge Rifkind admitted that patent law was “reputed to be dull, tedious, undramatic,” but promised that “if we who behold patent litigation will but look aright,” we should find “dramatic tales to tell.”<sup>469</sup> Had he only known to look back a hundred years, he would have found all the drama one could need.

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<sup>468</sup> Simon H. Rifkind, *The Romance Discoverable in Patent Cases*, 37 J. PAT. OFF. SOC'Y 319 (1955).

<sup>469</sup> *Id.* at 319, 322, 330.