

COMMON SENSE: TREATING STATUTORY NON-OBVIOUSNESS AS A NOVELTY ISSUE

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Abstract

Title 35 of the United States Code at § 103 limits patent protection to subject matter that would not be “obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” The requirement was introduced as a statute by the Patent Act of 1952, but, according to the legislative history, was a codification of judicial precedent. The origin of that precedent generally is attributed to the 1851 Supreme Court decision of Hotchkiss v. Greenwood. However, Hotchkiss was not widely declared a watershed moment in legal history until Cuno Engineering Corp. v. Automatic Devices Corp. ninety years later, and enactment of the Patent Act of 1952. The decision by the Supreme Court in Hotchkiss was, in fact, consistent with earlier case law developed largely by English courts, and by U.S. Supreme Court Justice Joseph Story. Until KSR International Co. v. Teleflex Inc., the Supreme Court, despite language that appears to link patentability to skill, generally maintained an underlying requirement, predating Hotchkiss, that patentable subject matter embody a new application of principle that alters the functional relationship between claimed components of statutory subject matter. Invocation of broad motivation and “common sense” by the Court in KSR to determine patentability ironically limits the capacity of reason to produce the consistent results intended by the enactment of § 103.

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An army of principles will penetrate where an army of soldiers cannot—It will succeed where diplomatic management would fail—It is neither the Rhine, the Channel, nor the Ocean, that can arrest its progress—It will march on the horizon of the world, and it will conquer.¹

Thomas Paine

INTRODUCTION

Title 35, § 102 of the United States Code provides a list of conditions for novelty of statutorily competent subject matter, and states that a “person shall be entitled to a patent unless” any of the conditions in the several paragraphs of that section are met.² Section 103 adds that,

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.³

P.J. Federico, in his 1954 Commentary on the 1952 Patent Act, stated that, “this section is a limitation on section 102 and it should more logically have been made part of section 102, but it was made a separate section to prevent 102 from becoming too long and involved and because of its importance.”⁴ The legislative history of the Patent Act of 1952 makes clear that § 103 was based on previous notions of “patentable novelty,” as stated in the Revision Notes, which Federico quotes in his commentary:

The Revision Notes further state, under section 103:

“There is no provision corresponding to the first sentence explicitly stated in the present statutes, but the refusal of patents by the Patent Office, and the holding of patents invalid by the courts, on the ground of lack of invention of [sic] lack of *patentable novelty* has been followed since at least as early as 1850. This paragraph is added with the view that an explicit statement in the

1. Thomas Paine, *Agrarian Justice*, in *THE COMPLETE WRITINGS OF THOMAS PAINE* 609, 622 (Philip S. Foner ed., 1945).

2. 35 U.S.C. § 102 (2000).

3. 35 U.S.C. § 103 (2000).

4. P.J. Federico, *Commentary on the New Patent Act*, 35 U.S.C.A. (1954), reprinted in 75 J. PAT. & TRADEMARK OFF. SOC’Y 161, 180 (1993).

statute may have some stabilizing effect, and also to serve as a basis for the addition at a later time of some criteria which may be worked out.”⁵

Therefore, at least in view of the legislative history of the Patent Act of 1952, § 103 was intended to be a codification of “patentable novelty,” as applied under judicial precedent since “at least as early as 1850.”⁶

In fact, the statutory basis on which courts developed “patentable novelty” was laid down in the Patent Act of 1793 and was well-developed before 1850 by the courts, primarily through the efforts of Justice Story in decisions he rendered while riding circuit in the District of Massachusetts. Justice Story, in turn, drew his reasoning from case law established in England after 1790. Even under the Patent Act of 1790, as later relayed by Thomas Jefferson, examination of patent applications included informal rules that barred patentability for mere changes in form or proportion from what was already in the public domain.⁷

The notion that the modern conception of non-obviousness was born from the Supreme Court’s decision in *Hotchkiss v. Greenwood*⁸ was expressed by the Supreme Court in *Cuno Engineering Corp. v. Automatic Devices Corp.*,⁹ ninety years after *Hotchkiss*. Subsequent focus upon *Hotchkiss* in the legislative history of the Patent Act of 1952 has further perpetuated this notion, and has caused confusion in the application of judicial doctrine codified under § 103.

Closer inspection of minimum requirements of patentability, when viewed in the context of prior art, reveals that Supreme Court decisions have always presumed, as did the statutes under which they operated, that some new application of principle, or “mode of operation,” and not mere changes in form or proportion, represented a form of novelty. Although a new application of principle could take many forms, generally speaking it was manifested in some new operative relationship among the component parts, as opposed to, for example, a novel combination of parts acting independently of each other, also known as an “aggregation,” which has never been considered patentable.

5. *Id.* at 181 (quoting H.R. Rep. No. 82-1923, at 18 (1952); S. Rep. No. 82-1979, at 18 (1952)).

6. *Id.*

7. Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), in GREGORY A. STOBBS, *SOFTWARE PATENTS* 899, 903 (2d ed. 2000).

8. *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248 (1851).

9. *Cuno Eng’g Corp v. Automatic Devices Corp.*, 314 U.S. 84 (1941).

Since the Patent Act of 1952 and until the Supreme Court's decision in *KSR International Co. v. Teleflex Inc.*,¹⁰ there has been an amazing parallel in the reasoning applied by the Supreme Court to analyses under the earlier doctrine of "patentable novelty," despite the limited analysis and attention paid to that doctrine. The Supreme Court in *KSR*, however, broadened the horizon of the person having ordinary skill in the art by making such person capable of almost any combination so long as there is motivation in the art to achieve the result effected by the combination claimed by the patent applicant. Such analysis further obscures what appears now to have been forgotten: patentability is a consequence of an intrinsic property of claimed subject matter and not of the qualities or actions of the individual responsible for its genesis. As stated most succinctly by Conder C. Henry, a former Assistant Commissioner of Patents at the United States Patent and Trademark Office: "Potentially every man is an inventor."¹¹

I. 35 U.S.C. § 103 AND THE TYRANNICAL GHOST OF "INVENTION"

In 1963, Judge Giles S. Rich of the U.S. Court of Customs and Patent Appeals presented a lecture at the First Annual Institute of Patent Law in Dallas, Texas that described the circumstances under which the Patent Act of 1952 was passed.¹² According to Judge Rich, the impetus for a new patent act was "discontent in the patent bar" caused by courts that "were, on the average, applying a too stringent test for 'invention'" and, consequently, downgrading the "practical value of patents."¹³

Judge Rich then told the story of how, in July of 1949, the U.S. House Subcommittee on Patents, Trademarks and Copyrights, chaired by Representative Joseph R. Bryson of South Carolina, enlisted P. J. Federico, a representative of the United States Patent Office, to draft "an overall patent revision bill."¹⁴ In November 1949, the resulting "Committee Print" was circulated "to a few individuals for

10. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007).

11. Conder C. Henry, *Standards of Invention in Mechanical Cases*, 32 J. PAT. OFF. SOC'Y 97, 113 (1950).

12. Giles S. Rich, *Congressional Intent—Or, Who Wrote The Patent Act of 1952?*, in *PATENT PROCUREMENT AND EXPLOITATION: PROTECTING INTELLECTUAL RIGHTS* 61-78 (Southwestern Legal Foundation ed., 1963).

13. *Id.* at 63 ("In the late 1940's there was discontent in the patent bar. The practical value of patents was being downgraded. The courts were, on the average, applying a too stringent test for 'invention'").

14. *Id.* at 64, 66.

comment,” including Mr. Rich,¹⁵ and then in February, 1950 assigned, according to a “well-conceived plan,” to a two-man “Drafting Committee” operating under the auspices of a Coordinating Committee of seventeen patent law associations.¹⁶ The drafting committee included Paul Rose, Chairman of the Patent Law and Practice Committee of the American Property Law Association, and Mr. Rich, who had testified at hearings conducted on previous legislation¹⁷ and who had been recommended for the committee by Alexander C. Neave, Chairman of the Patent Law and Practice Committee of the New York Patent Law Association.¹⁸ Henry R. Ashton, President of the American Patent Law Association, was a “virtual third member” of the Drafting Committee.¹⁹

The Drafting Committee, along with Mr. Federico, redrafted the Committee Print and incorporated suggestions of the Patent Office Advisory Committee of the Secretary of Commerce (“containing numerous suggestions which were piped into the Coordinating Committee”) and the comments of various patent organizations, attorneys for the House Subcommittee and Representative Bryson.²⁰ The resulting bill was introduced on July 17, 1950²¹ and circulated for additional comments by the patent community.²² On December 4, 1950, the Supreme Court issued its opinion in *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*²³ Although the provision had been in all of the earlier drafts, Judge Rich recalled “that [the *Atlantic & Pacific* decision] clinched the determination to include in the bill what is now 35 U.S.C. § 103, in order to get rid of the vague requirement of ‘invention.’”²⁴ A new bill was introduced on April 18, 1951.²⁵ “Revision Notes” for the bill were drafted by Mr.

15. *Id.* at 66. Giles S. Rich was an attorney at the time, practicing in New York.

16. *Id.* at 67-68.

17. Giles S. Rich, *Why and How Section 103 Came to Be*, 14 FED. CIR. B.J. 181, 188-90 (2004) (noting that when he testified in 1948 before the House Subcommittee on Patents, Mr. Rich was a “chairman of a committee of the New York Patent Law Association which attended to legislation.”).

18. Rich, *supra* note 12, at 67-68.

19. *Id.* at 66, 68.

20. *Id.* at 68-69.

21. *Id.* at 60 (“[T]he first actual bill was introduced by Representative Bryson, H.R.-9133 of the 81st Congress, 2d Session . . .”).

22. *Id.* at 69.

23. *Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp.*, 340 U.S. 147 (1950).

24. Rich, *supra* note 12, at 70.

25. *Id.* at 71, n.13 (“H.R.-3760 . . . 82d Cong., 1st Sess.”)

Federico, with assistance from Messrs. Ashton and Rich.²⁶ After some subsequent revisions, another new bill, H.R. 7794, was introduced to the House of Representatives on May 12, 1952²⁷ and passed on May 19, 1952.²⁸ It was passed by the Senate on July 4, 1952 with “no knowledgeable debate,”²⁹ and was signed into law by President Truman on July 19, 1952.³⁰

Judge Rich spoke several times over the years after 1963 on the topic of the 1952 Patent Act, particularly with respect to the standard for patentability under 35 U.S.C. § 103. For example, in 1964, after summarizing the origins of exclusionary rights in intellectual property, Judge Rich characterized limitations in early U.S. patent law as a failure to separate “good” from “bad” monopolies, whereby a “good patent does not monopolize something the public already has, so as to take something away from the public.”³¹ According to Judge Rich, requiring only “bare novelty” was inadequate to meet this need, and it was not until the Supreme Court decision in *Hotchkiss v. Greenwood*, that a higher standard was imposed³² as a “requirement for invention.”³³ The critical language of the Court’s opinion, as recited by Judge Rich, was that the improvement that was the subject of the patent was “the work of the skilful mechanic, not that of the inventor.”³⁴ Judge Rich went on to explain that, although the Court in *Hotchkiss* recognized that “bare novelty” was inadequate to distinguish “good” from “bad” monopolies, decisions over the next one-hundred years, attempting to define “invention,” led to a “messy state of affairs.”³⁵ As a result, a commission was appointed by President Roosevelt in 1941 that proposed the declaration, as

26. *Id.* at 73.

27. *Id.*

28. *Id.* at 75.

29. *Id.* at 76.

30. *Id.* at 77.

31. Giles S. Rich, *The Vague Concept of “Invention” as Replaced by § 103 of the 1952 Patent Act*, 46 J. PAT. OFF. SOC’Y 855, 859 (1964), reprinted in 14 FED. CIR. B.J. 147, 154 (2004).

32. *Id.* (“But beyond bare novelty one must go one further and troublesome step to have a sound system and keep the monopoly on the good side. It was not long after the 1836 Act—in 1850 in fact—that the United States Supreme Court made this clear in the ‘doorknob case.’” (citing *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248 (1851)).

33. *Id.* at 155 (“Due to the reasoning of [the Supreme Court in *Hotchkiss*], that the new doorknob ‘was the work of the skillful mechanic, not that of the inventor,’ what came out . . . in 1850 and is still with us is an injection into the law of what has ever since been called the ‘requirement for invention.’” (quoting *Hotchkiss*, 52 U.S. at 267).

34. *Id.* (quoting *Hotchkiss*, 52 U.S. at 267).

35. *Id.* at 156.

annotated by Judge Rich, of “a national standard whereby. . . *patentability* of an invention shall be determined by the objective test as to its advancement of the arts and sciences.”³⁶

The report of the “Kettering Commission,” as it was called (after Charles F. Kettering, who was the head of the Commission), led to the bills discussed above that ultimately resulted in the Patent Act of 1952. The problem put forward by the Kettering Commission, as stated by Judge Rich, “was not really to determine ‘invention,’ but to determine the *patentability of inventions*”³⁷ The problem purportedly was resolved by incorporating into the Patent Act a statutory requirement of “*patentability*,” whereby, under the statute, “what is patented must *not* have been *obvious* to one of ordinary skill *in the art involved*, at the *time* the invention was made.”³⁸ The intent, according to Judge Rich, was to displace judicial language associated with a “standard of invention,”³⁹ with a statutory threshold of patentability founded upon novelty, utility and “unobviousness.”⁴⁰ The expectation, as quoted from the House Report on the new act, was that “[t]his section should have a stabilizing effect and minimize great departures which have appeared in some cases.”⁴¹

By 1964, however, even Judge Rich was forced to recognize that implementation of the new statute was resulting in a “mish-mash,”⁴² that was described in detail in three congressional studies, reported in 1957, 1963 and 1964.⁴³ Judge Rich attributed the difficulties to various characterizations of the new law as a “mere codification,”⁴⁴ as opposed to replacement of judicial attempts at establishing a “standard of invention,” with a requirement of “unobviousness to a

36. *Id.* (quoting H.R. Doc. No. 78-239, at 10 (1943)) (emphasis added).

37. Rich, *supra* note 31, at 156.

38. *Id.* at 157.

39. *Id.* (“This is not a ‘standard of invention’ and it is not called a requirement of invention.”)

40. *Id.* at 158. (“In section 103 Congress made such a policy declaration. It did not there declare what should constitute ‘invention.’ It was a statement of something to take the place of this vague concept.”)

41. *Id.* at 157 (quoting H.R. Rep. No. 82-1923, at 7 (1952)).

42. *Id.* at 158.

43. *Id.* at 159. (citing SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS, 85TH CONG., EFFORTS TO ESTABLISH A STATUTORY STANDARD OF INVENTION, STUDY NO. 7 (Comm. Print 1958); S. Rep. No. 88-107, at 11 (1963); S. Rep. No. 86-1018, at 11 (1964)).

44. *Id.* (“[T]he members of the bar have a lot to answer for in creating and perpetuating the mish-mash because it is they who . . . played down section 103 and persuaded a number of courts that it made no change whatever but was ‘mere codification.’”)

particular kind of person at a particular time.”⁴⁵ Despite the fact that twelve years had passed since passage of the new act, Judge Rich was of the opinion that the courts would come to a “common interpretation” of the statute over time:

I cite these as straws in the wind. A study of the *Columbian Law Review* last year concludes that “nothing indicates that the courts are moving toward a common interpretation of the statute.” I am not so sure. I say give them time. We have only had the statute for a dozen years and the judges who have been there that long, as many of them have, are still indoctrinated with the old “standard of invention” terminology that they learned from the old patent lawyers and the old textbooks. There will be new editions of all three in due course.⁴⁶

In a 1972 article, “Laying the Ghost of the ‘Invention’ Requirement,” Judge Rich again explained the statutory requirement of non-obviousness.⁴⁷ Despite acknowledging clarification in 1966 by the Supreme Court in *Graham v. John Deere, Co.* (and its companion cases *Calmar, Inc. v. Cook Chemical Co.*, and *Colgate-Palmolive Co. v. Cook Chemical Co.*),⁴⁸ and in *United States v. Adams*,⁴⁹ Judge Rich stated that he and others saw that “confusion remains rampant in the courts and has arisen even in the Supreme Court”⁵⁰ He identified himself as one of the authors of § 103 and “as the originator of one of its principle features,”⁵¹ which he did not specify. Judge Rich recounted the historical development of non-obviousness as applied to U.S. patent law, beginning with Thomas Jefferson’s proposal to include obviousness as a defense to patent infringement in what would ultimately become the Patent Act of 1793.⁵² According to Judge Rich, *Hotchkiss* grafted a “qualitative measure of patentability for new inventions,”⁵³ onto statutory patent law as “judicial

45. *Id.* (“Might it not do some good and help to achieve the uniformity the subcommittee so much desires if its own members and staff could convince themselves that the 1952 Patent Act was supposed to *replace* the “standard of invention,” which never was a standard, with, a requirement of unobviousness to a particular kind of person at a particular time?”)

46. *Id.* at 160 (citation omitted).

47. Giles S. Rich, *Laying the Ghost of the “Invention” Requirement*, in 1 *APLA Q. J.* 24-25 (1972), *reprinted in* 14 *Fed. Cir. B.J.* 163 (2004).

48. *Graham v. John Deere, Co.*, 383 U.S. 1 (1966).

49. *United States v. Adams*, 383 U.S. 39 (1966).

50. Rich, *supra* note 47, at 164.

51. *Id.*

52. *Id.* at 165.

53. *Id.*

legislation.”⁵⁴ This was a “condition,” however, that, as stated by Judge Rich, was “not much of a standard, because it was too vague.”⁵⁵ Section 103, as stated by Judge Rich, “refined and sharpened” the condition, thereby creating a “statutory system under which all patents granted pursuant to statute do serve to promote the progress of useful arts because, being for unobvious subject matter, they necessarily add to the sum of useful knowledge.”⁵⁶ Judge Rich specifically denied that § 103 was “merely a ‘codification,’”⁵⁷ but rather a “codification . . . and *revision*.”⁵⁸ He viewed § 103 to be a “whole new way of thinking,” apart from previous judicial attempts to define “invention” and to be “a clear *directive* to the courts to think that way.”⁵⁹ After summarizing Supreme Court cases directed to § 103, including certain dictum, such as reference to synergism in *Anderson’s-Black Rock, Inc. v. Pavement Salvage Co.*,⁶⁰ Judge Rich concluded with an upbeat assessment of a recently decided case by the Ninth Circuit Court of Appeals⁶¹ and with the Latin phrase, “*dum spiro, spero!*” (“While I breathe, I hope!”).⁶²

In 1977, at the Bureau of National Affairs Conference commemorating the twenty-fifth anniversary of 35 U.S.C. § 103, Judge Rich retold the story of how 35 U.S.C. § 103 was drafted, relating how he proposed to the Drafting Committee the idea of eliminating reference to the term “invention,” and, instead, to “speak in terms of a requirement for *patentability*, saying how it shall be determined.”⁶³ Almost in the same breath, Judge Rich acknowledged that, despite the simplicity of the idea, he was still “trying to make it plain”:

It was in the process of working out the counterproposal in 1948 that I formulated a policy in my mind which I have held to firmly

54. *Id.* at 166. (“The gist of *Hotchkiss v. Greenwood* is that the Supreme Court, like Jefferson, sensed that Congress had not included in the statute a necessary limitation on the grant of patents and added that condition itself. This was judicial legislation.”)

55. *Id.*

56. *Id.*

57. *Id.* at 170.

58. *Id.* at 171. (“Yes, Title 35 as a whole is a codification; but it is also specifically and officially described as a codification *and revision*. An example of strict codification of case law is Section 103(e) which put the rule of the *Milburn Case*, 270 U.S. 390 (1926), into the statute without change.”)

59. *Id.* at 170.

60. *Anderson’s-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969).

61. *Reeves Instrument Corp. v. Beckman Instruments, Inc.*, 444 F.2d 263 (9th Cir. 1971).

62. Rich, *supra* note 47, at 179.

63. Rich, *supra* note 17, at 189.

since and which I communicated to my fellow members on our committed [sic] and to the Congressional committee at hearings. It was this: All of the trouble people were trying to remedy by these bills attached to the undefinable term “invention,” as the name of a third requirement for patentability. “Why don’t we get away from this troublesome term altogether?” I asked, “Let’s not use it at all and say what we really mean, and speak in terms of requirement for *patentability*, saying how it shall be determined.”

This is the simple idea which many courts and many patent lawyers still have not taken in. Here I am 29 years later still trying to make it plain.⁶⁴

Judge Rich noted that “the term ‘obvious’ had, of course, often cropped up in opinions and patent cases through the past century,”⁶⁵ and concluded with an oblique reference to the success of § 103 in having “some stabilizing effect,” while alluding to continuing difficulties in interpretation of the statute:

I am happy to go along with the concluding statement in Pat Federico’s APLA paper that the views of people who have worked on the statute are “not material”—just because they worked on it—and that “The language of the statute must speak for itself” “It is a good statute; I only wish all the courts felt the way Pat does.

Referring to the Reviser’s Note to section 103, which Pat wrote, I think it has had “some stabilizing effect,” as the note anticipates. But I am still wondering about his present thoughts, after twenty-five years, on “the addition at a later time of some criteria which may be worked out.”⁶⁶

In a paper prepared for delivery at the Spring Meeting of the American Patent Law Association in 1978,⁶⁷ Judge Rich lamented the “tyranny of words,” whereby the words “inventor,” “invention,” “invents,” and “invented,” would have “such a magical power” that a federal judge would deem “‘nonobviousness’ to be a ‘clumsy’ word

64. *Id.* at 188-89.

65. *Id.* at 190.

66. *Id.* at 192 (The “Revision Notes” accompanying H.R. REP. NO. 7794 state, in part, with respect § 103: “There is no provision corresponding to the first sentence explicitly stated in the present statutes This paragraph is added with the view that an explicit statement in the statute may have some stabilizing effect, and also to serve as a basis for the addition at a later time of some criteria which may be worked out.”).

67. Giles S. Rich, *Escaping the Tyranny of Words—Is Evolution in Legal Thinking Impossible?*, in *The Ultimate Condition of Patentability* pt. 3, at 301-24 (John F. Witherspoon ed., Bureau of National Affairs, Inc., 1980), reprinted in 14 FED. CIR. B.J. 193 (2004) (prepared for delivery on May 5, 1978 at the Spring Meeting of the American Patent Law Association in Rochester, N.Y.).

by comparison.”⁶⁸ Again, Judge Rich recounted the development of patent law in this country. He credited the Court in *Hotchkiss v. Greenwood*⁶⁹ with establishing a distinction between the “degree of skill and ingenuity which constitute essential elements of every invention”⁷⁰ and improvements that are the “work of the skillful mechanic, not that of the inventor.”⁷¹ After summarizing developments in the Supreme Court since enactment of § 103, he concluded that he did not “believe that the requirement for ‘invention’ is very much alive in the Supreme Court because, when one follows the carefully considered dictates of the Court, that old requirement will be seen to have been subsumed in the statutory requirement for non-obviousness.”⁷² Judge Rich closed with a plea: “Let’s not be tyrannized by words. Let’s try to hang on for dear life to the little advances in the art of thinking about patent law that we are able to make in our lifetimes.”⁷³

II. ESTABLISHMENT OF THE PATENT ACTS OF 1790 AND 1793

Although instances of exclusionary rights in novel creations have been found dating back to antiquity,⁷⁴ Venice generally is credited with granting the first patent,⁷⁵ and with enacting the first statute creating exclusionary rights for inventors in 1474.⁷⁶ Even in this earliest patent statute, reference is made to “men of great genius,” and grant of exclusionary rights to “every person who shall build any new

68. *Id.* at 196. Judge Rich was referring to a speech made by the Hon. George Edwards, U.S. Court of Appeals, 6th Cir., entitled, “That Clumsy Word ‘Nonobviousness.’”

69. *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248 (1851).

70. Rich, *supra* note 67, at 204 (quoting *Hotchkiss*, 52 U.S. at 267).

71. *Id.* at 204 (quoting *Hotchkiss*, 52 U.S. at 267).

72. *Id.* at 215.

73. *Id.* at 216.

74. See generally F.D. Prager, *The Early Growth and Influence of Intellectual Property*, 34 J. PAT. OFF. SOC’Y 106 (1952) (discussing the early development of intellectual property).

75. G. Mandich, *Venetian Patents (1450-1550)*, 30 J. PAT. OFF. SOC’Y 166, 168-169 (1948) (“The Republic of Venice, on the other hand, is generally credited with the first patents, issued from case to case in [the] form of pure privileges, particularly to printers.”).

76. *Id.* at 169 (“We can now claim the priority of Venice in recognizing the *right* of inventors. Actual patents for new inventions had been granted by the Senate of Venice in 1443, Venetian style, in 1460—more than one—and in 1473; and we now find, as a matter of even greater interest, that the same Senate regulates the grant of patents to *any* inventor in broad and general manner, by an act having the full form and nature of a law. The act is of 1474.” (footnotes omitted)).

and ingenious device in this City.”⁷⁷ Mandich specifically notes that the act, therefore, includes “a requirement of inventive merit . . . , according to which the invention must not be a trifling, all too obvious application of known technology.”⁷⁸

Whether “inventors” have an inherent right in their works is fundamental to any tracing of statutory or judicial support for threshold requirements of exclusionary rights in intellectual property. Prager argues that there are “inherent, exclusive rights,” that are “not created but only developed or limited by statutes on privileges, patents and copyrights.”⁷⁹ Prager concludes that “patents have two historic roots: State policies and the idea of intellectual property,”⁸⁰ and that “endurance of a system for the promotion of progress in the arts” cannot be based “merely on written statutes,” but must have public approval.⁸¹ As an apparent example of economic policies enacted by statute to promote “progress in the arts,” Prager states that, while “production of a new thing” creates an inherent right as an extension of the idea of intellectual property, it “is equally important to note, that if a co-producer’s contribution is minor, and does not amount to real production of the thing as an economic-legal unit, no property right is created by such contribution.”⁸² Prager remarks that the “line of actual demarcation is sometimes debatable but that the principle is clear.”⁸³ Moreover, Prager takes issue with commentators who argue that a patentability requirement of inventiveness, beyond that of being a new and useful structure or process, is a “mere ‘ghost of the law,’” and with vague reference to *Hotchkiss*, he dates the birth of this “ghost” back at least two millennia:

Some writers have urged quite seriously that the requirement of inventiveness is a mere “ghost of the law.” If this be a “ghost,” it was not born in 1850 as assumed by these writers, but at least 2000 years ago. For centuries, this “ghost” had a lot of substance in the

77. *Id.* at 176-77 (The act stated, in part: “WE HAVE among us men of great genius. . . . Therefore: BE IT ENACTED that, by the authority of this Council, every person who shall build any new and ingenious device in this City. . .”).

78. *Id.* at 177.

79. Prager, *supra* note 74, at 108.

80. *Id.* at 139.

81. *Id.* at 140 (“It was demonstrated that endurance of a system of the promotion of progress in the arts, as well as the original creation of such a system, required more than government-sponsored maxims; it required mainly the public approval of intellectual property. Patents and copyrights are based on this approval, not merely on written statutes in legal books”).

82. *Id.* at 110.

83. *Id.*

opinion of the people It was invisible only to the lawyers of ELIZABETH'S Privy Council, and to them only until the people had started to revolt.⁸⁴

In the United States, the Constitution clearly enumerates among the powers granted to Congress that of establishing the limited exclusive right to "Inventors" for "Discoveries" to "promote the Progress of Science and useful Arts."⁸⁵ Although the Constitution has no recorded legislative history, reference is made to the clause by James Madison in *The Federalist*, albeit only broadly, as the exclusive province of Congress, which Seidel quotes as follows:

"The utility of this clause [sic] will scarcely be questioned. The copyright of authors has been solemnly adjudged in Great Britain to be a right in Common Law. The right to useful inventions seems with equal reason to belong to the inventors. The public good fully coincides in both cases with the claims of individuals. The states cannot separately make effectual provision for either of the cases, and most of them have anticipated the decision of this point by laws passed at the instance of Congress."⁸⁶

It should be noted, however, that intellectual property protection was not introduced to the United States by the power enumerated in Article 1, Section 8, Clause 8 of the Constitution; the colonies, and then the states under the Continental Congress, had been granting patents before the adoption of the Constitution.⁸⁷ In a few instances, some states, such as New York, continued to grant patents even after adoption of the Constitution.⁸⁸

The Constitution became effective on March 4, 1789. Six weeks later, on April 20, 1789, Congress appointed a house committee to

84. *Id.* at note 7 (citation omitted); *see, e.g.*, Drury W. Cooper, *Some Ghosts of the Law*, 23 J. PAT. OFF. SOC'Y 319, 321 (1941) ("In the law of patents we have become so accustomed to the application of a test of 'patentability' based upon an inference as to what one of average skill in the calling would or would not have done, that few stop to consider whether the test has a basis in statutory law. If it has, then all questions of its probable or possible change are for Congress to consider. If it has no statutory basis, then the 'man skilled in the art' is a ghost foisted upon us by the courts and, as one of the most distinguished patent judges of our time once remarked of him, 'He is the son of a sea-cook who gives us all the trouble in these patent cases.'").

85. U.S. CONST. art. I, § 8, cl. 8.

86. Arthur H. Seidel, *The Constitution and a Standard of Patentability*, 48 J. PAT. OFF. SOC'Y 5, 17 n.28 (1966) (quoting *Federalist* No. 43, at 186 (James Madison) (E.H. Scott ed. 1894)).

87. *Id.* at 21-23.

88. *Id.* at 22 n.38.

prepare a federal patent and copyright bill.⁸⁹ Prager remarks that the bill, presented as House Bill 10 on June 23, 1789, was derived from an original draft by Noah Webster.⁹⁰ Although Webster's draft has been lost,⁹¹ it appears that, in essence, it was "based on a inventor's public claim and announcement of the metes and bounds of his discovery,"⁹² which would protect an author's, or inventor's, "natural" right.⁹³ Furthermore, Webster supported statutory protection for inventors and authors as an equitable exchange for the benefit contributed by their "ingenuity and labor," as quoted by Prager from the February 1788 edition of the American Magazine:

The authors of useful inventions are among the benefactors of the public and are entitled to some peculiar advantages for their ingenuity and labor. The productions of genius and the imagination are if possible more really and exclusively property than houses and land and are equally entitled to legal security. The want of some regulation for this purpose may be numbered among the defects of the American government.⁹⁴

House Bill 10 was replaced by House Bill 41⁹⁵ which, like House Bill 10,⁹⁶ provided for opposition proceedings.⁹⁷ The Patent Act that was ultimately approved, on April 10, 1790,⁹⁸ did not include opposition proceedings but, instead, put in place an examination system that impaneled the "Secretary of State, the Secretary for the department of war, and the Attorney General, or any two of them, if they shall deem the invention or discovery sufficiently useful and

89. Frank D. Prager, *Proposals for the Patent Act of 1790*, 36 J. PAT. OFF. SOC'Y 157, 158 (1954).

90. *Id.* at 160.

91. *Id.*

92. *Id.*

93. *Id.* at 158 ("The public interest was then absorbed by the question of basic, natural rights, to be secured by a federal Bill of Rights. The movement for such a Bill probably gave support to the intellectual property idea of Webster and thereby to the early enactment of a federal patent and copyright act.")

94. *Id.* at 157 (citing AM. MAGAZINE, Feb. 1788 (Webster ed., 1788)).

95. *Id.* at 163.

96. Frank D. Prager, *Historical Background and Foundation of American Patent Law*, 5 AM. J. LEGAL HIST. 309, 321-22 (1961) (quoting H.B. 10: "And it be further enacted, That upon petition of any person or persons to _____ setting forth that he, she, or they, hath or have invented or discovered any art, manufacture, engine, machine, invention or device, or any improvement upon, or in some art, manufacture, engine, machine, invention or device, not before known or used, it shall and may be lawful for the said _____ to direct an advertisement to be inserted, . . . requiring all persons concerned to appear . . . to show cause why letters patent under the great seal of the United States, should not issue . . .").

97. Prager, *supra* note 89, at 164.

98. *Id.* at 165.

important, to cause letters patent to be made out in the name of the United States.”⁹⁹ Inclusion of an examination system was contrary to Webster’s original suggestion, which, as stated by Prager, “proclaimed the inventor’s property [was] based on his creative act and bounded only by his correct delineation of the new area.”¹⁰⁰

A system of patent law modeled on the French system, which included examination,¹⁰¹ had been advocated by James Rumsey in a letter to Thomas Jefferson dated June 6, 1789,¹⁰² while House Bill 10 was in preparation. Thomas Jefferson was in France as the American ambassador at that time and it is not clear what influence Jefferson had on the Patent Act of 1790. However, it is known that Rumsey had been befriended by Benjamin Franklin as a competitor of John Fitch.¹⁰³ Regardless, the examination system of the Patent Act of 1790 set forth no standard by which to gauge whether an invention or discovery was “sufficiently useful and important”¹⁰⁴ to merit grant of exclusive rights under a patent.

Jefferson returned from France in March of 1790 to become Secretary of State.¹⁰⁵ There is nothing to suggest that Jefferson participated in any of the amendments to the Patent Act of 1790 that occurred prior to its enactment.¹⁰⁶ It became clear soon after, however, that the new Act required far too much attention by the Secretary of State, the Secretary for the Department of War and the Attorney General, who were charged with the responsibility for carrying it out.¹⁰⁷ On February 7, 1791, a bill was introduced to the House of Representatives as H.R. 121, which E.C. Walterscheid argues was a draft of a new act prepared by Jefferson, or “something closely akin to it.”¹⁰⁸ Jefferson’s draft removed provision for

99. Patent Act of 1790, ch. 7, § 1, 1 Stat. 109, 110 (1790) (repealed 1793).

100. Prager, *supra* note 89, at 160.

101. *Id.* at 159 n.9 (noting that in France, the Parliament of Paris examined utility).

102. *Id.* at 158-59 (quoting a letter from James Rumsey to Thomas Jefferson (June 6, 1789), From James Rumsey in 15 THE PAPERS OF THOMAS JEFFERSON 170, 171 (Julian P. Boyd & William H. Gaines eds., 1958)).

103. *Id.* at 160 (“Franklin had met and rejected Fitch late in 1785 and had attracted competition for Fitch, first by Arthur Donaldson in 1786 and then by Rumsey, whose open conflict with Fitch started in 1787.”). For more of this interesting story, see Boyd, T., “Poor John Fitch: Inventor of the Steamboat,” G.P. Putnam’s Sons, New York, 1935.

104. Patent Act of 1790, ch. 7, § 1, 1 Stat. 109, 110 (1790) (repealed 1793).

105. E.C. Walterscheid, *Thomas Jefferson and the Patent Act of 1793*, 40 ESSAYS IN HIST. § I (1998), <http://etext.virginia.edu/journals/EH/EH40/walter40.html>.

106. *Id.*

107. *Id.* § 2.

108. *Id.* § 3.

examination of applications and replaced it with a registration system like that of England.¹⁰⁹ Jefferson also proposed a defense to infringement where “the invention was ‘so unimportant and obvious that it ought not to be the subject of an exclusive right’”¹¹⁰ As noted by Walterscheid, there was “no reference to the patentability rules which many years later Jefferson stated were established by the patent board under the Act of 1790,” and Walterscheid argues this “clearly suggests that, at least as of early 1791, the board had yet to develop and implement these rules.”¹¹¹

H.R. 121 was replaced by H.R. 166,¹¹² which was introduced on March 1, 1792.¹¹³ H.R. 166 did not include Jefferson’s defense of obviousness and required that the invention be of “any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement on any art, machine, manufacture, composition of matter, not before known or used”¹¹⁴ and that an inventor “fully explain the principle and the several modes in which he has contemplated the application of that principle or character, by which it may be distinguished from other inventions.”¹¹⁵ This bill was, in turn, replaced by H.R. 204 on December 10, 1792, which became, as amended, the Patent Act of 1793.¹¹⁶

Walterscheid argues that the patent board under the Act of 1790 established rules of patentability only “late in 1792 after they had been proposed by Barnes acting on behalf of Rumsey”¹¹⁷ in a treatise¹¹⁸ commenting on the House Report of March 1792.¹¹⁹ These rules, articulated by Jefferson in 1813, were, as quoted by Walterscheid,

109. *Id.* § 4.

110. *Id.* (quoting Thomas Jefferson, *A Bill to Promote the Progress of the Useful Arts*, in 22 THE PAPERS OF THOMAS JEFFERSON 359, 360 (Charles T. Cullen et al. eds., 1986)).

111. *Id.*

112. Walterscheid suggests that “E-23848,” which is an “Evans number” as identified in Charles Evans’ American Bibliography series, is in fact H.R. 166. *Id.* § 3.

113. *Id.* § 3.

114. An Act to Promote the Progress of the Useful Arts, § 2, 1 Stat. 109-10 (1790) (repealed 1793).

115. *Id.*

116. Patent Act of 1793, ch. 11, 1 Stat. 318 (1793) (repealed 1836).

117. Walterscheid, *supra* note 105, § 4.

118. J. BARNES, TREATISE ON JUSTICE, POLICY, AND UTILITY OF ESTABLISHING AN EFFECTUAL SYSTEM OF PROMOTING THE PROGRESS OF USEFUL ARTS, BY ASSURING PROPERTY IN THE PRODUCTS OF GENIUS (Philadelphia 1792).

119. Walterscheid, *supra* note 105, § 4.

(a) “that a machine of which we were possessed, might be applied by every man to any use of which it is susceptible”; (b) “that a change of material shall not be entitled to a patent”; and (c) “that a mere change of form should give no right to a patent.”¹²⁰

Barnes’ treatise also proposed articles to be incorporated into the new patent act that particularly specified that entitlement to a patent required discovery of a new principle, or an improvement in the principle of a machine:

Article I.

. . . II. A person shall be *entitled* to obtain a patent *provided* he shall have discovered a *new principle*, in case of machines, or shall have discovered an *improvement* in the *principle* of any machine which is *free*, or patented; the latter to be called a perfective patent; or *new art*, or process in case of a composition of matter.¹²¹

Barnes’ proposals appear to have been adopted in that the Patent Act of 1793 included an additional section, Section 2, that did not appear in H.R. 166:

SEC.2.

Provided always, and be it further enacted, That any person, who shall have discovered an improvement in the principle of any machine, or in the process of any composition of matter, which shall have been patented, and shall have obtained a patent for such improvement, he shall not be at liberty to make, use or vend the original discovery, nor shall the first inventor be at liberty to use the improvement: And it is hereby enacted and declared, that simply changing the form or proportions of any machine, or composition of matter, in any degree, shall not be deemed a discovery.¹²²

120. *Id.* § 4 n.37.

121. Barnes, *supra* note 118, at 30-31.

122. *Id.* Patent Act of 1793. The remaining portions of Section 2 appear to derive from Sections III and IV of Barnes’ treatise, which state:

III. But, *he* who makes an improvement in the principal of any machine, shall *not* be at liberty to use the original discovery or machine, but with the *consent* of the first inventor; *nor*, shall the first inventor be at liberty to use the improvement, but with the *consent* of the *improver*.

IV. *Nor*, shall *changing* the *form*, or *proportions* of any machine, in any degree, be construed to be a discovery.

For further discussion of Section 2, see Walterscheid, E.C., “To Promote the Progress of Useful Arts: American Patent Law and Administration, 1798-1836,” Fred B. Rothman & Co., Littleton, Colorado (1998) p. 222, n.96.

III. GENESIS OF A JUDICIAL STANDARD UNDER THE PATENT ACT OF 1793

Although the first patent cases under the new Patent Act of 1793 would not be heard for several years, by 1795 courts in England were contemplating principle of operation as a test for patentability. In *Boulton v. Bull*,¹²³ the Court of Common Pleas was evenly divided, and so rendered no judgment in the case of James Watt, who sued for infringement of a patent directed toward a method of use of a “steam,” or “fire engine.”¹²⁴ The invention did not include a novel apparatus,¹²⁵ but, rather, an improvement in a method of use of steam engines, whereby, to make the engine more efficient, spent steam from a cylinder was condensed in a separate vessel rather than by introduction of cold water into the cylinder containing the steam.¹²⁶ The defendant argued that because there was no new instrument, or machine, the patent could only be for “mere principles,” and therefore must be invalid.¹²⁷ In other words, since, according to English law, a “patentee must describe his invention in such a manner, that other artists in the same trade or business may be taught to do the same thing for which the patent is granted,”¹²⁸ there can be no patent protection for “mere principles,” because, until they are “embodied and reduced into practice,” they are like “sentiments of an author,” which, “while in his own mind[,] . . . are alike the property of him or of another.”¹²⁹ By partitioning the known device, that is, the steam engine, from the method of its use, as “mere principles,” the defendant concluded that the plaintiff, as a matter of law, was entitled to protection for neither:

Upon the whole therefore of the case, it appears either that the patent is for an entire formed machine, when it ought to have been for an improvement only, and in which case the specification does

123. *Boulton v. Bull*, (1795) 126 Eng. Rep. 651 (C.P.).

124. *Id.*

125. JENNY UGLOW, *THE LUNAR MEN* 243 (2002), *quoting* a letter from William Small to James Watt (February 5, 1769), in *MATTHEW BOULTON PAPERS*, Birmingham City Archives, at 340-44 (describing that Watt was advised by his friend William Small not to include in his patent specifications “drawings nor descriptions of any particular machinery, but specify in the clearest manner that you have discovered some principles.”).

126. *Boulton*, 126 Eng. Rep. at 654.

127. *Id.* at 655 (“But supposing it to be a patent for mere principles (for the specification states that the *invention* consists of *principles*) it is neither originally good in law, nor is it continued by 15 Geo. 3. c. 61.” (emphasis added)).

128. *Id.* at 656.

129. *Id.*

not correspond with it, or it is for mere principles, which according to the stat. 21 Jac. 1, c. 3, cannot be the subject of a patent.¹³⁰

Not surprisingly, the plaintiff disagreed with the defendant's characterization and linked the "principle of the invention" with the benefit achieved "by whatever mode that effect may be produced."¹³¹ The plaintiff was careful, however, to distinguish what is known, and therefore not patentable, from the patentable improvement:

Where an improvement is made upon a machine already known, the patent ought not to be for the machine itself, but for the method of improving it. . . . [I]f from the nature of the thing, a patent for the new method or improvement only should have the effect of giving a right to the whole machine, that is not of itself a ground on which the patent can be set aside.¹³²

In other words, with respect to the patented method, a new use of known fire engines gave a right to the patent holder over known fire engines, but only to the extent of the improvement provided for by the patent, and this right was not invalidated by the fact that fire engines employed by the patented method were known. The novel method was application of a new principle to known subject matter, which provided a benefit not previously known, and was entitled to patent protection.

The differences among the judges hinged on the meaning of the term "principle," and the scope of protection to be afforded to its novel application. Two of the four judges held that a literal reading of the applicable statute limited patent protection to "manufactures" and, therefore, methods, regardless of any new "principle," were not eligible for protection.

For example, Judge Heath plainly stated that the statute provided only for "new manufactures," and that it was so limited because "it precludes all nice refinements; it gives us to understand the reason of the proviso that it was introduced for the benefit of trade,"¹³³ and therefore, "the subject of a patent, ought to be specified, and it ought

130. *Id.* at 658.

131. *Id.* ("The patent is neither for a formed instrument, nor is the specification for a principle unorganized. The former is for 'a new invented *method* of lessening the consumption of steam and fuel in fire engines,' by whatever mode that effect may be produced: the latter states both the principle of the invention, and also the mode in which it is to operate, namely, the preserving the cylinder hot by the means described, and the condensing the steam in separate vessels communicating with the cylinder." (emphasis added)).

132. *Id.*

133. *Id.* at 660-61.

to be that which is vendible, otherwise it cannot be a manufacture.”¹³⁴ The patentee, on the other hand, by asserting that the invention was not limited to any particular embodiment, effectively conceded a lack of invention:

If the argument for the patentee were correct, it would follow, that where a patent was obtained for the principle, the organization would be of no consequence. Therefore the patent for the application of the principle, must be as bad as the patent for the principle itself. It has been urged for the patentee, that he could not specify all of the cases, to which his machinery could be applied. The answer seems obvious, that what he cannot specify he has not invented.¹³⁵

The judge concluded that the patent cannot be good because, as an application of principle, it extends beyond the machinery specified and is, therefore, uncertain:

This patent extends to all machinery that may be made on this principle, so that he has taken a patent for more than he has specified The grant of a method is not good, because uncertain, the specification of a method or the application of principle is equally so, for these reasons I have alleged.¹³⁶

Similarly, Judge Buller argued that a principle, if patentable, would have the same meaning as the “manufacture” of the statute:

This brings us to the true foundation of all patents, which must be the manufacture itself; and so says the statute 21 Jac. 1, c. 3. . . . I am of opinion that the patent is granted for the *manufacture*, and I agree . . . that verbal criticisms ought not to avail, but that *principle* in the patent, and *engine* in the act of parliament mean and are the same thing.¹³⁷

He concluded the “true question in this case is, whether the Plaintiff’s patent can be supported for the engine,”¹³⁸ and the objections to the patent are, therefore, that “the fire engine was known before : and secondly, though the Plaintiff’s invention consisted only of an improvement of the old machine, he has taken the patent for the whole machine, and not for the improvement alone.”¹³⁹ Judge Buller drew a parallel with so-called “patents of addition,” characterized as

134. *Id.* at 661.

135. *Id.*

136. *Id.*

137. *Id.* at 663 (emphasis added).

138. *Id.* at 664.

139. *Id.*

putting “but a new button to an old coat,”¹⁴⁰ and commented that, “[i]f the button were new, I do not feel the weight of the objection that the coat in which the button was to be put, was old.”¹⁴¹ Judge Buller acknowledged that patents of addition could be valid, “[b]ut then it must be for the *addition only*, and not for the old machine too.”¹⁴² According to Judge Buller, since novelty in the method of use of the fire engine was inextricably linked with the previously known engine, the improvement could not be patented without depriving the public of a right to the engine and, therefore, the patent of the improvement must be void.¹⁴³

Judge Rooke, on the other hand, took the view that, if the invention was to be patentable, it would not be as a mere principle, but rather a novel modification in the steam engine to effect the inventor’s method:

What method can there be of saving steam or fuel in engines, but by some variation in the construction of them? A *new invented* method therefore conveys to my understanding the idea of a *new mode of construction*. I think those words are tantamount to *fire engines of a newly invented construction*; at least I think they will bear this meaning, if they do not necessarily exclude every other.¹⁴⁴

Patentability for Judge Rooke was, therefore, clearly linked to mechanical improvements, regardless of whether the patentee considered the improvement to be a “principle, invention, or method”:

It follows from thence, that the *mechanical improvement*, and *not the form* of the machine, is the object of the patent; and if this mechanical improvement is intelligibly specified . . . whether the patentee call it a principle, invention, or method, or by whatever other appellation, we are not bound to consider his terms, but the real nature of his improvement and the description he has given of it, and we may I think protect him without violating any rule of law.¹⁴⁵

140. *Id.*

141. *Id.*

142. *Id.* (emphasis added).

143. *Id.* at 665 (“But here the Plaintiffs claim the right to the whole machine. To that extent their right cannot be sustained, and therefore I am of opinion that there ought to be judgment for the Defendant.”).

144. *Id.* at 659.

145. *Id.*

Lord Chancellor Judge Eyre, admitting that “[p]atent rights are no where that I can find accurately discussed in our books,”¹⁴⁶ and referring to Sir Edward Coke as providing only “little assistance”¹⁴⁷ on the subject of patents, began, like the others, with the language of the statute, but he construed a broader definition of eligible subject matter. Instead of limiting protection to “manufacture,” Judge Eyre included the associated language in the statute of “sole working or making of any manner of *new manufacture*”¹⁴⁸ and relied on an earlier case, *Salkeld*, to state that the term “manufacture” is to include “all new artificial manners of operating with the hand.”¹⁴⁹ Furthermore, “principles carried into practice in a new manner, to new results of principles carried into practice,”¹⁵⁰ were, for Judge Eyre, legitimate bases for patent protection under English statute:

In the case of *Salkeld*, the words “*new devices*” are substituted and used as synonymous with the words “*new manufacture*.” It was admitted in the argument at the bar, that the word “*manufacture*” in the statute was of extensive signification, that it applied not only to things made, but to the *practice of making*, to principles carried into practice in a new manner, to new results of principles carried into practice.¹⁵¹

He did not, however, broaden patent protection to principles, *per se*, but only as manifested in practical applications:

Undoubtedly there can be no patent for a mere principle, but for a principle so far embodied and connected with corporeal substances, as to be *in a condition to act*, and to *produce effects* in any art, trade, mystery, or manual occupation, I think that there may be a patent . . . It is not that the patentee has conceived an abstract notion, that the consumption of steam in fire engines may be lessened, but he has discovered a *practical manner* of doing it; and for that *practical manner of doing it* he has taken his patent. Surely this is a very different thing from taking a patent for a principle, it is *not for a principle*, but *for a process*.¹⁵²

146. *Id.* at 665.

147. *Id.*

148. *Id.* (emphasis added).

149. *Id.* at 666 (“Under the *practice of making* we may class all new artificial manners of operating with the hand, or with instruments in common use, new processes in any art, producing effects useful to the public.” (emphasis added)).

150. *Id.*

151. *Id.* (emphasis added).

152. *Id.* at 667 (emphasis added).

It is on this basis that Judge Eyre concluded that a new method for use of a device, in this case, a fire engine, may, indeed, be a subject of a valid patent:

The objection on the act of parliament is of the same nature as one of the objections to the specification: the specification calls a *method* of lessening the consumption of steam in fire-engines a *principle*, which it is not; the act calls it an *engine*, which perhaps also it is not; but both the specification and the statute are referable to the same thing, and when they are taken with their correlative are perfectly intelligible. Upon the wider ground I am therefore of the opinion that the act has continued this patent.¹⁵³

The four judges who opined on Watt's use of a fire engine in the Court of Common Pleas, therefore, were split as to whether a process could be the valid subject of a patent. However, on closer inspection, it is apparent that they all agreed that the presence of a new application of principle, or "whatever other appellation,"¹⁵⁴ was critical to that determination, and differed on only whether any such new application of such principle in the form of a method could be protected under a statute which refers only to the sole working or making of any manner of "new manufacture."¹⁵⁵

This same patent was again at issue in the case of *Hornblower v. Boulton*,¹⁵⁶ in the Court of Kings Bench in 1799. As in the earlier case before the Court of Common Pleas, the argument was made that the patent was "for a philosophical principle only, neither organized or capable of being organized."¹⁵⁷ In this case, however, decided four years after the case against Bull in the Court of Common Pleas, the judges unanimously upheld Watt's patent. All the judges agreed that the method of the invention was within the scope of subject matter protectable under the statute as a new manufacture and not a patent for "mere principles."¹⁵⁸ Judge Lawrence, for example, equated a device and method of its use under the statute as "only placing several things and performing several operations in the most convenient order," and contrasted manifestation of a principle to principle as a "mere elementary truth."¹⁵⁹

153. *Id.* at 669-70 (emphasis added).

154. *Id.* at 659.

155. *Id.* at 663.

156. *Hornblower v. Boulton*, (1799) 101 Eng. Rep. 1285 (K.B.).

157. *Id.* at 1288.

158. *See id.*

159. *Id.* at 1292.

The patent was granted for application of principles, either as a method or arrangement of component parts, and was distinguished from “mere principles” by the “particular parts requisite to produce the effect intended” and “the manner how they are to be applied,” as stated by Judge Grose:

This method, however, if not effected or accompanied by a manufacture, I should hardly consider as within the statute of James. But it seems to me that, in this specification, he does describe a new manufacture, by which his principle is realized Thus he specifies the *particular parts requisite to produce the effect intended*, and states *the manner how they are to be applied*. . . . But then it is objected that the patent should have been for that manufacture; whereas it is for principles, which the specification describes. To which I answer, that the patent is not merely for principles, nor does the specification describe principles only. The patent states the principles on which the inventor proceeds, and shows in his specification the manufacture by means of which those principles are to take effect; which effect is to be the lessening of the consumption of steam and fuel by keeping the steam vessel of one uniform heat with the steam so long as the engine is worked.¹⁶⁰

Therefore, as held by the Court of the King’s Bench, regardless of whether the invention was a method or machine, patentability hinged on new application of a principle, and extended only to that application. Naked principle was not entitled to protection under the statute.

In the United States, Justices Story and Washington, while riding circuit on the Circuit Courts for the Districts of Massachusetts and Pennsylvania, respectively, wrote several opinions for early patent cases. One of the first of these cases, *Park v. Little*,¹⁶¹ was a suit for infringement of a patent for alarm bells affixed to a fire engine (i.e., steam engines to be used in extinguishing fires).¹⁶² Here, circuit Justice Washington distinguished improvements in “principle” from “form” by holding that improvements in “form” of the invention constituted an “invasion of the plaintiff’s privilege,” while improvements in “principle” did not:

The last question is, have the defendants by the devising or using their bells, violated the plaintiff’s right? Inquiries under this head are—1st. Are the defendants’ bells, as used by them, an

160. *Id.* at 1290 (emphasis added).

161. *Park v. Little*, 18 F. Cas. 1107 (C.C.D. Penn. 1813) (No. 10,715).

162. *Id.* at 1107.

improvement of the plaintiffs? You have seen and tried both, and can decide. 2d. Is it an improvement in the principle or in the form? If the former, then it is no invasion of the plaintiff's privilege—if the latter, it is.¹⁶³

Justice Story, whose first term on the Supreme Court was the year before,¹⁶⁴ was, like Justice Washington, riding circuit in early 1813. In May, one month after Washington's opinion in *Park*, Story wrote, in *Woodcock v. Parker*,¹⁶⁵ that "a subsequent inventor cannot, by obtaining a patent therefor, oust the first inventor of his right, or maintain an action against him for the use of his own invention,"¹⁶⁶ apparently contradicting Justice Washington's suggestion that patentably distinct improvements did not infringe an earlier inventor's exclusive right.

One year later, however, Justice Story, in another circuit court opinion, *Odiorne v. Winkley*,¹⁶⁷ clearly linked new application of principle to patentability, but limited the scope of that protection to the improvement consequent to the application, and prohibited exclusive rights from embracing the "original" or "whole" machine as being overly broad:

The original inventor of a machine is exclusively entitled to a patent for it. If another person invent [sic] an improvement on such machine, he can entitle himself to a patent for such improvement only, and does not thereby acquire a right to patent and use the original machine; and if he does procure a patent for the whole of such a machine with the improvement, and not for the improvement only, his patent is too broad, and therefore void. It is often a point of intrinsic difficulty to decide, whether one machine operates upon the same principles as another.¹⁶⁸

Therefore, Justice Story strongly implied that, as stated by Justice Washington, operation of a machine according to the same principles of a patented invention is an infringement and, although an improvement of a machine may be patented, practice of that improvement will also constitute an infringement, absent some demonstration that the improvement operates on a principle that

163. *Id.* at 1108.

164. R. KENT NEWMYER, SUPREME COURT JUSTICE JOSEPH STORY: STATESMAN OF THE OLD REPUBLIC 74-75 (1985) (noting that Justice Story came to the Supreme Court in 1812, one year before *Park* was decided).

165. *Woodcock v. Parker*, 30 F. Cas. 491 (C.C.D. Mass. 1813) (No. 17,971).

166. *Id.* at 492.

167. *Odiorne v. Winkley*, 18 F. Cas. 581 (C.C.D. Mass. 1814) (No. 10,432).

168. *Id.* at 582.

substitutes for the one on which the first patent is based. Justice Story's reference to the "whole" machine, in context, can only mean that a patentee of an improvement cannot secure to himself the right to practice the earlier patented invention regardless of whether the improvement is employed, and that if the patent for the improvement does provide that right, it is void. The severability of the improvement from the "whole" machine means that the patentee's right to his improvement extends only to his improvement and does not affect the rights of the earlier patent holder, except to the extent that the earlier patent holder incorporates the improvement into practice of his "original" or "whole" machine.

In 1817, circuit Justices Story and Washington issued opinions that addressed the patent rights of one Jacob Perkins. Justice Story, in the case of *Lowell v. Lewis*,¹⁶⁹ charged the jury that the question of whether Perkins' pump was a "new invention" must rest on whether the patent is "for a specific machine, substantially new in its structure and mode of operation, and not merely changed in the form, or in the proportion of its parts."¹⁷⁰ Here, Story does not employ the term "principle" but, instead, requires the presence of a new "mode of operation," as the distinction from being "merely changed in form" or "in the proportion of its parts."¹⁷¹ In *Gray v. James*,¹⁷² a case challenging the validity of another of Perkins' inventions, Justice Washington stated that absent evidence the two patented machines were substantially alike in principle, the defendants in the infringement suit must fail in their attempt to invalidate Perkins' patent.¹⁷³

The first case before the U.S. Supreme Court to deal squarely with the validity of patents directed to improvements was *Evans. v. Eaton*.¹⁷⁴ The patent was directed to an improved flour, or grain, mill owned by Oliver Evans. Justice Marshall, delivering the opinion for the Court, upheld the patent in the face of the charge that the patent was invalid as having been construed "to be solely for the general result produced by the combination of all the machinery, and not for

169. *Lowell v. Lewis*, 15 F. Cas. 1018 (C.C.D. Mass. 1817) (No. 8,568).

170. *Id.* at 1019-20.

171. *Id.*

172. *Gray v. James*, 10 F. Cas. 1019 (C.C.D. Penn. 1817) (No. 5,719).

173. *Id.* at 1020 ("[Perkins' machine and Chandler's earlier machine] are materially unlike in their parts, in their structure, and in their operation. . . . Or, if this be not so, it behooves the defendants clearly to show the contrary, before the court can listen to a motion to set aside the verdict, on the ground that the two machines are substantially alike in principle.").

174. *Evans v. Eaton*, 16 U.S. (3 Wheat.) 454 (1818).

the several improved machines, as well as for the general result.”¹⁷⁵ Evans claimed an “exclusive right to the principles, and to all the machines above specified, and for all the uses and purposes specified, as not having been heretofore known or used before I discovered them.”¹⁷⁶ As explained before by Justice Story, in *Odiorne*, the crucial distinction between patenting a “whole” machine and an improvement to it apparently was in the nature of the right claimed by the patentee.¹⁷⁷ In *Evans*, Chief Justice Marshall was able to uphold the patent because the patent rights extended only to improvements in the machine, and not to the “whole machine”:

Although, in his specification, he claims a right to the whole machine, in his petition he only asks for a patent for the improvements in the machine. The distinction between a machine, and an improvement on a machine, or an improved machine, is too clear for them to be confounded with each other.¹⁷⁸

It was this improvement, articulated by Evans as an “application of these principles,”¹⁷⁹ directed “to the improvement of the process of manufacturing flour, and other purposes”¹⁸⁰ that was granted to him as an exclusionary right:

It is, then, the opinion of this court, that Oliver Evans may claim, under his patent, the exclusive use of his inventions and improvements in the art of manufacturing flour and meal, and in the several machines which he has invented, and in his improvements on machines previously discovered.¹⁸¹

In the same year that *Evans* was decided, Justice Story, writing anonymously, published a note, “On the Patent Laws,”¹⁸² that appears

175. *Id.* at 505.

176. *Id.* at 515.

177. *Odiorne v. Winkley*, 18 F. Cas. 581, 582 (C.C.D. Mass. 1814) (No. 10,432).

178. *Evans*, 16 U.S. at 516.

179. *Id.* at 515. The “principles” were summarized by the Court as follows:

[The plaintiff’s] schedule states his first principle to be the operation of his machinery on the meal from its being ground until it is bolted. . . .

. . . .

His second principle is the application of the power that moves the mill to his machinery.

The application of these principles, he says, to manufacturing flour, is what he claims as his invention or improvement in the art. . . .

180. *Id.* (“He asserts himself to be the inventor of the machines and claims the application of these principles, to the improvement of the process of manufacturing flour, and other purposes, as his invention and improvement in the art.”).

181. *Id.* at 517.

182. Joseph Story, Note, *On the Patent Laws*, 16 U.S. (3 Wheat.) app. 13 (1818).

as an appendix to Justice Marshall's opinion.¹⁸³ In the note, Justice Story laid out a synopsis of U.S. patent law to-date, which he attributed in "great degree" to the corresponding English statute and cases.¹⁸⁴ Justice Story relied particularly heavily on the English cases of *Boulton* and *Hornblower*, discussed above, explaining that "these cases were very elaborately discussed, and contain more learning on the subject of patents than can be found in any other adjudications, and are, therefore, deserving of the most accurate attention of every lawyer."¹⁸⁵ Justice Story quoted extensively from both cases. For example, from Mr. Justice Heath, in *Boulton*, Justice Story quoted:

Method is a principle reduced to practice; it is, in the present instance the general application of a principle to an old machine. . . . *A patent for an improvement of a [machine], and a patent for an improved [machine], are, in substance, the same.* The same specification would serve for both patents; the new organization of parts is the same in both.¹⁸⁶

From Mr. Justice Rooke, Justice Story quoted, "a *new invented method* conveys to my understanding the idea of a new mode of construction,"¹⁸⁷ and, from *Hornblower*, before the Court of the King's Bench, Justice Story quoted Mr. Justice Lawrence as stating:

"[E]ngine and *method* mean the same thing, and may be the subject of a patent. *Method*, properly speaking is only placing several things and performing several operations, in the most convenient order; but it may signify a *contrivance*, or *device*; so may an *engine*; and therefore, I think it may answer the word *method*. So *principle* may mean an elementary truth; but it may also mean constituent parts."¹⁸⁸

183. See Frank D. Prager, *The Influence of Mr. Justice Story on American Patent Law*, 5 AM. J. LEGAL HIST. 254 (1961), for more details concerning the circumstances of Justice Story's Notes.

184. Story, *supra* note 182, at 13. Justice Story introduced the note as follows:

The patent acts of the United States are, in a great degree, founded on the principles and usages which have grown out of the English statute on the same subject. It may be useful, therefore, to collect together the cases which have been adjudged in England, with a view to illustrate the corresponding provisions of our own laws; and then to bring in review the adjudications in the courts of the United States.

185. *Id.* at 18.

186. *Id.* (quoting *Boulton v. Bull*, (1795) 126 Eng. Rep. 651, 660-61 (K.B.)) (emphasis added).

187. *Id.* at 18-19 (quoting *Boulton*, 126 Eng. Rep. at 659).

188. *Id.* at 19 (quoting *Hornblower v. Boulton*, (1799) 101 Eng. Rep. 1285 (K.B.)).

Therefore, to Justice Story, patentability in the United States, if derived at least in part from these two cases in England, hinged on the presence of application of principle embodied as a combination of constituent parts, either as a method or a device. As we shall see, this premise for patentability was present, and refined, throughout Justice Story's presence on the Supreme Court, and heavily influenced developments in patent law well into the twentieth century.

The first Supreme Court opinion authored by Justice Story on patent law was *Evans v. Eaton*,¹⁸⁹ which revisited the earlier Supreme Court case for which Chief Justice Marshall wrote the opinion in 1818.¹⁹⁰ Justice Story invalidated the patent on the basis that, although "[i]t is not disputed that the specification does contain a good and sufficient description of the improved Hopperboy, and of the manner of constructing it,"¹⁹¹ the patent was "defective in not specifying that improvement, and therefore the plaintiff ought not to recover."¹⁹² The essence of Justice Story's reasoning lay in the statutory requirement that "[t]he specification must describe the invention 'in such full, clear, and distinct terms, as to distinguish the same *from all other things before known*,'"¹⁹³ and that Evans' specification did not meet this requirement because it did not specify the limit of the improvement:

How can that be a sufficient specification of an improvement in a machine, which does not distinguish what the improvement is, nor state in what it consists, nor how far the invention extends? Which describes the machine fully and accurately, as a whole, mixing up the new and the old, but does not in slightest degree explain what is the nature or limit of the improvement which the party claims as his own? It seems to us perfectly clear that such a specification is indispensable. We do not say that the party is bound to describe the old machine; but we are of opinion that he ought to describe what his own improvement is, and to limit his patent to such an improvement.¹⁹⁴

Justice Story linked adequate description of what the inventor considered his invention to be, as a limit of his patent right, with the idea that patentability is founded upon demonstration that the

189. *Evans v. Eaton*, 20 U.S. (7 Wheat.) 356 (1822).

190. *Evans v. Eaton*, 16 U.S. (3 Wheat.) 454 (1818).

191. *Id.* at 428.

192. *Id.* at 435.

193. *Id.* at 434 (quoting Patent Act of 1793, ch. 11, § 3, 1 Stat. 318, 321 (repealed 1836)).

194. *Id.* at 434-35.

invention is “substantially new” by virtue of its “structure and mode of operation”:

From this enumeration of the provisions of the act, it is clear that the party cannot entitle himself to a patent for more than his own invention; and if his patent includes things before known, or before in use, as his invention, he is not entitled to recover, for his patent is broader than his invention. If, therefore, the patent be for the whole of a machine, the party can maintain a title to it only by establishing that it is substantially new in its structure and mode of operation.¹⁹⁵

In 1825, Justice Story, in *Earle v. Sawyer*,¹⁹⁶ refused to overturn a jury verdict upholding a patent directed to a shingle mill that differed from known machines for sawing shingles only in the substitution of a perpendicular saw with a known circular saw.¹⁹⁷ As stated by Justice Story, “[t]he main question was, and still is, whether there is anything new in the improvement patented by the plaintiff.”¹⁹⁸ Testimony during the trial characterized substitution of a perpendicular saw as, in Story’s words, “so obvious to mechanics, that one of ordinary skill, upon the suggestion being made to him, could scarcely fail to apply it in the mode which the plaintiff had applied his.”¹⁹⁹ Story summarized the defendant’s arguments as requiring that any patentable combination must be the product of “mental labor and intellectual creation,” or “[i]f the result of accident, it must be what would not occur to all persons skilled in the art, who wished to produce the same result,” that the “mere putting of two things together, although never done before, is no invention.”²⁰⁰ Story wholly rejected this line of reasoning as contrary to “common sense”:

It did not appear to me at the trial, and does not appear to me now, that this mode of reasoning upon the metaphysical nature, or the

195. *Id.* at 430.

196. *Earle v. Sawyer*, 8 F. Cas. 254 (C.C.D. Mass. 1825) (No. 4,247).

197. *Id.* at 254-55 (summarizing the difference of the claimed invention over the prior art as: “The former machine, here alluded to and patented by the plaintiff, is a machine for manufacturing shingles, called the ‘improved shingle mill,’ in which a perpendicular saw, with the appropriate machinery to move it, was exclusively used. The present patent claims, as an invention of the plaintiff, the substitution of a circular saw, with the appropriate machinery in the old machine, for the like purpose of sawing shingles. With the exception of this substitution, all other parts of the old machine, . . . were unaltered. . . . It was proved that circular saws were in use before, for the purpose of veneering and sawing picture frames, but they were small . . .”).

198. *Id.* at 255.

199. *Id.*

200. *Id.*

abstract definition of an invention, can justly be applied to cases under the patent act. That act proceeds upon the language of common sense and common life, and has nothing mysterious or equivocal about it. . . .²⁰¹

After quoting the statute, Story articulated a threshold for patentability as follows:

The thing to be patented is not a mere elementary principle, or intellectual discovery, but a principle put in practice, and applied to some art, machine, manufacture, or composition of matter. It must be new, and not known or used before the application; that is, the party must have found out, created, or constructed some art, machine, &c. or improvement on some art, machine, &c. which had not been previously found out, created, or constructed by any other person.²⁰²

The manner of invention was dismissed by Justice Story, and even the degree of utility was given only nominal weight:

It is of no consequence, whether the thing be simple or complicated; whether it be by accident, or by long, laborious thought, or by an instantaneous flash of mind, that it is first done. The law looks to the fact, and not to the process by which it is accomplished. It gives the first inventor, or discoverer of the thing, the exclusive right, and asks nothing as to the mode or extent of the application of his genius to conceive or execute it. It must also be useful, that is, it must not be noxious or mischievous, but capable of being applied to good purpose But the degree of positive utility is less important in the eye of the law, than some other things, though in regard to the inventor, as a measure of the value of the invention, it is of the highest importance.²⁰³

Justice Story concluded that the law was clear and that attempts to read into the statute a more stringent standard posed a threat of making application of the law more obscure:

The first question then to be asked, in cases of this nature, is whether the thing has been done before. In case of a machine, whether it has been substantially constructed before; in case of an improvement of a machine, whether that improvement has ever been applied to such a machine before, or whether it is substantially a new combination. If it is new, if it is useful, if it has not been known or used before, it constitutes an invention within the very terms of the act, and, in my judgment, within the very

201. *Id.*

202. *Id.* at 256.

203. *Id.*

sense and intendment of the legislature. I am utterly at a loss to give any other interpretation of the act; and, indeed, in the very attempt to make that more clear, which is expressed in unambiguous terms in the law itself, there is danger of creating an artificial obscurity.²⁰⁴

The defendant's attempt to invoke the case law of England in support of a standard beyond that of a novel mode was directly attacked by Story:

How, indeed, can it be possible, that an English court should deem some intellectual labour, beyond the novelty of the combination, necessary for a patent, when it is the acknowledged law of England (different in that respect from our own), that the first importer of an invention, known and used in foreign parts, may be entitled to a patent as the invention in England? What of intellect is employed in the mere importation of a known machine? An inventor, in the sense of the English law, is the first maker, or constructor, or introducer, in England.²⁰⁵

In Justice Story's opinion, application of a mode of operation not previously known, in addition to utility, entitled an inventor to patent protection.

The Patent Act of 1836,²⁰⁶ reinstated substantive reexamination of patent applications under section 7²⁰⁷ of the act, and omitted language of section 2 of the Patent Act of 1793, including the limitation "that simply changing the form or proportion of any machine, or composition of matter, in any degree, shall not be deemed a discovery."²⁰⁸ Justice Story, nevertheless, in *Wyeth v. Stone*,²⁰⁹ drew a correlation with the Patent Act of 1793 in a common requirement that "the inventor, in his specification or description of his invention, should 'fully explain the principle and the several modes, in which he has contemplated the application of that principle or character, by

204. *Id.*

205. *Id.*

206. Patent Act of 1836, ch. 357, 5 Stat. 117 (1836) (repealed 1870).

207. *Id.* at § 7 (stating, in part: "*And be it further enacted*, That, on the filing of any such application, description, and specification, and the payment of the duty hereinafter provided, the Commissioner shall make or cause to be made, an examination of the alleged new invention or discovery; and if, on any such examination, it shall not appear to the Commissioner that the same had been invented or discovered by any other person . . . , if the Commissioner shall deem it to be sufficiently useful and important, it shall be his duty to issue a patent therefor.").

208. Patent Act of 1793, ch. 11, § 2, 1 Stat. 318-23 (repealed 1836).

209. *Wyeth v. Stone*, 30 F. Cas. 723 (C.C.D. Mass. 1840) (No. 18,107).

which it may be distinguished from other inventions.”²¹⁰ As stated by Justice Story:

[An inventor] might lawfully unite in one patent all the modes, in which he contemplated the application of his invention, and all the different sorts of machinery, or modifications of machinery, by which or to which it might be applied; and if each were new, there would seem to be no just ground of objection to his patent, reaching them all.²¹¹

However, where, for example, the patent claims “the abstract principle or art of cutting ice by means of an apparatus worked by any other power than human,”²¹² Justice Story asserted that “such a claim is utterly unobtainable in point of law”²¹³ as “a claim for an art or principle in the abstract, and not for any particular method or machinery, by which ice is to be cut.”²¹⁴ Generally, then, “[a] claim broader than the actual invention of the patentee is, for that very reason, upon the principles of the common law utterly void, and the patent is a nullity,”²¹⁵ just as Justice Story had asserted in patent cases under the Patent Act of 1793.

In 1842, Justice Story held, in *Howe v. Abbott*,²¹⁶ that “application of an old process to manufacture an article, to which it had never before been applied, is not a patentable invention,”²¹⁷ and that “[t]here must be some new process, or some new machinery used, to produce the result.”²¹⁸ Speaking generally, Justice Story stated that, although production of an old result by a new mode was patentable, the converse was not true; a new result was an insufficient condition, absent “some new mode or process to produce it.”²¹⁹ For Justice Story, new application of a principle, or mode of operation, was a necessary and sufficient condition for patentability, while operation of an old process, i.e., an old application of a principle, to

210. *Id.* at 729 (quoting the Patent Act of 1836 § 6). The quoted portion of the Patent Act of 1836 also appears at Section 3 of the Patent Act of 1793, and also in Section 2 of H.R. 166, which preceded the final bill H.R. 204 that, with amendment, became the Patent Act of 1793.

211. *Id.*

212. *Id.* at 730.

213. *Id.* at 727.

214. *Id.*

215. *Id.*

216. *Howe v. Abbott*, 12 F. Cas. 656 (C.C.D. Mass. 1842) (No. 6,766).

217. *Id.* at 658.

218. *Id.*

219. *Id.* (“He, who produces an old result by a new mode or process, is entitled to a patent for that mode or process. But he cannot have a patent for a result merely, without using some new mode or process to produce it.”).

produce a new product, was not. Similarly, in *Bean v. Smallwood*,²²⁰ Justice Story held that, for a device to be patentable, it must be “substantially new,” and that application of the device to a new purpose will not make it patentable:

Now, I take it to be clear, that a machine, or apparatus, or other mechanical contrivance, in order to give the party a claim to a patent therefor, must in itself be substantially new. If it is old, and well known, and applied only to a new purpose, that does not make it patentable. . . . In short, the machine must be new, not merely the purpose to which it is applied. . . . In other words, the thing itself which is patented must be new, and not the mere application of it to a new purpose or object.²²¹

In one of his last opinions, issued in May of 1845, before his retirement from the bench and subsequent death in September of the same year,²²² Justice Story wrote, in *Allen v. Blunt*,²²³ that the testimony of those “practically engaged in the trade, employment or business of the particular branch of mechanics to which the patent right applies,” and that of “persons who, although not practical artisans, are thoroughly conversant with the subject of mechanics as a science,” can both be relied upon to assess patent validity.²²⁴ However, according to Justice Story, the specific purpose for which the testimony of each can be considered competent is different. He explained that there are two bases for challenging patent validity:

Two important points are necessary to support the claim to an invention: First, that it should be substantially new, as, for example, if it be a piece of mechanism, that it should be substantially new in its structure or mode of operation. Secondly, that the specification should express the mode of constructing, compounding and using the same in such full, clear and exact terms, “as to enable any person skilled in the art or science, to

220. *Bean v. Smallwood*, 2 F. Cas. 1142 (C.C.D. Mass. 1843) (No. 1,173).

221. *Id.* at 1143. Under the Patent Act of 1952, the patentability of new uses for known products is apparent from 35 U.S.C. § 100(b), which states “[t]he term process means process, art, or method, and includes a new use of a known process machine, manufacture, composition of matter, or material.” See also, DONALD S. CHISUM, 1 CHISUM ON PATENTS § 1.03[8][c] (noting that the suggestion that a new use for an old product might be patentable, does not occur until *Ansonia Brass & Copper Co. v. Elec. Supply*, 144 U.S. 11 (1892), and that the “better view is that this definition[, in 35 U.S.C. § 100(b),] reaffirmed the existing law on the patentability of new uses.”).

222. NEWMYER, *supra* note 164, at 381.

223. *Allen v. Blunt*, 1 F. Cas. 448 (C.C.D. Mass. 1845) (No. 216).

224. *Id.* at 450.

which it appertains, or with which it is most nearly connected, to make, construct, compound and use the same.”²²⁵

According to Justice Story, the second point, enablement, could be attested to by a “mere artisan, skilled in the art with which it is connected,”²²⁶ because “he can, from the description in the specification, so make, construct, compound and use the same,”²²⁷ and, therefore, his testimony “would be very cogent evidence of the sufficiency of the specification.”²²⁸ In contrast to a “mere artisan,” however, only a person “trained in the science to which it belonged, would, at a glance, [be able to] ascertain whether the mechanical apparatus or chemical compound was identical in its composition and structure or not, or whether the differences consisted in the mere change of one known mechanical equivalent for another.”²²⁹ Therefore, only a person “with a thorough knowledge of the scientific principles” on which a patented invention depended would be competent to testify whether that patented invention was “substantially new in its structure or mode of operation.”²³⁰ The underlying premise being that, as stated by Justice Story, “science alone would be able to answer the question whether or not a particular machine was substantially in its mode of operation new, or identical with another, although with apparent differences of form and structure, which might mislead the unscientific mind.”²³¹ Justice Story charged the jury with the distinction between these “classes of witnesses”:

I should, therefore, say to the jury that each of these classes of witnesses was important and competent for different purposes in causes respecting patents for inventions. But that the very highest witnesses to ascertain and verify the novelty of an invention, and the identity or diversity of mechanical apparatus and contrivances, and equivalents, were, beyond all question, all other circumstances being equal, scientific mechanics; that they were far the most important and most useful to guide the judgment, and to enable the

225. *Id.* (quoting the Patent Act of 1836, ch. 357, at § 6, 5 Stat. 117, 119 (1836) (repealed 1870).

226. *Id.*

227. *Id.*

228. *Id.*

229. *Id.*

230. *Id.*

231. *Id.*

jury to draw a safe conclusion, whether the modes of operation were new or old, or were identical or diverse.²³²

IV. NINETY YEARS OF SOLITUDE

A. *Hotchkiss v. Greenwood*

As a prelude to *Hotchkiss v. Greenwood*,²³³ it is interesting to note that Justices Nelson and Woodbury, who would respectively write the majority and dissenting opinions of *Hotchkiss*, wrote opinions while on circuit in 1846 directed to infringement and substantial novelty of patented inventions. In particular, Justice Nelson, in *Blanchard's Gun-Stock Turning Factory v. Warner*,²³⁴ denied a new trial to the defendants because they had not met their burden of showing that any difference in the accused infringing device was anything more than a “merely formal alteration”²³⁵ or “mechanical contrivance, making no substantial change in the machine,”²³⁶ and had failed to convince the jury that any “departure in the defendants’ machine . . . constituted a material variation from the plaintiff’s arrangement.”²³⁷ Justice Woodbury, in *Hovey v. Henry*,²³⁸ stated that, in a challenge to the validity of the plaintiff’s patent, the defendant must not only

show that each part or element of the combination had been known and used before; but that all the parts had been known and used in the present combination, and it was not a new invention, if all the parts in a combination had been applied to a different object before, and they were now only applied to a new object.²³⁹

In *Hovey v. Stevens*,²⁴⁰ Justice Woodbury asserted that, because it would appear to be a “very obvious change to any mechanic . . . to alter the means of attaching a cylinder with several knives in it to the stock, so as to attach it with a single knife or cutter in it,” he should like to hear more evidence from mechanics and experts, whether such a change merely in its fastening is a change in principle, or is

232. *Id.*

233. *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248 (1850).

234. *Blanchard's Gun-Stock Turning Factory v. Warner*, 3 F. Cas. 653 (C.C.D. Conn. 1846) (No. 1,521).

235. *Id.* at 658-59.

236. *Id.*

237. *Id.*

238. *Hovey v. Henry*, 12 F. Cas. 603 (C.C.D. Mass. 1846) (No. 6,742).

239. *Id.* at 603-04.

240. *Hovey v. Stevens*, 12 F. Cas. 609 (C.C.D. Mass. 1846) (No. 6,745).

anything which is new in principle; or whether one mode is not a mere equivalent for the other, so as to fix one knife instead of several in one cylinder or flange on a cylinder.²⁴¹

Neither Justices Nelson nor Woodbury suggested any departure from Justice Story's expressed opinions regarding new application of principle or new mode of operation as a criterion for patentability. The question of an "obvious change" was only raised by Justice Woodbury, and only with respect to his desire to hear "more evidence" from mechanics and experts as to whether there was anything "new in principle."²⁴²

Hotchkiss v. Greenwood,²⁴³ is widely acclaimed to be the seminal case of obviousness as a judicial, and later statutory, threshold for patentability, whereby a "degree of inventive skill and ingenuity" replaced "inventive principle" as a condition of patentability.²⁴⁴ The case centered on a patent for a "new and useful improvement in making door and other knobs, of all kinds of clay used in pottery, and of porcelain."²⁴⁵ The method included pouring metal into a dovetail-shaped cavity, the largest dimension of which was at the bottom of the cavity.²⁴⁶ The plaintiffs in this infringement suit argued that the court below erred by "[taking it] upon themselves to determine in the negative the question whether 'it required skill and thought and invention to attach the knob of clay to the metal shank and spindle, so they would unite firmly, and make a solid, substantial article of manufacture' instead of submitting it to the jury."²⁴⁷ The plaintiffs also argued that the court erred by excluding from the instructions the question of "whether a knob of clay or porcelain thus attached to the metallic shank and spindle were an article better and cheaper than the knob theretofore manufactured of metal or other materials."²⁴⁸

The defendants argued that the patent was limited to "manufacturing knobs of clay in the particular manner specified, so

241. *Id.* at 610, 612.

242. *Id.* at 612.

243. *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248 (1850).

244. See, e.g., John F. Duffy, *Inventing Invention A Case Study of Legal Innovation*, 86 TEX. L. REV. 1, 39 (2007) ("*Hotchkiss v. Greenwood*, the Supreme Court's first major opinion in this area, replaced the early requirement of inventive principle with a more general doctrine that demanded a sufficient 'degree of skill and ingenuity' as a condition for patentability." (quoting *Hotchkiss*, 52 U.S. at 267)).

245. *Hotchkiss*, 52 U.S. at 264.

246. *Id.* at 258.

247. *Id.* at 254.

248. *Id.*

that, when manufactured they shall be held to the shank by force of the dovetail.”²⁴⁹ Further, they argued that “knobs for doorhandles and for locks had been previously patented to a person in Middletown [Connecticut], which were made and fastened in the same identical way as the ones described in the plaintiffs’ specification,”²⁵⁰ but for the fact that the earlier knobs were metallic rather than clay.²⁵¹ Therefore, the question devolved to one of whether substitution of metallic knobs for those of clay was patentable. The defendants were careful to place the question before the court in the context of whether the invention was a “new mode” and admitted that, if it were, the patentees would, in fact, be entitled to their patent:

If in the present case the patentees had invented an improvement in the mode of fastening the knobs to the handles, or if they had invented a new mode of making knobs out of clay or other materials, their patent might have been sustained; but we maintain they cannot obtain a patent for a new use, or double use, of the article of clay, any more than they could sustain a patent for a new use of an old machine.²⁵²

As we have seen, it was accepted at that time, as previously stated by Justice Story, that application of a known machine to a new workpiece was not patentable.²⁵³ Using an example from *Boulton v. Bull*,²⁵⁴ the defendants asserted that discovery that a known “fever-powder” was a “specific cure for a consumption, if given in particular quantities,” would not entitle the discoverer to a patent for the use of the known fever-powder for that use.²⁵⁵ The defendants argued that, similarly, in this case, the plaintiff was “claiming the right to apply a common element of nature to a new purpose, without the aid of any new mode or process of working it, and without combining it with any other portions of matter so as to make it a composition.”²⁵⁶ As summarized by the defendants:

We claim, therefore, that this patent cannot be sustained as a patent for the exclusive privilege of using clay for the manufacture of

249. *Id.* at 258.

250. *Id.*

251. Justice Nelson summarized: “[I]n other words, the novelty consisted in the substitution of a clay knob in the place of one made of metal or wood, as the case might be.” *Id.* at 265.

252. *Id.* at 261.

253. *See supra* note 221 and accompanying text.

254. *Boulton v. Bull*, (1795) 126 Eng. Rep. 651 (K.B.).

255. *Hotchkiss*, 52 U.S. at 261-62.

256. *Id.* at 260.

knobs, instead of brass, silver, or metallic compositions. That such a claim does not rise to the dignity of an invention or discovery, but is a mere substitution of one material in place of another, for making the same common article. There is no change proposed in the manner of working the clay, no improvement in machinery used to produce the result, and no new result is obtained; the same identical knobs are produced and applied in the same way; the only change is in the material used, and we suppose that a mere change of one material for another cannot be the subject of a patent.²⁵⁷

Each of the three bases that the defendant used to conclude their argument made reference to a “mode” of invention:

We claim, therefore, in conclusion, that this patent is void,—

1st. Because it claims in its specification to have invented the mode of fastening the knob to the handle, which the verdict of the jury has shown to be untrue, and therefore the claim is larger than the invention.

2d. Because the patent for the substitution of one material for another, without any combination, or any new mode or process of manufacturing the article, cannot be sustained.

3d. Because no patent for the manufacture of an article can be sustained, unless the particular mode of manufacturing the article is specified and is new, and the difference between the old and new mode of manufacturing is pointed out.²⁵⁸

Justice Nelson, without reference to “principle” or “mode” of operation, categorically denied substitution of materials as a basis for patentability:

The improvement consists in the superiority of the material, and which is not new, over that previously employed in making the knob.

But this, of itself, can never be the subject of a patent. No one will pretend that a machine, made, in whole or in part, of materials better adapted to the purpose for which it is used than the materials of which the old one is constructed, and for that reason better and cheaper, can be distinguished from the old one; or, in the sense of the patent law, can entitle the manufacturer to a patent.

The difference is formal, and destitute of ingenuity or invention. It may afford evidence of judgment and skill in the selection and

257. *Id.* at 262.

258. *Id.* at 263.

adaptation of the materials in the manufacture of the instrument for the purposes intended, but nothing more.²⁵⁹

Rather, “invention” was held to depend upon “ingenuity and skill” beyond that of the “ordinary” or “skillful” mechanic:

[U]nless more ingenuity and skill in applying the old method of fastening the shank and knob were required in the application of it to the clay or porcelain knob than were possessed by an ordinary mechanic acquainted with the business, there was an absence of that degree of skill and ingenuity which constitute essential elements of every invention. In other words, the improvement is the work of a skilful mechanic, not that of the inventor.²⁶⁰

In essence, Justice Nelson turned Justice Story’s analysis in *Allen v. Blunt* on its head by converting the level of skill of the “ordinary mechanic” or “mere artisan” from evidence of enablement into a test for patentable distinction. Even so, the Supreme Court did not explicitly repudiate or overrule substantial novelty as a test for patentability and held in favor of the defendants who explicitly argued invalidity of the patent on the basis that, neither in the composition of the components, in their combination, nor in the method of manufacture of the article, was there any new mode of operation.²⁶¹

B. *Hotchkiss’ Immediate Legacy*

The question of whether the Supreme Court in *Hotchkiss* intended to lay the foundation for a new doctrine in patent law should be viewed in light of subsequent opinions, written shortly after *Hotchkiss*. Courts often rely upon *LeRoy v. Tatham*²⁶² and *O’Reilly v. Morse*²⁶³ to establish the threshold of patentable subject matter under 35 U.S.C. § 101.²⁶⁴ However, the Court in the majority opinions of both cases, continued to base patentability on new application of principle, just as in cases prior to *Hotchkiss*. The only issue dividing the majority and dissenting opinions in these cases was the scope of protection to be afforded.

259. *Id.* at 266.

260. *Id.* at 267.

261. *Id.* at 270 (Woodbury, J., dissenting). (Justice Woodbury, in his dissenting opinion, made reference to “mode” only as an application of “earth,” “mechanical power,” or “principle,” whether new or old, to a “new object,” and as to whether an improvement was obtained).

262. *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 177 (1852) [hereinafter *Le Roy I*].

263. *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 120 (1853).

264. *See, e.g.*, *Gottschalk v. Benson*, 409 U.S. 63 (1972); *Parker v. Flook*, 437 U.S. 584 (1978); *Diamond v. Chakrabarty*, 447 U.S. 303 (1980); *Diamond v. Diehr*, 450 U.S. 175 (1981); *Lab. Corp of Am. v. Metabolite Labs., Inc.*, 548 U.S. 124 (2006).

For example, in *Le Roy v. Tatham*,²⁶⁵ decided two years after *Hotchkiss*, the Supreme Court reversed and remanded a verdict of infringement by a jury in the Circuit Court for the Southern District of New York because the lower court judge in that case had erroneously charged the jury, as paraphrased by Justice McLean in his majority opinion, “that the novelty of the combination of the machinery, specifically claimed by the patentees as their invention, was not a material fact for the jury.”²⁶⁶

The plaintiffs’ claimed invention was stated in the specification to be as follows:

We do not claim as our invention and improvement, any of the parts of the above-described machinery, independently of its arrangement and combination above set forth. What we do claim as our invention, and desire to secure, is, the combination of the following parts above described, to wit: the core and bridge, or guide-piece, with the cylinder, the piston, the chamber and the die, when used to form pipes of metal, under heat and pressure, in the manner set forth, or in any other manner substantially the same.²⁶⁷

The lower court responded to an objection by the defendant that the patent was invalid for “want of originality” by stating that “the originality did not consist in the novelty of the machinery, but in bringing a newly discovered principle into practical application”²⁶⁸ As in *Hotchkiss*, the Supreme Court did not repudiate application of principle as a basis for patentability. To the contrary, as had been done in essentially all cases directed to the subject prior to *Hotchkiss*, a distinction was made between patentability of a “principle” in the abstract, and its practical application:

The word *principle* is used by elementary writers on patent subjects, and sometimes in adjudications of courts, with such a want of precision in its application, as to mislead. It is admitted, that a principle is not patentable. A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right. . . .

265. *Le Roy I*, 55 U.S. at 177.

266. *Id.* at 177.

267. *Id.* at 172.

268. *Id.* at 174.

. . . In all such cases, the processes used to extract, modify, and concentrate natural agencies, constitute the invention.²⁶⁹

An English case, *Househill Co. v. Neilson*,²⁷⁰ was quoted by the majority as support for the distinction between a broad principle and its application for the purpose of patentability:

It is said, in the case of the *Househill Co. v. Neilson* . . . “A patent will be good, though the subject of the patent consists in the discovery of a great, general and most comprehensive principle in science or law of nature, if that principle is by the specification applied to any special purpose, so as to thereby effectuate a practical result and benefit not previously attained.”²⁷¹

The Court then applied this reasoning to the patentees’ known combination of elements and held that “[t]he patentees claimed the combination of the machinery as their invention in part, and no such claim can be sustained without establishing its novelty . . .”²⁷² The Court quoted from Justice Story’s opinion in *Bean v. Smallwood*: “[A] machine, or apparatus, or other mechanical contrivance, in order to give the party a claim to a patent therefor[e], must in itself be substantially new. If it is old and well-known, and applied only to a new purpose, that does not make it patentable.”²⁷³

Justice Nelson, who wrote the majority opinion in *Hotchkiss*, dissented on the basis that although the “patentees have certainly been unfortunate in the language of the specification,”²⁷⁴ they have, in essence, “claim[ed] the combination of the machinery, only when used to form pipes under heat and pressure, in the manner set forth, or in any other manner substantially the same.”²⁷⁵ The patentees’ invention was based on the discovery that “lead, when recently set and solid, but still under heat and extreme pressure, in a close vessel, would reunite after a separation of its parts, and ‘heal’ (in the language of the patentees) ‘as it were by the first invention,’ as completely as though it had not been divided.”²⁷⁶ Using their discovery, the patentees modified the prior art apparatus, patented by

269. *Id.* at 174-75.

270. *Househill Co. v. Neilson*, 1 WEBS. PAT. CAS. 673, 683 (1844).

271. *Le Roy I*, 55 U.S. at 175 (quoting *Househill Co. v. Neilson*, 1 WEBS. PAT. CAS. 673, 683 (1844)).

272. *Le Roy I*, 55 U.S. at 177.

273. *Id.* (quoting *Bean v. Smallwood*, 2 F. Cas. 1142, 1143 (C.C.D. Mass. 1843) (No. 1,173)).

274. *Le Roy I*, 55 U.S. at 182 (Nelson, J., dissenting).

275. *Id.* at 180.

276. *Id.* at 178.

Burr, and were able by use of the modified apparatus to improve production.²⁷⁷ However, as stated by Justice Nelson, the patentees did not “intend to confine themselves to the arrangement of the apparatus thus particularly specified,”²⁷⁸ but, rather, believed they were entitled to any application of the principle employed to produce pipe having the “essential difference in its character, and which distinguishes it from all other theretofore known, . . . that it is wrought under heat, by pressure and constriction, from set or solid metal.”²⁷⁹ He summarized the claimed invention as an “embodiment or employment of the newly-discovered property in the metal”²⁸⁰ and its practical application:

I conclude, therefore, that the claim, in this case, is not simply for the apparatus employed by the patentees, but for the embodiment or employment of the newly-discovered property in the metal, and the practical adaptation of it, by these means, to the production of a new result, namely, the manufacture of wrought pipe out of solid lead.²⁸¹

The English case *Boulton v. Bull*, discussed above,²⁸² was relied upon by Justice Nelson to answer the question of whether the claim was the proper subject matter of a patent. Specifically, in response to the challenge in *Boulton* that “there was no new mechanical construction”²⁸³ and that “the validity of the patent was placed on the ground that it was for well-known principles,”²⁸⁴ Justice Nelson stated that, “Lord Chief Justice Eyre laid down the true doctrine, and which, I think, will be seen to be the admitted doctrine of the courts of England at this day,”²⁸⁵ whereby, as stated by the Lord Chief Justice Eyre, “there can be no patent for a mere principle; but for a principle,

277. Justice Nelson stated:

The patentees, by their discovery, were enabled to dispense with the long core of Burr, and to fix firmly a bridge or cross bars at the end of the cylinder near the die, to which bridge they fastened a short core extending into and through the die. By this arrangement they obtained a firm, immovable core, that always preserved its centrality with the die, and secured the manufacture of pipe of uniformity of thickness of wall and accuracy of bore, of any dimension.

Id. at 178-79.

278. *Id.* at 179.

279. *Id.*

280. *Id.* at 183.

281. *Id.*

282. See *supra* text accompanying note 123.

283. *Le Roy I*, 55 U.S. at 183 (Nelson, J., dissenting).

284. *Id.*

285. *Id.*

so far embodied and connected with corporeal substances as to be in a condition to act, and to produce effects in any art, trade, mystery or manual occupation, I think there may be a patent.”²⁸⁶ Justice Nelson further stated that, “[t]his doctrine, in expounding the law of patents, was announced in 1795, and the subsequent adoption of it by the English courts, shows that Chief Justice Eyre was considerably in advance of his associates upon this branch of the law.”²⁸⁷ According to Justice Nelson, the doctrine articulated by Lord Chief Justice Eyre and “recognized in several subsequent cases in England”²⁸⁸ is “settled”:

I shall not pursue a reference to the authorities on this subject any further. The settled doctrine to be deduced from them, I think, is, that a person having discovered the application for the first time of a well-known law of nature, or well-known property of matter, by means of which a new result in the arts or in manufactures is produced, and has pointed out a mode by which it is produced, is entitled to a patent; and, if he has not tied himself down in the specification to the particular mode described, he is entitled to be protected against all modes by which the same result is produced, by an application of the same law of nature or property of matter. And a fortiori, if he has discovered the law of nature or property of matter, and applied it, is he entitled to the patent, and aforesaid protection.²⁸⁹

Far from breaking from earlier case law in the United States paralleling the English doctrine of patentable novelty based on new application of a principle, Justice Nelson embraced the doctrine:

And why should not this be the law? The original conception—the novel idea in the one case, is the new application of the principle or property of matter, and the new product in the arts or manufactures—in the other, in the discovery of the principle or property, and application, with like result. The mode or means are but incidental, and flowing naturally from the original conception; and hence of inconsiderable merit. But, it is said, this is patenting a principle, or element of nature. The authorities to which I have referred, answer the objection. It was answered by Chief Justice Eyre, in the case of Watts’s patent in 1795, fifty-seven years ago;

286. *Id.* (quoting *Boulton v. Bull*, (1795) 126 Eng. Rep. 651, 667).

287. *Le Roy I*, 55 U.S. at 184 (Nelson, J., dissenting).

288. *Id.* at 185.

289. *Id.* at 186-87.

and more recently and in still more explicit and authoritative terms.²⁹⁰

Moreover, Justice Nelson equated patentability of new application of principle with application of “genius of the inventor.” The basis for the majority opinion in *Hotchkiss*, of skill and ingenuity as a basis for patentability, and earlier cases, which were founded upon “new application of a principle,” was considered by Justice Nelson to be one and the same doctrine:

And what if the principle is incorporated in the invention, and the inventor protected in the enjoyment for the fourteen years. He is protected only in the enjoyment of the application for the special purpose and object to which it has been newly applied by his genius and skill. . . .

I own, I am incapable of comprehending the detriment to the improvements in the country that may flow from this sort of protection to inventors.

To hold, in the case of inventions of this character, that the novelty must consist of the mode or means of the new application producing the new result, would be holding against the facts of the case, as no one can but see, that the original conception reaches far beyond these. It would be mistaking the skill of the mechanic for the genius of the inventor.²⁹¹

In the context of Justice Nelson’s dissenting opinion in *Le Roy*, the meaning of the majority opinion of *Hotchkiss*, which he also wrote, becomes clear; rather than being a substitution of new application of principle for skill beyond that of the “ordinary mechanic” as a test for invention, Justice Nelson equates them. In short, at least in view of Justice Nelson’s dissenting opinion in *Le Roy*, the doctrine of substantial novelty, or patentability consequent to new application of principle, is not supplanted by reference to skill beyond that of the ordinary mechanic, but reaffirmed by it.

O’Reilly v. Morse,²⁹² decided in 1854, went even further than *Le Roy* to explain patentable novelty, particularly of combinations of elements as embodiments of applied principle. In that case, the Court explicitly laid out that patentability is not precluded by the manner of discovery by which a mode of combined elements cooperates:

No invention can possibly be made, consisting of a combination of different elements of power, without a thorough knowledge of the

290. *Id.* at 187.

291. *Id.*

292. *O’Reilly v. Morse*, 56 U.S. (15 How.) 62 (1853).

properties of each of them, and the mode in which they operate on each other. And it can make no difference, in this respect, whether he derives his information from books, or from conversation with men skilled in the science. If it were otherwise, no patent, in which a combination of different elements is used, could ever be obtained. For no man ever made such an invention without having first obtained this information, unless it was discovered by some fortunate accident.²⁹³

However, the Court also concluded that, in this case, the inventor, Professor Samuel F.B. Morse, claimed more than that to which he was entitled, by asserting an exclusive right to any manner of remote communication by use of electric or galvanic current:

It is impossible to misunderstand the extent of this claim. He claims the exclusive right to every improvement where the mode of power is electric or galvanic current, and the result is the marking or printing intelligible characters, signs, or letters at a distance.

....

... 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 opinion that the claim is too broad, and not warranted by law.²⁹⁴

The Court relied on the English case of *Neilson v. Harford*,²⁹⁵ to explain the distinction between patentability of a combination of known elements and ineligibility of patent rights to a principle in the abstract:

We see nothing in this opinion differing in any degree from the familiar principles of law applicable to patent cases. Neilson claimed no particular mode of constructing the receptacle, or of heating it. . . . And hence it seems that the court at first doubted, whether it was a patent for anything more than the discovery that hot air would promote the ignition of fuel better than cold. And if this had been the construction, the court, it appears, would have held the patent to be void; because the discovery of a principle in natural philosophy or physical science, is not patentable.

....

293. *Id.* at 111.

294. *Id.* at 112-13.

295. *Neilson v. Harford*, (1841) 151 Eng. Rpt. 1266 (Exch. Div.)

Undoubtedly, the principle that hot air will promote the ignition of fuel better than cold, was embodied in this machine. But the patent was not supported because this principle was embodied in it. . . . But his patent was supported, because he had invented a mechanical apparatus, by which a current of hot air, instead of cold, could be thrown in.²⁹⁶

The Court also recited, with approval, its previous decision in *Le Roy* for the same reason:

We proceed to the American decisions. And the principles herein stated, were fully recognized by this court in the case of *Le Roy v. Tatham* and others, decided at the last term.

It appeared that, in that case, the patentee had discovered that lead, recently set, would, under heat and pressure in a close vessel, reunite perfectly after a separation of its parts, so as to make wrought instead of cast pipe. And the court held that he was not entitled to a patent for this newly-discovered principle or quality in lead; and that such a discovery was not patentable. But that he was entitled to a patent for the new process or method in the art of making lead pipe, which this discovery enabled him to invent and employ; and was bound to describe such a process or method, fully, in his specification.²⁹⁷

The Court specifically held against the idea that there had been any extension of the patent rights beyond those laid out in Neilson's patent:

Many cases have also been referred to, which were decided in the circuit Courts. It will be found, we think, upon careful examination, that all of them, previous to the decision on Nielson's [sic] patent, maintain the principles on which this decision is made. Since that case was reported, it is admitted, that decisions have been made, which would seem to extend patentable rights beyond the limits here marked out. As we have already said, we see nothing in that opinion, which would sanction the introduction of any new principle in the law of patents. But if it were otherwise, it would not justify this court in departing from what we consider as established principles in the American courts.²⁹⁸

Justice Grier dissented from the majority opinion, invalidating the broad claim to remote communication by electric or galvanic current because there was no reference to any "specific machinery or

296. *O'Reilly*, 56 U.S. at 115.

297. *Id.* at 117-18.

298. *Id.* at 118.

parts of machinery.”²⁹⁹ With reference to the provision of the constitution that “Congress shall have the power to promote the progress of science and useful arts, by securing for limited times to authors and inventors, the exclusive right to their respective writings and discoveries,”³⁰⁰ Justice Grier cited Curtis’ treatise on patents, which applied the term “art” to “those cases, where the application of a principle is the most important part of the invention, and where the machinery, apparatus or other means by which the principle is applied, are incidental only and not of the essence of the invention.”³⁰¹ Justice Grier stated that, where “a man may discover some new process, or new application of a known principle, element, or power of nature, to the advancement of the art . . . [he] will be entitled to a patent for the same, as ‘an improvement in the art,’” or, in the alternative, “he may invent a machine to perform a given function, and then he will be entitled to a patent only for his machine.”³⁰² And, although, “mere discovery of a new element, or law, or principle of nature, without any valuable application of it to the arts, is not the subject of a patent,”³⁰³ Justice Grier stated that “[w]hen a new and hitherto unknown product or result, beneficial to mankind, is effected by a new application of any element of nature, . . . it cannot be denied that such invention or discovery is entitled to the denomination of a ‘new and useful art.’”³⁰⁴ Justice Grier’s objection to the majority opinion was in the Court’s limiting Morse’s patent to a specific mechanical embodiment when the discovery was a new application of principle that constituted a “new and useful art,” which Justice Grier argued was entitled to patent protection. The result of failing to protect an inventor who had made an “improvement in the art by application of a new principle,” was, for Justice Grier, an annulment of the patent law:

A construction of the law which protects such an inventor, in nothing but the new invented machines or parts of machinery used in the exercise of his art, and refuses it to the exercise of the art itself, annuls the patent law. . . . To look at an art as nothing but a combination of machinery, and give it protection only as such,

299. *Id.* at 128-29 (Grier, J., dissenting).

300. U.S. CONST. art. I, § 8, cl. 8.

301. *O’Reilly*, 56 U.S. at 130 (Grier, J., dissenting) (quoting GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS IN THE UNITED STATES OF AMERICA § 90 (2d ed. 1854)).

302. *O’Reilly*, 56 U.S. at 131.

303. *Id.* at 132.

304. *Id.* at 133.

against the use of the same or similar devices or mechanical equivalents, is to refuse it protection as an art. It ignores the distinction between an art and a machine; it overlooks the clear letter and spirit of the statute; and leads to inextricable difficulties. It is viewing a statue or a monument through a microscope.³⁰⁵

Justice Grier was in agreement with Justices Nelson and McLean in their approval in *Le Roy*³⁰⁶ of *Househill v. Neilson*:³⁰⁷

I do not intend to review the English cases which adopt the principle for which I now contend, notwithstanding their narrow statute; but would refer to the opinion of my brother Nelson; and will add, that Mr. Justice McLean, in delivering the opinion of the court in that case, quotes with approbation the language of Lord Justice Clerke, in the Neilson case, which is precisely applicable to the question before us. He says: "The specification does not claim anything as to form, nature, shape, materials, numbers, or mathematical character of the vessel or vessels in which the air is to be heated, or as to the mode of heating such vessels." Yet this patent was sustained as for a new application of a known element; or, to use correct language, as an improvement in the art of smelting iron, without any regard to the machinery or parts of machinery used in the application. Such I believe to be the established doctrine of the English courts.³⁰⁸

In 1860, the Supreme Court again heard *Le Roy v. Tatham*.³⁰⁹ The Court reversed its earlier decision, and held that patentability in a process could be found, despite lack of novelty in the machinery employed in its application, to obtain new results:

If it be admitted that the machinery, or a part of it, was not new when used to produce the new product, still it was so combined and modified as to produce new results, within the patent law. One new and operative agency in the production of the desired results would give novelty to the entire combination.³¹⁰

Further, as applied to the facts of the case, where "it must be observed that the machinery used was admitted to be old, and any difference in form and strength must arise from the mode of manufacturing the pipes,"³¹¹ the Court agreed that there was "invention" in "bringing a

305. *Id.*

306. *Le Roy v. Tatham*, 55 U.S. (14 How.) 156 (1852).

307. *Househill Co. v. Neilson*, 1 WEBS. PAT. CAS. 673, 683 (1844).

308. *O'Reilly*, 56 U.S. at 132 (Grier, J., dissenting) (citation omitted).

309. *Le Roy v. Tatham*, 63 U.S. (22 How.) 132 (1859) [hereinafter *LeRoy II*].

310. *Id.* at 139.

311. *Id.* at 138.

newly-discovered principle into practical effect,”³¹² regardless of “[w]hether the new manufacture was the result of frequent experiments or of accident,” so long as the process has been demonstrated to the satisfaction of all observers.³¹³ The Court upheld the patent on this basis. “It is rare that so clear and satisfactory an explanation is given to machinery which performs the important functions above specified. We are satisfied that the patent is sustainable, and that the complainants are entitled to the relief claimed by them.”³¹⁴ Interestingly, there is no mention of *Hotchkiss* in *Le Roy I*, *O’Reilly* or *Le Roy II*, despite the fact that the patent was compared to earlier methods known in the art,³¹⁵ new application of principle, supported by sufficient explanation, was sufficient to support patentability.

The Patent Act of 1870³¹⁶ replaced section 6 of the Patent Act of 1836³¹⁷ requiring that an inventor “fully explain the principle and the several modes in which he has contemplated the application of that principle or character by which it may be distinguished from other inventions,”³¹⁸ with language in section 26 of the new Act that “he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle so as to distinguish it from other inventions.”³¹⁹ The change thereby, in essence, maintained the statutory language requiring explanation of a distinguishing “principle” of the invention. In an early case under the new statute,

312. *Id.* at 139.

313. *Id.*

314. *Id.* at 141.

315. Justice McLean in *Le Roy II* summarized the prior art in comparison to the subject, Hanson, patent as follows:

Up to the year 1837, the date of Hanson’s invention, two methods only were known of making wrought pipe from lead, in the set or solid state, and these were the Burr method and the draw-bench method. As soon as the plan of the Hansons was introduced, they superseded all other methods.

Both of the above methods were defective – the draw-bench on account of the great labor, limited length of pipe produced, and unequal thickness; and the Burr, because of the difficulty of holding the core central in the die, in forming pipes of small calib[er].

The superiority of the Burr method, for the general purposes of manufacturing leaden pipes which requires different sizes to be made, was so slight, as it seems, that for seventeen years after the date of the Burr patent, not one of such machines was put in use in the United States or in Europe.

Id. at 140.

316. Patent Act of 1870, ch. 230, 16 Stat. 198-217 (repealed 1952).

317. Patent Act of 1836, ch. 357, 5 Stat. 117 (repealed 1870).

318. Patent Act of 1836 § 6.

319. Patent Act of 1870 § 26.

Hicks v. Kelsey,³²⁰ the Supreme Court relied on *Hotchkiss* to hold that substitution of a “curve of iron instead of wood and iron,” where the purpose, the means of accomplishing the purpose, and the “form of the reach and mode of operation” are the same, was “void for want of novelty in the alleged invention.”³²¹ There was no indication by the Court that *Hotchkiss* represented any fundamental break with earlier decisions addressing patentability, or, more specifically, that *Hotchkiss* added any new requirement beyond that of novelty. To the contrary, the Court asserted that “[c]ases have frequently arisen in which substantially the question now presented has been discussed,” and recited *Hotchkiss* only because “none can be cited more directly in point.”³²²

On the same day that *Hicks* was decided, the Supreme Court, in *Hailes v. Van Wormer*,³²³ held a new combination to be patentable if it provides new and useful results, even where “all the constituents of the combination were well known and in common use before the combination was made,” although the “results must be a product of the combination, and not a mere aggregate of several results each the complete product of one of the combined elements.”³²⁴ In this case, the patentee claimed a stove that combined a “self-feeding” feature with a “revertible draft” component, each of which operated independently of the other.³²⁵ The Court stated that “[m]erely bringing old devices into juxtaposition, and there allowing each to work out its own effect without the production of something novel, is not invention.”³²⁶ In other words, there must be production of a “new and useful result the joint product of the elements of the combination and

320. *Hicks v. Kelsey*, 85 U.S. (18 Wall.) 670 (1873).

321. Justice Bradley stated:

The question is whether the mere change of material—making the curve of iron instead of wood and iron—was a sufficient change to constitute invention; the purpose being the same, the means of accomplishing it being the same, and the form of the reach and mode of operation being the same.

In our judgment, the patent in this case is void for want of novelty in the alleged invention.

Id. at 673-74.

322. *Id.* at 674 (“Cases have frequently arisen in which substantially the question now presented has been discussed. Perhaps, however, none can be cited more directly in point than that of *Hotchkiss v. Greenwood* . . .”).

323. *Hailes v. Van Wormer*, 87 U.S. (20 Wall.) 353 (1873).

324. *Id.* at 368.

325. *Id.* at 367-68.

326. *Id.* at 368.

something more than an aggregate of old results.”³²⁷ *Hotchkiss* was not mentioned by the Court.

In May of 1874, the Supreme Court decided the *Corn-Planter Patent; Brown v. Guild, Same v. Selby*,³²⁸ in which several patents that issued consequent to reissue of each of two original patents were separately either sustained or held invalid. Of the ten new patents, five from each of the two patents surrendered during reissue, the validity of four of the patents from the first and one patent from the second of the surrendered patents were upheld or not considered by the Court. The remaining reissued patents, 1037 and 1091 through 1094, all were held invalid as embodying only minor changes from the prior art, and without reference to *Hotchkiss*.³²⁹

In dissent, Justice Clifford invoked the statutory requirement that the inventor, “in the case of a machine . . . must explain the principle thereof, . . . so as to distinguish it from other inventions,”³³⁰ and asserted that, although “a new and useful combination consisting of old ingredients may be the proper subject of letters-patent if the combination produces a new and useful result, . . . the act of Congress does not authorize the patentee to surrender such a patent and to

327. *Id.*

328. *Corn-Planter Patent; Brown v. Guild, Same v. Selby*, 90 U.S. (23 Wall.) 181 (1874).

329. *Id.* at 217-32. (“There is nothing in the particular form and shape of the appellants’ runner [of reissue 1037] which is sufficiently diverse from others that preceded it, to entitle it to the merit of an invention. . . . The device was not altered by Brown substantially, in form, operation, or purpose It seems to us that it was simply the application of an old device to a new use. We are of opinion, therefore, that reissue 1091 is void. . . . After careful consideration of this claim [of reissue 1092], we are brought to the conclusion that the subject of it is not patentable [I]t can hardly be contended that the proper location of the seat for effecting the same object [as that of prior inventions], required the exercise of inventive power. . . . But thus modified, [reissue 1093] would substantially correspond with reissue 1038, being simply for a mode of doing that . . . , employing only in addition the mode of operation used by Kirkham. In other respects the two combinations would be precisely the same. We are of opinion, therefore, that this patent cannot be sustained. . . . The next patent, reissue 1094, is for a matter too frivolous to form the subject of invention. No mechanic of any skill would construct a machine of the character described without providing some such arrangement. This patent is not sustained.”).

330. Justice Clifford stated:

Applicants for a patent are required to file in the Patent Office a written description of their invention and of the manner and process of making, constructing, and using the same . . . and in the case of a machine he must explain the principle thereof and the best mode in which he has contemplated applying that principle, so as to distinguish it from other inventions. Patents granted without a compliance with those conditions are invalid, as the express requirement of the act of Congress is that every inventor or discoverer shall do so, *before* he shall receive a patent for his invention or discovery.

Id. at 235-36 (Clifford, J., dissenting).

reissue the same for the separate ingredients”³³¹ Justice Clifford explained that “[v]alid patents may be granted for a new combination of old ingredients, provided it appears that the new combination produces a new and useful result, but the invention in such a case consists entirely in the new combination”³³² The reasons that Congress limited each combination of components to a single patent were, according to Justice Clifford, “for the plain reason that the ingredients are old, and for the additional reason that a patent for a separate ingredient is not the same as the combination of several ingredients.”³³³ At least for Justice Clifford, then, patentability of a combination of known components to produce a new and useful result was founded upon an application of principle that was distinct from other inventions. As in the majority opinion, there was no mention of *Hotchkiss*.

In 1875, the Supreme Court, in *Collar Co. v. Van Dusen*³³⁴ denied validity of a reissued patent directed to an improvement in paper shirt collars and cited *Hotchkiss* for support:

Nothing short of invention or discovery will support a patent for a manufacture any more than for an art, machine, or composition of matter, for which proposition there is abundant authority in the decisions of this court.³³⁵

The Court, however, then went on to reaffirm “principle in a machine” as the basis of “invention” that is the property of its discoverer:

Where a person has discovered a new and useful *principle* in a machine, manufacture, or composition of matter, he may employ other persons to assist in carrying out that *principle*, and if they, in the course of experiments arising from that employment, make discoveries ancillary to the plan and preconceived design of the employer, such suggested improvements are in general to be regarded as the property of the party who discovered the original *principle*, and they may be embodied in his patent as part of his invention.³³⁶

331. *Id.* at 238-39.

332. *Id.* at 244.

333. *Id.* at 239.

334. *Collar Co. v. Van Dusen*, 90 U.S. (23 Wall.) 530 (1874).

335. *Id.* at 563.

336. *Id.* at 563-64 (emphasis added).

Later that same year, in *Brown v. Piper*,³³⁷ the Court again held that new application by a patentee of an old process “without any exercise of inventive faculty” cannot “be deemed new or original in the sense of the patent law.”³³⁸ The Court held that this was “fatal to the patent,”³³⁹ and relied on *Hotchkiss*, as well as several cases that preceded it, including *Howe v. Abbott*³⁴⁰ and *Bean v. Smallwood*,³⁴¹ both decided by Justice Story.³⁴²

*Reckendorfer v. Faber*³⁴³ decided the patentability of a pencil “composed of a wooden sheath and lead core, having one end of the sheath enlarged and recessed to constitute a receptacle for an eraser, or other similar article . . .”³⁴⁴ As a preliminary matter, the Court addressed a challenge by the plaintiff to the capacity of the courts to examine decisions by the Commissioner for Patents. The Court summarized six of the “most recent cases” decided by the Supreme Court relating to patents, of which *Hotchkiss* was the first listed, and held in the affirmative, namely, that “the validity of the patent is subject to an examination by the courts.”³⁴⁵ Notably, the Court did not assert *Hotchkiss* to be the first case to represent any patent law doctrine; but rather only for the proposition that mere substitution to obtain a “cheaper” or “better” result was “not the subject of the patent.”³⁴⁶

The Court then decided the patentability of the claimed pencil and held that the “combination, to be patentable, must produce a different force or effect, or result in the combined forces or processes, from that given by their separate parts. There must be a new result

337. *Brown v. Piper*, 91 U.S. 37 (1875).

338. *Id.* at 41.

339. *Id.*

340. *Howe v. Abbott*, 12 F. Cas. 656 (C.C.D. Mass. 1842).

341. *Bean v. Smallwood*, 2 F. Cas. 1142 (C.C.D. Mass. 1843).

342. *Brown*, 91 U.S. at 41.

343. *Reckendorfer v. Faber*, 92 U.S. 347 (1876).

344. *Id.* at 349.

345. *Id.* at 354-55 (Justice Hunt stated: “Upon the proposition that the decision of the commissioner on the question of invention, its utility and importance, is conclusive, and that the same is not open to examination in the courts, we are unanimously of the opinion that the proposition is unsound. His decision in the allowance and issue of a patent creates a prima facie right only; and, upon all the questions involved therein, the validity of the patent is subject to an examination by the courts.”).

346. *Id.* at 352 (Justice Hunt summarized *Hotchkiss* as follows, in part: “The precise question argued in this court [in *Hotchkiss*] and decided was of the patentability of this invention, and it was held not to be patentable. The only thing claimed as new was the substitution of a knob made of clay or porcelain for one made of wood. This, it was said, might be cheaper or better; but it was not the subject of a patent.”).

produced by their union: if not so, it is only an aggregation of separate elements.”³⁴⁷ The patents in suit were held to claim only aggregations and, therefore, were not valid because there was no difference in principle:

In the case we are considering, the parts claimed to make a combination are distinct and disconnected. Not only is there no new result, but no joint operation The *principle* is the same in both instances This, however, is not invention within the patent law, as the authorities cited fully show.³⁴⁸

In *Dunbar v. Myers*,³⁴⁹ decided later in the same year as *Reckendorfer*, the Court cited *Hotchkiss* for the following proposition:

Invention or discovery is the requirement which constitutes the foundation of the right to obtain a patent; and it was decided by this court more than a quarter of a century ago, that unless more ingenuity and skill were required in making or applying the said improvement than are possessed by an ordinary mechanic acquainted with the business, there is absence of that degree of skill and ingenuity which constitutes the essential elements of every invention.³⁵⁰

This assertion was essentially a restatement of the language in *Hotchkiss*, and like the Court in *Hotchkiss*, did not disavow case law before or since *Hotchkiss* that based “invention” on a new application of principle. Moreover, the following reasoning in *Dunbar* seems to track Justice Story’s view in *Allen v. Blunt* that expert testimony is to be relied upon to identify some new application of principle as a basis for patentability:

Nor is any argument necessary to show that the employment of one deflecting plate covering the upper part of the stiffening plate on the same side of the circular saw is old

Concede that, and still it is insisted by the complainants that they employ or use two deflecting plates, one placed on each side of the saw

. . . .

Expert witnesses were examined upon the point . . . and one of the most intelligent and learned of his class testified . . . that it required no invention to apply a second plate in such a case to

347. *Id.* at 357.

348. *Id.* at 357-58 (emphasis added).

349. *Dunbar v. Myers*, 94 U.S. 187 (1876).

350. *Id.* at 197.

perform exactly the same duty as the one previously applied on the opposite side of the saw.³⁵¹

The Supreme Court in *Smith v. Goodyear Dental Vulcanite Co.*,³⁵² also made reference to *Hotchkiss*, but only narrowly, as in *Reckendorfer*. The patent at issue in *Smith* was directed to a method developed by a Dr. John A. Cummings, a dentist in Boston, of forming and setting plates of teeth employing “rubber, or some other elastic substance, so compounded with sulfur, lead, and other similar substances as to form a hard gum, or whalebone gum, rigid enough for the purposes of mastication, and pliable enough to yield a little to the mouth.”³⁵³ The Court held that the patent was valid, despite the argument that the material employed to bond the plate was a “mere substitution” and, therefore, void in view of *Hotchkiss*.³⁵⁴ Specifically, with respect to *Hotchkiss*, the Court stated:

The improvement [in *Hotchkiss*], therefore, was nothing more than the substitution of one material for another in constructing an article. The clay or porcelain door-knob had no properties of functions which other door-knobs made of different materials had not. It was cheaper, and perhaps more durable; but it could be applied to no new use, and it remedied no defects which existed in other knobs. Hence it was ruled that the alleged improvement was not a patentable invention. The case does decide that employing one known material in place of another is not an invention, if the result be only greater cheapness and durability of the product. *But this is all*. It does not decide that no use of one material in lieu of another in the formation of a material manufacture can, in any case, amount to invention, or be the subject of a patent. If such a substitution involves a new mode of construction, or develops new uses and properties of the article formed, it may amount to invention.³⁵⁵

The Court then relied on *Hicks*,³⁵⁶ which also cited *Hotchkiss*,³⁵⁷ to positively assert patentability where “there is some such new and

351. *Id.* at 194-96.

352. *Smith v. Goodyear Dental Vulcanite Co.*, 93 U.S. 486 (1876).

353. *Id.* at 490.

354. *Id.* at 492 (Justice Strong stated: “Among these the one perhaps most earnestly urged is the averment that the device described in the specification was not a patentable invention, but that it was a mere substitution of vulcanite for other materials If this is in truth all that the thing described and patented was, . . . it may be conceded that it constituted no invention. So much is decided in *Hotchkiss v. Greenwood*. But such is not our understanding of the device described and claimed.”).

355. *Id.* at 496 (emphasis added).

356. *Hicks v. Kelsey*, 85 U.S. (18 Wall.) 670 (1873).

useful result, where a machine has acquired new functions and useful properties, . . . though the only change made in the machine has been supplanting one of its materials by another.”³⁵⁸ Dr. Cummings’ method of forming and setting dental plates was stated by the Court, without further reliance on *Hotchkiss*, to be based on improvements that were “too many and too great to be ascribed to mere mechanical skill,” and, therefore, “may justly be regarded as the results of inventive effort, and as making the manufacture of which they are attributes a novel thing in kind, and consequently patentable as such.”³⁵⁹ Hand-in-glove with this conclusion was the assertion that nothing in the art was suggestive of the patented invention and that, therefore, Cummings’ claimed subject matter was novel:

We need go no farther into a consideration of the various devices and publications offered to show that the manufacture patented was known before Cummings invented it. Suffice it to say, that none of them, in our opinion, suggest or exhibit in substance such a manufacture. The defen[s]e of want of novelty is, therefore, not sustained.³⁶⁰

In *Pearce v. Mulford*,³⁶¹ the Supreme Court explicitly equated, under the test of “invention,” exercise of “ordinary mechanical skill” and “what is obvious to a person skilled in the art to which it relates”:

We cannot think the advance which the patentee made upon that can be called invention. . . . It is nothing more than the exercise of ordinary mechanical skill. . . . But all improvement is not invention, and entitled to protection as such. Thus to entitle it, it must be the product of some exercise of the inventive faculties, and it must involve something more than what is obvious to persons skilled in the art to which it relates.³⁶²

357. *Id.* at 674.

358. *Smith v. Goodyear Dental Vulcanite Co.*, 93 U.S. 486, 496-97 (1876) (As stated by the Court: “This was intimated very clearly in the case of *Hicks v. Kelsey*, where it was said, ‘The use of one material instead of another in constructing a known machine is, in most cases, so obviously a matter of mere mechanical judgment, and not of invention, that it cannot be called an invention, unless some new and useful result, as increase of efficiency, or a decided saving in the operation, be obtained.’ But where there is some such new and useful result, where a machine has acquired new functions and useful properties, it may be patentable as an invention, though the only change made in the machine has been supplanting one of its materials by another. This is true of all combinations, whether they be of materials or processes.”).

359. *Id.* at 497.

360. *Id.* at 499.

361. *Pearce v. Mulford*, 102 U.S. 112 (1880).

362. *Id.* at 117-18.

There is in this holding by the Supreme Court no assessment of whether there has been any “new application of principle” or new mode of invention. The patent in *Pearce* was held void for lack of “invention,” or “patentability,” wholly apart from the statutory requirement of novelty.³⁶³ Strikingly, however, there is no mention of *Hotchkiss* anywhere in *Pearce* by the appellants, the appellees, or the Court.

After *Pearce*, “principle” and “mode of invention” are often given only occasional reference. For example, in *Pickering v. McCullough*,³⁶⁴ the Supreme Court invalidated a patent directed to manufacture of crucibles in a plaster mould as a combination of old elements, in which “no one of them gives any additional efficiency to the others, or changes in any way the mode or result of its action.”³⁶⁵ With respect to the prior art, the Court found that “[i]n the case of this apparatus the mould was known, and a rib or former was known,”³⁶⁶ the difference lying in substitution of a rib.³⁶⁷

In *Heald v. Rice*,³⁶⁸ on the other hand, the Court quoted *Hotchkiss* at length, and again went back to the idea of principle to determine patentability:

There was no patentable invention in Rice’s adaptation. . . . The Morey attachment had been already invented. The idea and *principle* of its operation, in adapting boilers to use of straw as a fuel, was the essence of his invention. Rice, it is confessed, discovered nothing more than that

. . . .

. . . If Morey’s patent is for a combination, it is a combination of the straw-feeding attachment with all boilers for generating steam, when it is desired to use straw for fuel, and therefore includes the very combination claimed by Rice.³⁶⁹

363. *Id.* at 118 (The Court stated: “In this case neither the tubing, nor the open link formed of tubing, nor the process of making either the open or the closed link, nor the junction of closed and open links in a chain, was invented by the patentee. We are, therefore, constrained to hold that the first claim of the patent, even if not void for want of novelty, is void for want of patentability.”).

364. *Pickering v. McCullough*, 104 U.S. 310 (1881).

365. *Id.* at 318.

366. *Id.*

367. *Id.* (“This rib Nimmo substituted for the old one in the same combination. And this is the whole of the invention. Upon the principles stated, there is no invention in it.”).

368. *Heald v. Rice*, 104 U.S. 737 (1881).

369. *Id.* at 754-56 (emphasis added).

None of the Supreme Court cases immediately following *Hotchkiss* repudiated doctrine relying on the presence of a new application of principle or mode of operation as a prerequisite to patentability. On the contrary, as we have seen, many of those cases and opinions, including those by the justices who presided over *Hotchkiss*, reaffirmed the earlier doctrine—*Hotchkiss* was not considered to be a watershed case.

C. “That Impalpable Something”

In 1882, the Supreme Court in *Loom Co. v. Higgins*³⁷⁰ introduced the notion of impermissible hindsight reconstruction. The Court in that case stated, in response to an argument that the claimed invention was a “mere aggregation of old devices,”³⁷¹ that “we cannot yield our assent to the argument, that the combination of the different parts or elements for attaining the object in view was so obvious as to merit no title to invention.”³⁷² The Court, instead, argued it “may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result, never attained before, it is evidence of invention.”³⁷³ The Court explained that “[i]f the thing could not be understood without the exercise of inventive power, it is a little strange that it should have been so easily adapted to the looms on which it has been used with such striking results”³⁷⁴ and that “[n]ow that it has succeeded, it may seem very plain to anyone that he could have done it as well. This is often the case with inventions of the greatest merit.”³⁷⁵ Therefore, as with the earlier association by the Court in *Smith*, between lack of suggestion in the art and inventive contribution beyond that “ascribed to mere mechanical skill,”³⁷⁶ the Court in *Loom* expressly cautioned against findings of obviousness that were based solely on apparent simplicity of successful modification of known devices.

Between May of 1882 and March of 1885, the Supreme Court heard at least fourteen additional patent cases that directly addressed patent validity. In each case, the patent at issue was invalidated as

370. *Loom Co. v. Higgins*, 105 U.S. 580 (1881).

371. *Id.* at 591.

372. *Id.*

373. *Id.*

374. *Id.* at 587.

375. *Id.* at 591.

376. *Smith v. Goodyear Dental Vulcanite Co.*, 93 U.S. 486, 497. See *supra* text accompanying note 344.

lacking “invention.” There is no consistency among them in application of doctrine, other than to find that the difference in the claimed invention from the prior art in each case was insufficient.³⁷⁷ Seven of these cases cite *Hotchkiss*, only generally at the head of, or among, a plurality of cases.³⁷⁸ There is no statement that *Hotchkiss* established any new doctrine.

377. *E.g.*, *Packing Co. Cases*, 105 U.S. 566, 574-75 (1882) (“All of the elements of the process are old. They are merely aggregated There is nothing new either in the shape, construction, or material of his cans.”); *Hall v. MacNeale*, 107 U.S. 90, 96 (1883) (“But the whole invention existed in the bolt of the patent of 1860. There was no invention in adding to the solid conical bolt the screw-thread of the cored conical bolt.”); *Slawson v. Grand St. R.R. Co.*, 107 U.S. 649, 653 (1883) (“It requires no more invention than the placing of an additional pane of glass in a showcase for the display of goods, or the putting of an additional window in a room opposite one already there. It would occur to any mechanic engaged in constructing fare-boxes, that it might be advantageous to insert two glass panes, . . . one next to the driver and the other next to the interior of the car. But this would not be an invention within the meaning of the patent law.”); *King v. Gallun*, 109 U.S. 99, 102 (1883) (“There is as little invention in compressing a bale of several parcels of hair tied up together as in compressing one large parcel of the same commodity.”); *Double Pointed Tack Co. v. Two Rivers Mfg. Co.*, 109 U.S. 117, 120-21 (1883) (“In view of this state of the art, there was no patentable invention, and nothing more than mechanical skill in putting the diagonal cuts or bevels on the same side of each leg of the staple The second claim is for the washer in combination with the staple of the first claim. This is not a patentable combination. There is only an aggregation of parts when the staple is used with the washer.”); *Estey v. Burdett*, 109 U.S. 633, 640 (1884) (“Our conclusion is that the absolute length and size of the valve opening was a matter of judgment, in view of the state of the art shown, and that there was no invention in making its length and size greater or less in a reed-board of a given width, or where the reed-board was made wider or narrower, or had more or less sets of reeds in it, either full or partial.”); *Bussey v. Excelsior Mfg. Co.*, 110 U.S. 131, 146 (1884) (“Claim 2 is merely for an aggregation of parts, and not for patentable combination, there being no patentable relation between a portable reservoir with a flue in its rear side and the existence or portability of a base-pan beneath it. In claim 3 there is merely an aggregation of parts, there being no patentable relation between a damper for the middle flue of a three-flu stove, and the existence or portability of a base-pan or the existence of a warming-closet.”); *Pa. R.R. v. Locomotive Engine Safety Truck Co.*, 110 U.S. 490, 498 (1884) (“In the case at bar, the old contrivance of a railroad truck, swiveling upon the king-bolt, with transverse slot, and pendant divergent lengths, already in use under railroad cars, as applied in the old way, without any novelty in the mode of applying it, to the analogous purpose of forming the forward truck of a locomotive engine. This application is not a new invention, and therefore not a valid subject of a patent.”); *Phillips v. Detroit*, 111 U.S. 604, 608 (1884) (“We are of opinion that, taking into consideration the state of the art, no invention was required for the construction of the pavement described in the patent, and that it demanded only ordinary mechanical skill and judgment and but a small degree of either.”); *Morris v. McMillin*, 112 U.S. 244, 248 (1884) (“It is plain, therefore, that no such ingenuity as merited the issue of a patent was required for this improvement, but only the ordinary judgment and skill of a trained mechanic.”); and *Stephenson v. Brooklyn Cross-Town R.R.*, 114 U.S. 149, 157-58 (1885) (“There is, in fact, no combination, but a mere aggregation of separate devices, each of which performs the function for which used separately, it was adapted, and does not contribute to any new result, the product of their joint use.”).

378. *Packing Co. Cases*, 105 U.S. at 572; *Philips*, 111 U.S. at 607; *Slawson*, 107 U.S. at 653; *Pa. R.R.*, 110 U.S. at 494; *King*, 109 U.S. at 102; *Morris*, 112 U.S. at 249; *Stephenson*, 114 U.S. at 156.

Only one of these fourteen cases, *Atl. Works v. Brady*,³⁷⁹ refers to “principle” underlying a patented invention, and even here, the Court linked application of principle to what would be suggested to one of “ordinary mechanical skill”:

Was it invention to place a screw for dredging at the stem of the boat? Nothing more than this was in reality suggested by the patentee. . . . Would not this have been suggested by ordinary mechanical skill? The plan and mode of an operation would have been precisely the same. . . . No invention would be requisite for any of these arrangements. It seems to us that the whole principle of the “Essayons’s” construction and furnishment, as well as that of the patent in question, was anticipated by the “Enoch Train,” if not by the French steamers, and that a patent for that principle, though qualified by the natural incidents and adjuncts of its application, ought not to be sustained.³⁸⁰

Perhaps not so incidentally, the Court laid out the policy for granting patent protection as a reward to “those who make some substantial discovery or invention.”³⁸¹ What constitutes an invention is stated more explicitly in the negative, and appears remarkably Jeffersonian³⁸²:

It was never the object of those laws to grant a monopoly for every trifling device, every shadow of a shade of an idea, which would naturally and spontaneously occur to any skilled mechanic or operator in the ordinary progress of manufactures. 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. It embarrasses the honest pursuit of business with fears and apprehensions of concealed liens and

379. *Atl. Works v. Brady*, 107 U.S. 192 (1883).

380. *Id.* at 199.

381. *Id.* at 200 (“The design of the patent laws is to reward those who make some substantial discovery or invention, which adds to our knowledge and makes a step in advance in the useful arts. Such inventors are worthy of all favor.”).

382. See, e.g., letter from Thomas Jefferson to Thomas Cooper (Jan. 16, 1814) in 6 THE WRITINGS OF THOMAS JEFFERSON 295 (H. A. Washington ed.) (New York, John C. Riker 1857) (“The abuse of the frivolous patents is likely to cause more inconvenience than is counterbalanced by those really useful.”).

unknown liabilities to lawsuits and vexatious accountings for profits made in good faith.³⁸³

In one of the last of these cases in this short period of legal history, *Hollister v. Benedict & Burnham Manufacturing Co.*,³⁸⁴ the Supreme Court held invalid a patent directed to a stamp for sealing liquor casks with identifying marks formed of two layers of paper: a central portion bearing a number or registration mark on one side and adhesive on the other, and a second layer peripheral to the adhesive portion of the first layer but on the same side as, and adhering to, the first layer, whereby after being secured to a surface, a periphery of the first layer would be defaced by removal of the second layer, while preserving the registration mark.³⁸⁵ The Court acknowledged that “adoption of the present taxpaid stamp, in lieu of that previously in use by the Internal Revenue Bureau, has proven its superior utility in the prevention of frauds upon the revenue.”³⁸⁶ The Court quoted testimony of the Commissioner of Internal Revenue, in part, as follows: “It is believed that this system affords the government a very effectual protection against the perpetration of fraud in connection with the collection of the tax on distilled spirits.”³⁸⁷ Further, the Court found the stamp to be novel, and yet denied that it was patentable:

This is what we ascertain to be the precise idea embodied in the invention described and claimed in the patent, and which, although we find to be new in the sense that it had not been anticipated by any previous invention, of which it could therefore be declared to be an infringement, yet is not such an improvement as is entitled to be regarded in the sense of patent laws as an invention.³⁸⁸

Thus, the Court denied patentability to novel subject matter that admittedly was an improvement, even recognizing the unusual nature of the case:

Such an increased utility, beyond what had been attained by devices as previously in use, in cases of doubt, is usually regarded as determining the question of invention. But in the present case we are not able to give it such effect.³⁸⁹

383. *Atl. Works*, 107 U.S. at 200.

384. *Hollister v. Benedict & Burnham Mfg. Co.*, 113 U.S. 59 (1885).

385. *Id.* at 65-66.

386. *Id.* at 71.

387. *Id.* at 71-72.

388. *Id.* at 70-71.

389. *Id.* at 72.

Having conceded novelty and improvement over “any previous invention,” the Court found a lack of “display” of anything but “the expected skill of the calling” and, therefore, there was “in no sense the creative work of that inventive faculty which it is the purpose of the Constitution and the patent laws to encourage and reward.”³⁹⁰ In other words, the Court held application of skill beyond that of the ordinary mechanic apart from novelty and benefit. There was no allegation that the invention lacked any new application of principle and was, therefore, distinct only in form or proportion. Nor was there any assertion that the stamp was merely the aggregation of independently acting component parts. There also was no reference to *Hotchkiss* in the decision. Rather, the Court simply found that once a problem of “frauds upon the revenue, committed by the removal of taxpaid stamps from packages,”³⁹¹ was “seriously and systematically studied,” the remedy would be obvious to those “competent to deal with the subject”³⁹²:

As soon as the mischief became apparent, and the remedy was seriously and systematically studied by those competent to deal with the subject, the present regulation was promptly suggested and adopted, just as a skilled mechanic, witnessing the performance of a machine, inadequate, by reason of some defect, to accomplish the object for which it had been designed, by the application of this common knowledge and experience, perceives the reason of the failure, and supplies what is obviously wanting.³⁹³

By 1891, the Supreme Court appeared to recognize that it had reached a point of futility in attempting to apply any known test for inventive merit. In *McClain v. Ortmyer*,³⁹⁴ the Court upheld a lower court decision that a patent directed to “single-roll” or “single-curve” springs, where “the only novelty consists in cutting the double-roll spring [of the prior art] into two”³⁹⁵ was invalid.³⁹⁶ Though still broadly considering the question to be one of novelty, the Court could not define a test for “invention” other than as an “impalpable something” beyond “simple mechanical skill”:

390. *Id.* at 73.

391. *Id.* at 72.

392. *Id.* at 73.

393. *Id.*

394. *McClain v. Ortmyer*, 141 U.S. 419 (1891).

395. *Id.* at 426.

396. *Id.* at 429 (“[W]e are satisfied that a mere severance of the double spring does not involve invention . . .”).

What shall be construed as invention within the meaning of the patent laws has been made the subject of a great amount of discussion in the authorities, and a large number of cases, particularly in the more recent volumes of reports, turn solely upon the question of novelty. . . . To say that it involves an operation of the intellect, is a product of intuition, or something akin to genius, as distinguished from mere mechanical skill, draws one somewhat nearer to an appreciation of the true distinction, but it does not adequately express the idea. The truth is the word cannot be defined in such manner as to afford any substantial aid in determining whether a particular device involves an exercise of the inventive faculty or not. In a given case we may well be able to say that there is present invention of a very high order. In another we can see that there is lacking that impalpable something which distinguishes invention from simple mechanical skill. Courts, adopting fixed principles as a guide, have by a process of exclusion determined that certain variations in old devices do or do not involve invention; but whether the variation relied upon in a particular case is anything more than ordinary mechanical skill is a question which cannot be answered by applying the test of any general definition.³⁹⁷

The Court specifically denied the plaintiff's assertion, based on English precedent, that "the only practical test of invention is the effect of the device upon the useful arts—in other words, that utility is the sole test of invention, and inferentially at least, that the utility of a device is conclusively proven by the extent to which it has gone into general use."³⁹⁸ Specifically, the Court reaffirmed previous assertions limiting the scope of patentability in the United States to considerations of novelty and utility, and of the relationship between them:

These [English] cases, however, must not be construed in a way as to control the language of our statute, which limits the benefits of patent laws to things which are new as well as useful. . . .

397. *Id.* at 426-27.

398. *Id.* at 427-28. The Court further explained the distinction as lack of a requirement of novelty in England:

By common law of England, an importer—the person who introduced into the kingdom from any foreign country any useful manufacture—was as much entitled to a monopoly as if he had invented it In *Edgebury v. Stephens*, it was said: "The act [of monopolies] intended to encourage new devices useful to the kingdom, and whether learned by travel or by study it is the same thing.

Id. (citation omitted).

It is evident that these principles [of utility as the sole test of invention] have no application to the patent system in the United States, whose beneficence is strictly limited to the invention of what is new and useful, and that the English cases construing even their more recent acts, must be received with some qualification.³⁹⁹

Again, there was no mention of *Hotchkiss*. During this same period, however, decisions by the Supreme Court were also being made that were reminiscent of the old requirement that some new application of principle was adequate to support patentability, even if the added component of a novel combination embodying the new application of principle was otherwise known. Such was the case in *Western Electric Co. v. LaRue*,⁴⁰⁰ which was decided about six months prior to *McClain*, and the opinion for which was, as with *McClain*, written by Justice Brown. In *Western Electric*, the Court upheld the patentability⁴⁰¹ of a patent directed to a telegraph key that incorporated use of a torsional spring.⁴⁰² Torsional springs were known and had previously been used in “clocks, doors, and perhaps some other articles of domestic furniture.”⁴⁰³ In comparing the claimed invention to known telegraph keys, the Court held that,

there is nothing in any of these exhibits which shows the use of a torsional spring in a telegraphic instrument, and while the invention does not seem to be one of great importance, we think the adaptation of this somewhat unfamiliar spring to this new use, and its consequent simplification of mechanism, justly entitles the patentee to the rights of an inventor.⁴⁰⁴

The Court distinguished application of an old device to a “new sphere of action” to perform a “new function” from “transfer or adaptation of the same device to a similar sphere of action,” which the Court, in dicta, found to be lacking in inventive merit:

While the promotion of an old device, such, for instance, as a torsional spring, to a new sphere of action, in which it performs a new function, involves invention, the transfer or adaptation of the

399. *Id.* at 427-28.

400. *W. Elec. Co. v. LaRue*, 139 U.S. 601 (1891).

401. *Id.* at 605, 608.

402. *Id.* at 602 (describing the invention as follows: “The invention covered by this patent consists in the use in a telegraph key of a flat strip of metal supported at either end upon posts by means of adjustable screws and to the centre of which the lever is fastened. The torsional action of this piece of metal serves as a spring support for the lever. The main object of the invention is the substitution of this torsional spring for the ordinary pivotal support previously used . . .”).

403. *Id.* at 604.

404. *Id.* at 605.

same device to a similar sphere of action, where it performs substantially the same function, does not involve invention.⁴⁰⁵

In another example, *Krementz v. S. Cottle Co.*,⁴⁰⁶ Justice Shiras upheld patentability of a seemingly simple improvement because it was “a new and useful article, with obvious advantages over previous structures of the kind.”⁴⁰⁷ The Court reversed the holding of the court below, that the invention was “obvious to any skilled mechanic,”⁴⁰⁸ in view of testimony by the defendant that, despite “attention specifically turned to the subject,” he failed to see the plaintiff’s solution to the problem of soldering pieces to make buttons.⁴⁰⁹ As in *McClain*, the Court made explicit the difficulty of partitioning an “invention” from “ordinary skill of a mechanic”:

It is not easy to draw the line [that] separates the ordinary skill of a mechanic, versed in his art, from the exercise of patentable invention, and the difficulty is specially great in the mechanical arts, where the successive steps in improvements are numerous, and where the changes and modifications are introduced by practical mechanics.⁴¹⁰

Similarly, in *Keystone Manufacturing Co. v. Adams*,⁴¹¹ the Court upheld the patentability of a cornsheller that employed a series of “wings, wheels, or projections,” to “force the corn rapidly forward into the sheller,”⁴¹² as opposed to backwards, as was done in the prior art to prevent clogging of the machine. The Court suggested that the fact of successful improvement after prior “repeated and futile attempts,” should, indeed, be considered:

Where the patented invention consists of an improvement of machines previously existing, it is not always easy to point out what it is that distinguishes a new and successful machine from an old and ineffectual one. But when, in a class of machines so widely used as those in question, it is made to appear that at last, after

405. *Id.* at 606.

406. *Krementz v. S. Cottle Co.*, 148 U.S. 556 (1893).

407. *Id.* at 559.

408. *Id.* at 560.

409. *Id.* (The Court stated: “The view of the court below, that Kremenz’s step in the art was one obvious to any skilled mechanic, is negated by the conduct of Cottle, the president of the defendant company Yet, skilled as he was, and with his attention specifically turned to the subject, he [Cottle] failed to see, what Kremenz afterwards saw, that a button might be made of one continuous sheet of metal, wholly dispensing with solder, of an improved shape, of increased strength, and requiring less material.”).

410. *Id.* at 559.

411. *Keystone Mfg. Co., v. Adams*, 151 U.S. 139 (1894).

412. *Id.* at 143.

repeated and futile attempts, a machine has been contrived which accomplishes the result desired, and when the Patent Office has granted a patent to the successful inventor, the courts should not be ready to adopt a narrow or astute construction, fatal to the grant.⁴¹³

In *Potts v. Creager*,⁴¹⁴ the Court distinguished *Hotchkiss*, where there was “a mere change of material for the more perfect accomplishment of the same work,” from substitution “for a purpose wholly different,” from that of the corresponding part in the prior art:

Applying this test to the case under consideration, it is manifest that, if the change from the glass bars of the Creager Wood Exhibit to the steel bars of the Potts cylinder was a mere change of material for the more perfect accomplishment of the same work, it would, within the familiar cases of *Hotchkiss v. Greenwood*, *Hicks v. Kelsey*, *Terhune v. Phillips*, and *Brown v. District of Columbia*, not involve invention . . . Not only did they discard the glass bars, and substitute others of steel, but they substituted them for a purpose wholly different from that for which they had been employed. Under such circumstances, we have repeatedly held that a change of material was invention.⁴¹⁵

Therefore, as in several earlier cases, *Hotchkiss* was cited only for the proposition, applied by Thomas Jefferson under the Patent Act of 1790, and codified under the Patent Act of 1793, that a mere change of form, without more, was inadequate to establish patentability of novel subject matter.

Lack of suggestion in the art was relied upon to uphold the patentability of a method for manufacturing an interlocking mesh of wire in *Expanded Metal Co. v. Bradford*.⁴¹⁶ The Supreme Court cited *Loom*,⁴¹⁷ discussed above,⁴¹⁸ to support patentability of a new combination of old elements despite the seeming simplicity of the invention:

The fact that the invention seems simple after it is made does not determine the question: if this were the rule many of the most beneficial patents would be stricken down. . . . There is nothing in the prior art that suggests the combined operation of the Golding patent in suit. It is perfectly well settled that a new combination of

413. *Id.* at 144-45.

414. *Potts v. Creager*, 155 U.S. 597 (1895).

415. *Id.* at 608-09 (citations omitted).

416. *Expanded Metal Co. v. Bradford*, 214 U.S. 366 (1909).

417. *Loom Co. v. Higgins*, 105 U.S. 580 (1881).

418. See *supra* text accompanying note 355.

elements, old in themselves, but which produce a new and useful result, entitles the inventor to the protection of a patent.⁴¹⁹

The Court made reference thereafter to “ingenuity” and “usefulness” in conjunction with a lack of suggestion of the claimed combination in the prior art:

To our minds, Golding’s method shows that degree of ingenuity and usefulness which raises it above an improvement obvious to a mechanic skilled in the art, and entitles it to the merit of invention. Others working in the same field had not developed it, and the prior art does not suggest the combination of operations which is the merit of Golding’s invention.⁴²⁰

There was no reference to *Hotchkiss* by the Court in *Expanded Metal*.

“Inventive genius” was listed in *Diamond Rubber Co. of N.Y. v. Consolidated Rubber Tire Co.*,⁴²¹ only with respect to the difficulty of distinguishing inventive merit:

Many things, and the patent law abounds in illustrations, seem obvious after they have been done, and, “in the light of the accomplished result,” it is often a matter of wonder how they so long “eluded the search of the discoverer and set at defiance the speculations of inventive genius.” . . . Knowledge after the event is always easy, and problems once solved present no difficulties, indeed, may be represented as never having had any, and expert witnesses may be brought forward to show that the new thing which seemed to have eluded the search of the world was always ready at hand and easy to be seen by a merely skillful attention.⁴²²

As in earlier cases, acceptance and utility of change were cited at tests of invention, particularly of novelty: “But the law has other tests of the invention than subtle conjectures of what might have been seen and yet was not. It regards a change as evidence of novelty, the acceptance and utility of change as . . . further evidence, even as demonstration.”⁴²³ The Court asserted that a patentee need not understand the “scientific principles underlying his invention.”⁴²⁴ Invention for the Court rested on the inherent principal of the “new

419. *Expanded Metal*, 214 U.S. at 381.

420. *Id.*

421. *Diamond Rubber Co. of N.Y. v. Consol. Rubber Tire Co.*, 220 U.S. 428 (1911).

422. *Id.* at 434-35 (quoting *Pearl v. Ocean Mills*, 19 F. Cas. 59 (C.C.D. Mass. 1877)).

423. *Diamond Rubber*, 220 U.S. at 435.

424. *Id.* at 435-36 (“It is certainly not necessary that he understand or be able to state the scientific principles underlying his invention, and it is immaterial whether he can stand a successful examination as to the speculative ideas involved.”).

construction,” and not on whether that principal “be obvious or obscure”:

He must, indeed, make such disclosure and description of his invention that it may be put into practice. In this he must be clear. . . . This satisfies the law, which only requires as a condition of its protection that the world be given something new and that the world be taught how to use it. It is no concern of the world whether the principal upon which the new construction acts be obvious or obscure, so that it inheres in the new construction.⁴²⁵

Therefore, sixty years after *Hotchkiss*, the Supreme Court, despite reference to “inventive genius,” “merely skillful attention,” “acceptance and utility of change,” and even to what would “seem obvious,” still laid out new application of principle as fundamental to patentable novelty.

Reliance on principle was a test for invention in *Concrete Appliances Co. v. Gomery*,⁴²⁶ where the question to be addressed was “whether the combination is novel and whether it passes the line sometimes tenuous and difficult of ascertainment which separates mechanical skill from invention.”⁴²⁷ The Court took judicial notice that the principle underlying the claimed method of delivering wet concrete was known,⁴²⁸ and held that the patented device was merely the product of “ordinary mechanical skill and not of inventive genius.”⁴²⁹ Shortly thereafter, in another case that dealt with a patent directed to transport of wet concrete, *Powers-Kennedy Contracting Corp. v. Concrete Mixing & Conveying Co.*,⁴³⁰ the Court contrasted “new principles” with “a mere change in proportion,” which the Court associated with “no more than mechanical skill” and consequent lack of invention:

It remains to discuss whether there is foundation for the claim that McMichael discovered new principles, namely that concrete

425. *Id.* at 436.

426. *Concrete Appliances Co. v. Gomery*, 269 U.S. 177 (1925).

427. *Id.* at 180.

428. *Id.* at 180-81 (The Court stated: “It is a fact of which we may take judicial notice . . . that the principle of conveying and distributing a mobile substance by gravity has found exemplification for centuries Long prior to the Callahan application the principle had been applied to other substances capable of flow under the action of gravity, such as grain, coal, crushed stone, sand and iron ore.”).

429. *Id.* at 185 (“The adaptation independently made by engineers and builders of these familiar appliances . . . in combination of well known mechanical elements was the product only of ordinary mechanical and engineering skill and not of inventive genius.”).

430. *Powers-Kennedy Contracting Corp. v. Concrete Mixing & Conveying Co.*, 282 U.S. 175 (1930).

could be moved by compressed air, or that if it could not be satisfactorily moved by pressure of compressed air or other fluid agent, it could so be moved by a nozzle which cut off portions of the mass and drove them through the delivery duct like pistons.

Methods and apparatus for moving concrete by compressed air had been previously invented. . . . Other apparatus closely approximating that of the patent in suit had been used for transporting grout. In his specifications McMichael's only suggestion as to why they were unfit for concrete is that the pipes and parts were not of sufficient size. But obviously a mere change in proportion would involve no more than mechanical skill and would not amount to invention.⁴³¹

The Court drew a parallel with *Concrete Appliances*, paraphrasing the Court's holding in that case as also lacking any new application or principle and, therefore, within "the mechanical skill of those familiar with engineering and building problems":

This court [in *Concrete Appliances*] called attention to the fact that the principle of conveying and distributing a mobile substance by gravity had been exemplified in various methods for centuries, and that long prior to the patent there in suit the principle had been applied to various substances such as grain, coal, crushed stone, sand, and iron ore, and said

"The observations of common experience in the mechanical arts would lead one to expect that once the feasibility of using 'wet' concrete in building operations was established, the mechanical skill of those familiar with engineering and building problems would seek to make use of known methods and appliances for the convenient handling of this new building material."⁴³²

As in *Concrete Appliances* and *Powers-Kennedy*, the Court in *Saranac Automatic Machine Corp. v. Wirebounds Patents Co.* appeared, at least, to link new application of principle, or a lack of it, to "mechanical skill" in assessing patentability.⁴³³ First, "conception" of the patented invention by Inwood and Lavenberg was found by the Court to have been disclosed in the prior art:

The conception of Inwood and Lavenberg which was new, was that the pre-formed cleats and side materials could be assembled and so positioned with reference to each other, that they could be

431. *Id.* at 184-85.

432. *Id.* at 186-87 (quoting *Concrete Appliances Co. v. Gomery*, 269 U.S. 177, 184 (1925)).

433. *Saranac Automatic Mach. Corp. v. Wirebounds Patents Co.*, 282 U.S. 704, 712-13 (1931).

stapled together to manufacture, in the single stapling operation, the finished product, the box blank ready for folding. . . .

This conception is that of the reissue (product) patent, held valid as a basic patent in *Wirebounds Patents Co. v. Chicago Mill & Lumber Co.*, and by the Seventh Circuit Court of Appeals in *Wirebounds Patents Co. v. Gibbons Box Co.* . . .

Thus this patent completely discloses the invention of Inwood and Lavenburg and the advance which it made over the prior art.⁴³⁴

Then, differences in the Inwood and Lavenburg patent from the prior art were held by the Court to be “not invention, but the application of mechanical skill to the solution of the problem of devising suitable mechanical means for the manufacture of foldable box blanks by the process or method disclosed by the reissue patent.”⁴³⁵ The Court characterized the solution to the problem of “devising suitable mechanical means” as obvious, “[b]ut the solution of that problem was, we think, obvious, involving only the adaptation of familiar mechanical means for holding cleats and sides in place and requiring no more than the mechanical skill of the calling.”⁴³⁶

In *Altoona Publix Theatres, Inc. v. American Tri-Ergon Corp.*,⁴³⁷ the Supreme Court again linked “mere exercise of the skill of the calling”⁴³⁸ with lack of any application of new principle. In this case, the patentees employed a flywheel in a device “for securing uniformity of speed in machines used for recording and reproducing talking motion pictures.”⁴³⁹ Several prior instances were cited by the Court, beginning with Edison in 1879, where patentability was denied for use of a flywheel “for the purpose for securing uniformity of motion” of a phonograph cylinder.⁴⁴⁰ The Court in *Altoona* held that the claimed invention involved “no new principle, to produce an old result, greater uniformity of motion,” and was, therefore, merely the “product of skill, not of invention”:

An improvement to an apparatus or a method, to be patentable, must be the result of invention, and *not the mere exercise of the skill of the calling* or an advance plainly indicated by the prior art. . . . The patentees brought together old elements, in a

434. *Id.* at 709-10 (citation omitted).

435. *Id.* at 711.

436. *Id.*

437. *Altoona Publix Theatres, Inc. v. Am. Tri-Ergon Corp.*, 294 U.S. 477 (1935).

438. *Id.* at 486.

439. *Id.* at 479.

440. *Id.* at 484.

mechanism involving *no new principle*, to produce an old result, greater uniformity of motion. However skillfully this was done, and even though there was produced a machine of greater precision and a higher degree of motion-constancy, and hence one more useful in the art, it was still the product of skill, not of invention.⁴⁴¹

Decided between 1925 and 1935, *Concrete Appliances* (1925), *Powers Kennedy* (1931), *Saranac* (1931) and *Altoona* (1935) all determined the presence of invention by assessing whether anything more than mere mechanical skill was applied, and in all three cases the assessment followed identification of the presence or lack of any new application of principle by the claimed invention in the solution of a problem. In *Saranac*, the word “obvious” is used twice with reference to distinctions of the claimed invention over the prior art.⁴⁴² In all four cases, lack of any new application of principle was the basis for subsequently concluding that no more than “ordinary mechanical skill” was required to supply the differences between prior art and a claimed invention.

D. *The Ghost is Born*

In *Cuno Engineering Corp. v. Automatic Devices Corp.*,⁴⁴³ the Supreme Court held that the combination of a known automatic thermostatic control of an electric heating unit with a manually operated “wireless” or “cordless” lighter to obtain an automatic wireless lighter was not inventive because it was not the product of “inventive genius.” The Court reasoned:

Mead’s device was not patentable. We cannot conclude that his skill in making this contribution reached the level of *inventive genius* which the Constitution (Art. I, § 8) authorizes Congress to reward. He merely incorporated the well-known thermostat into

441. *Id.* at 486 (emphasis added).

442. *Saranac Automatic Mach. Corp. v. Wirebounds Patents Co.*, 282 U.S. 704, 711, 713 (1931). The second instance of the word “obvious” in *Saranac* states:

The pushers and hold back, like the channels and space blocks of the work holder, are familiar mechanical means for holding materials in position while work is being done upon them. Given the method of the reissue patent, failure to adapt these obvious means to the solution of the problem at hand would, we think, have evidenced a want of ordinary mechanical skill and familiarity with them.

Id. at 713.

443. *Cuno Eng’g Corp. v. Automatic Devices Corp.*, 314 U.S. 84 (1941).

the old “wireless” lighter to produce a more efficient, useful, and convenient article.⁴⁴⁴

Further, the Court asserted that *Hotchkiss* established “ingenuity” beyond that of a “mechanic skilled in the art” as a threshold condition for patent protection because “Since *Hotchkiss v. Greenwood* . . . it has been recognized that if an improvement is to obtain the privileged position of a patent more ingenuity must be involved than the work of a mechanic skilled in the art.”⁴⁴⁵

The *Cuno* Court relied on six cases for crediting *Hotchkiss* with establishing this threshold requirement.⁴⁴⁶ In the first of those cases, *Hicks v. Kelsey*,⁴⁴⁷ the Court recited only the portion of *Hotchkiss* which “held that the substitution of porcelain for metal in making door-knobs of a particular construction was not patentable, though the new material was better adapted to the purpose and made a better and cheaper knob—having been used for door-knobs, however, before.”⁴⁴⁸ In *Slawson v. Grand St. R.R. Co.*,⁴⁴⁹ the Court referenced *Hotchkiss* only in its conclusion that the addition of a second glass pane to a fare-box “would not be [an] invention within the meaning of the patent law.”⁴⁵⁰ In *Morris v. McMillin*,⁴⁵¹ the Court referenced *Hotchkiss* as an illustration of a case where combining known components “did not require invention.”⁴⁵² In *Phillips v. Detroit*,⁴⁵³ the Court employed *Hotchkiss* to illustrate “only the use of ordinary judgment and mechanical skill.”⁴⁵⁴ The Court does not mention *Hotchkiss* at all in *Saranac Automatic Machine Corp. v. Winebounds Patents Co.*⁴⁵⁵ or *Honolulu Oil Co. v. Halliburton*.⁴⁵⁶ None of these

444. *Id.* at 91 (emphasis added). The language of the majority in *Cuno* stated, at least in dicta, that “the new device, however useful it may be, must reveal the flash of creative genius, not merely the skill of the calling.” *Id.* This has since been explained by the Supreme Court as being merely “rhetorical embellishment of language going back to 1833.” *Graham v. John Deere Co.*, 383 U.S. 1, 15 n.7 (1965).

445. *Cuno*, 314 U.S. at 90 (citing *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248, 265 (1851)).

446. *Id.* at 90-91.

447. *Hicks v. Kelsey*, 85 U.S. (18 Wall.) 670 (1874).

448. *Id.* at 674.

449. *Slawson v. Grand St. R.R. Co.*, 107 U.S. 649 (1883).

450. *Id.* at 653.

451. *Morris v. McMillin*, 112 U.S. 244 (1884).

452. *Id.* at 249.

453. *Phillips v. Detroit*, 111 U.S. 604 (1884).

454. *Id.* at 607.

455. *Saranac Automatic Machine Corp. v. Winebounds Patents Co.*, 282 U.S. 704 (1931).

456. *Honolulu Oil Co. v. Halliburton*, 306 U.S. 550 (1939).

cases asserted that the Court in *Hotchkiss* inaugurated any new doctrine.

The next major Supreme Court decision on inventive merit, *Goodyear Tire & Rubber Co., Inc. v. Ray-O-Vac Co.*,⁴⁵⁷ makes no mention of *Cuno* or *Hotchkiss*.⁴⁵⁸ The patent was directed to a leak-proof dry cell for a flashlight battery.⁴⁵⁹ The Court upheld the district court's finding of validity of the patent and asserted the inadequacy of retrospective assessments of obviousness, holding that "[v]iewed after the event, the means Anthony adopted seem simple and such as should have been obvious to those who worked in the field, but this is not enough to negative invention."⁴⁶⁰ Even Justice Black who, in dissent, argued that "[t]hose who strive to produce and distribute goods in a system of free competitive enterprise should not be handicapped by patents based on a 'shadow of a shade of an idea,'"⁴⁶¹ did not invoke *Cuno*. Nor did he rely on *Hotchkiss* for the premise attributed to it by the Court in *Cuno*: that invention requires more than the "work of a mechanic skilled in the art."⁴⁶²

Lower courts were loath to adopt the dicta of *Cuno* regarding "inventive genius" and, even as early as 1944, were providing explanations of that case that were closely in accord with prior jurisprudence. For example, in *In re Shortell*,⁴⁶³ the Court of Customs and Patent Appeals declined to apply any distinct "flash of genius" test that would be "a higher standard of invention than had been for many years required."⁴⁶⁴ Rather, the court expressly construed the term "flash of creative genius" as being "intended to mean nothing more than that the thing patented must involve more than the skill of the art to which it relates."⁴⁶⁵ Of more significance, however, is the court's suggestion that a standard of non-obviousness was in existence for "more than a hundred years." In other words, from a time prior to *Hotchkiss*:

The Supreme Court, for more than a hundred years, held . . . that when patentable subject matter is properly applied for and claimed, it is patentable if the thing claimed was not anticipated, was not

457. *Goodyear Tire & Rubber Co., Inc. v. Ray-O-Vac Co.*, 321 U.S. 275 (1944).

458. *Id.*

459. *Id.* at 276.

460. *Id.* at 279.

461. *Id.* (Black, J., dissenting) (quoting *Atl. Works v. Brady*, 107 U.S. 192, 200 (1883)).

462. *Cuno Eng'g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 90 (1941).

463. *In re Shortell*, 142 F.2d 292 (C.C.P.A. 1944).

464. *Id.* at 295.

465. *Id.*

obvious to one skilled in the art, and the other conditions named in section 4886 of the Revised Statutes are met.⁴⁶⁶

Even more interesting is that, although the court in *Shortell* did recite and quote from *Hotchkiss*, it did so along with a partial quotation from *McClain v. Ortmyer*,⁴⁶⁷ which stated that “whether the variation relied upon in a particular case is anything more than ordinary mechanical skill is a question which cannot be answered by applying the test of any general definition.”⁴⁶⁸ *Hotchkiss* is not credited with the genesis of any doctrine.

In *Sinclair & Carroll Co., Inc. v. Interchemical Corp.*,⁴⁶⁹ the Supreme Court also did not apparently attribute *Hotchkiss* the significance given it by the court in *Cuno*. *Hotchkiss* was not cited in the “long line of cases,” among which *Cuno* was listed in *Sinclair*, where it was held “to be an essential requirement for the validity of a patent that the subject-matter display ‘invention,’ [and] ‘more ingenuity . . . than the work of a mechanic skilled in the art.’”⁴⁷⁰ The patent at issue in *Sinclair* was directed to a printing ink which dried instantly upon heating.⁴⁷¹ The Court invalidated the patent in view of prior patents that “taught an ink made with a solvent that would be non-volatile at room temperature and highly volatile when heated,”⁴⁷² effectively holding that the claimed subject matter lacked any new application of principle. The Court, however, couched the holding in what had become the conventional language of “invention”:

Even assuming that if Gessler had discovered the compound he would be entitled to a patent, he did not discover it. Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put into the last opening in a jig-saw puzzle. It is not invention.⁴⁷³

In *Jungersen v. Ostby & Barton Co.*,⁴⁷⁴ the Court explicitly relied on the lack of any new application of principle to invalidate a patent which employed centrifugal force to direct molten wax into a primary mold,⁴⁷⁵ and employed the broad language of “invention,”

466. *Id.* (citation omitted).

467. *McClain v. Ortmyer*, 141 U.S. 419 (1981).

468. *Shortell*, 142 F.2d at 295 (quoting *McClain v. Ortmyer*, 141 U.S. 419, 427 (1891)).

469. *Sinclair & Carroll Co., Inc. v. Interchemical Corp.*, 325 U.S. 327 (1945).

470. *Id.* at 330.

471. *Id.* at 328.

472. *Id.* at 334.

473. *Id.* at 335.

474. *Jungersen v. Ostby & Barton Co.*, 335 U.S. 560 (1949).

475. The Court stated:

or in this case, “inventive genius.” Specifically, the Court relied upon *Cuno* for support, stating:

Where centrifugal force was common as a means of introducing molten metal into the secondary mould, its use in an intermediate step to force molten wax into the primary mould was not an exemplification of inventive genius such as is necessary to render the patent valid. The patentee himself admitted that the same *principle* was employed in both steps.⁴⁷⁶

The majority opinion went so far as to quote deposition testimony of the patentee: “Q. But they both operate in the same way under the influence of the centrifugal machine? A. The same principle is used, yes.”⁴⁷⁷

V. REPLACEMENT OF “INVENTION” WITH “PATENTABILITY”

The last decision by the Supreme Court to address “the correct criteria of invention” prior to the Patent Act of 1952 was *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*,⁴⁷⁸ which issued on December 4, 1950. Judge Rich recalled this date as being particularly significant because the Supreme Court opinion influenced him and the Congressional committee on which he served “to replace the case law with a statutory provision”:

Now, it is very significant that what persuaded the Coordinating Committee to replace the case law with a statutory provision was the Supreme Court’s opinion, and Mr. Justice Douglas’ concurring opinion, published in the New York Times on the very day in 1950 that the Committee was having a meeting, in the case of *The Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.* I am sure that it is because I remember reading the opinions aloud that day to the Drafting Committee. The *decision* may have been all right, but we considered what was said in the opinions to be typical of all that was wrong with the patent law’s “invention” requirement.⁴⁷⁹

An examination of the prior art as it existed at the time of this alleged invention reveals that every step in the Jungersen method was anticipated. We think that this combination of these steps was, in its essential features, also well known in the art.

Jungersen’s process is nothing more than a refinement of a method known as the “cire perdue” or “lost wax” process, which was in use as early as the sixteenth century.

Id. at 563-64.

476. *Id.* at 566 (emphasis added) (citations omitted).

477. *Id.* at 566 n.6.

478. *Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp.*, 340 U.S. 147, 148 (1950).

479. *See Rich, supra* note 31, at 168-69 (citations omitted).

In *A&P*, the Court examined a patent which entailed

a cashier's counter equipped with a three-sided frame, or rack, with no top or bottom, which, when pushed or pulled, will move groceries deposited within it by a customer to the checking clerk and leave them there when it is pushed back to repeat the operation. It is kept on the counter by guides.⁴⁸⁰

The lower court's decision upholding the validity of the patent was reversed.⁴⁸¹ However, as Judge Rich made clear in his recollection of the committee's decision, it was not the decision of the Court which troubled the committee, but rather the Court's opinion.⁴⁸² Specifically, the committee found that the Court's reasoning lacked any meaningful indicia for assessing the patentability of a combination of old elements:

The problem the Court posed for itself was this:

"What indicia of invention should the courts seek in a case where nothing tangible is new, and invention, if it exists at all, is only in bringing old elements together?"

. . . .

The Court's first big step towards solving its problem was to say:

"It is agreed that the key to patentability of a mechanical device that brings old factors into cooperation is the presence or lack of invention."⁴⁸³

According to Rich, the Court's lack of proper reasoning in coming to the conclusion that the claimed invention was not patentable "clinched the decision" by the committee to impose a statutory requirement that "would serve as a uniform standard of patentability":

The only defect which the Supreme Court could find in the concurring validity findings of the lower courts was

"that a standard of invention appears to have been used that is less exacting than that required where a combination is made

480. *Great Atl. & Pac. Tea Co.*, 340 U.S. at 149.

481. *Id.* at 154.

482. Judge Rich wrote:

I hope you note that I distinguish between decisions and opinions Many a sound *decision* is rationalized by atrocious reasoning in the *opinion*, often written by someone who does not know what he is talking about or what his words may be doing to the law. And that is where most of our trouble comes from today.

See Rich, *supra* note 31, at 169.

483. *Id.* (quoting *Great Atl. & Pac. Tea Co.*, 340 U.S. at 150-51).

up of old components. It is on this ground (the court said) that the judgment below is reversed.”

That reasoning is what clinched the decision to enact a statutory substitute that would make more sense, would apply to all kinds of inventions, would restrict the courts in their arbitrary, *a priori* judgments on patentability, and that, above all, would serve as a uniform *standard of patentability*. And so we come to 35 U.S.C. § 103.⁴⁸⁴

Judge Rich stressed in his recollection of the coordinating committee’s decision that the new statute they proposed was to be a substitute for case law, at least as it was embodied by the reasoning of the Court in *A&P*:

[M]y position is that Congress, enacting the Patent Act of 1952, *did* replace the *A&P Case* reasoning—not its decision on the facts—by substituting statutory for case law.

....

As compared to finding or not finding “invention,” Section 103 was a whole new way of thinking and a clear *directive* to the Courts to think that way. Some courts and some lawyers do not yet seem to realize that.⁴⁸⁵

Far from viewing section 103 as a “whole new way of thinking,” even the first lower court cases understood the new statutory requirement to have “done no more in this respect than to adopt the test of so-called ‘obviousness’ which has, in the past, been enunciated by the courts, and that it did not provide a new test differing from that which has been generally followed in the adjudication of the patent cases.”⁴⁸⁶ Even more striking, in view of Judge Rich’s later comments regarding *A&P* as motivation for proposing the new statutory requirement, the court for the 6th Circuit in *General Motors Corp. v. Estate Stove Co.* held that “the principle stated in the Great Atlantic & Pacific Tea Co. case is not modified by the new Act, but continues to be the law, and is here controlling.”⁴⁸⁷

Closer inspection of the circumstances surrounding the new statutory requirement of non-obviousness, however, reveals that what should be considered the strangest reaction is Judge Rich’s surprise that interpretation of section 103 had become, by the time of his acceptance speech at the Kettering Award in 1964, in his words, a

484. *Id.* at 169-70 (quoting *Great Atl. & Pac. Tea Co.*, 340 U.S. at 154).

485. *Id.*

486. *Gen. Motors Corp. v. Estate Stove Co.*, 203 F.2d 912, 915 (6th Cir. 1953).

487. *Id.* at 918.

“mish-mash.”⁴⁸⁸ Judge Rich argued much later, in 1972, that section 103 was not simply a codification of judicially-created patent law, but also a revision that inserted a threshold requirement beyond “invention” and, as a consequence, some prior case law, including the dictum in *Cuno*, had been overruled:

[Section 103] was a new statement of an old requirement of the law which was utterly uncertain and indefinite. The statute undertook to remove ambiguity and provide definiteness.

....

On the point of Section 103 being “codification” it is interesting to consider the last sentence of the section which says “Patentability shall not be negatived by the manner in which the invention was made.” The specific intent of that sentence, which courts universally accepted without question, was to overrule the *Cuno* case dictum that a “flash of genius” was necessary. One cannot call that “codification.”

....

As I sometimes remind attorneys arguing cases, “There is always *an* invention. What we are considering is its *patentability*.”⁴⁸⁹

If the standard of “patentability” was, by the language of section 103, to be determined against what “would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains,”⁴⁹⁰ and if, as indicated in the House and Senate reports, this standard was “a condition which exists in the law and has existed for more than 100 years, but only by reason of decisions of the courts,”⁴⁹¹ then the statutory test for patentability was only new in that it became a uniform requirement as a consequence of its being dictated by statute. Therefore, section 103 may be deemed a revision only because it overruled inconsistent judicial precedent. In a sense, whether section 103 was characterized as “codification” was immaterial. As stated by Judge Rich:

The [House and Senate] reports also say that “the section is added to the statute for uniformity and definiteness.” Such statements and others made it arguable that it was just a “codification.” But what does that mean? What is a codification? Do you follow the statute or ignore it? If you ignore it, why have it?

488. See Rich, *supra* note 31, at 158.

489. See Rich, *supra* note 47, at 172-73.

490. 35 U.S.C. § 103 (2000).

491. H.R. Rep. No. 82-1923, at 7 (1952); S. Rep. No. 82-1979, at 6 (1952).

Codification is a loose term. It has been defined as the collection, condensation, systematizing and *reconciling* of what is scattered or *contradictory*. Yes, Title 35 as a whole is a codification; but it is also specifically and officially described as a codification *and revision*.⁴⁹²

The difficulty in applying the statutory requirement of non-obviousness in view of “ordinary skill in the art” as a “codification and revision” of judicial precedent is that the terminology of “ordinary skill” or its equivalent had been used for more than one hundred years, as cited by the House and Senate Reports, but rarely in a vacuum. *Hotchkiss*, in fact, said little more than that there must be application of more than ordinary skill. Furthermore, it did so only in the limited context of invalidating a patent that substituted one “form” of material having well-known properties for another. However, lack of patentability for a mere change of form was a well-established doctrine by the time of *Hotchkiss*, one that Jefferson professed to apply under the Patent Act of 1790.⁴⁹³ Therefore, reliance on *Hotchkiss* as a seminal case underlying the new statute, as was suggested by Judge Rich and by the “Revision Notes,”⁴⁹⁴ understandably left courts looking for additional guidance on how to measure “patentability.”

Contrary to the suggestion in the legislative history of section 103, the opinion in *Hotchkiss* was not groundbreaking. As we have seen, an “improvement in the principle of any machine, or in the process of any composition of matter,”⁴⁹⁵ as a requirement beyond utility and bare novelty, first appeared formally in the Patent Act of 1793 and was explicitly applied by courts thereafter. Justice Story, in particular, systematically looked for new application of principle as a criterion in determining the validity of patents. He distinguished between the skill of a “mere artisan” as evidence of enablement of a specification, and that of persons “thoroughly conversant with the subject of mechanics as a science.”⁴⁹⁶ For Justice Story, this

492. See Rich, *supra* note 47, at 171.

493. See Jefferson, *supra* note 7, at 335. As stated by Jefferson:

As a member of the patent board for several years, while the law authorized a board to grant or refuse patents, I saw with what slow progress a system of general rules could be matured. Some, however, were established by that board. . . . Another rule was that a change of material should not give title to a patent. . . . A third was that a mere change of form should give no right to a patent

Id.

494. H.R. Rep. No. 82-1923, at 18 (1952); S. Rep. No. 82-1979 at 18 (1952).

495. Patent Act of 1793, ch.11, § 2, 1 Stat. 318, 321 (1848).

496. Allen v. Blunt, 1 F. Cas. 448, 450 (C.C.D. Mass. 1845).

distinction could be relied upon to “answer the question whether or not a particular machine was substantially in its mode of operation [i.e., application of principle] new, or identical with another, although with apparent differences of form and structure, which might mislead the unscientific mind.”⁴⁹⁷ Both were important to Justice Story as “classes of witnesses,” but had “different purposes.”⁴⁹⁸

The Court in *Hotchkiss* did not overrule any of the previous decisions made relating to patentability, but instead simply failed to fully articulate judicial precedent, thereby confusing the matter for anyone attempting to rely on *Hotchkiss*. There was no general recognition of new precedential value in *Hotchkiss* until legislation of the Patent Act of 1952 following *Cuno*. Nevertheless, once begun, the Supreme Court as well as lower courts increasingly made decisions in view of *Hotchkiss* and on that basis. Further, since the Court in *Hotchkiss* said little more than that patentability required more than the skill of the “ordinary mechanic acquainted with the business,” it is not surprising that courts, and in particular the Supreme Court, would attempt to further develop the doctrine of “non-obviousness.” In fact, the Revision Notes attached to the House and Senate reports discussed above state that the new statutory provision of non-obviousness was “added with the view that an explicit statement in the statute may have some stabilizing effect, and also *to serve as a basis for the addition at a later time of some criteria which may be worked out.*”⁴⁹⁹

Judge Learned Hand reflects this expectation of further criteria in his short recitation of the development of section 103 in *Lyon v. Bausch & Lomb Optical Co.*⁵⁰⁰:

From 1793, when the second patent act was passed, until the Act of 1952, the only statutory standard for invention was that the discovery should be “new and useful”; and indeed the Act of 1952 itself repeats the same test in § 101. Congress did not try to define it but left it to the courts to develop by precedent. So far as we can find, it was not until 1850 that the Supreme Court made any such attempt; so that, although the disclosure must be “new,” it was so, provided it had not been published or in public use and was original. . . . Even *Cuno Engineering Corp., v. Automated Devices Corporation* . . . recognized the continued authority of

497. *Id.*

498. *Id.* (“It appears to me, that the patent acts look to both classes of persons, not only as competent, but as peculiarly appropriate witnesses, but for different purposes.”).

499. H.R. Rep. No. 82-1923, at 18; S. Rep. No. 82-1979, at 18 (emphasis added).

500. *Lyon v. Bausch & Lomb Optical Co.*, 224 F.2d 530 (2d Cir. 1955).

Hotchkiss v. Greenwood . . . “if an improvement is to obtain the privileged position of a patent more ingenuity must be involved than the work of a mechanic skilled in the art.” . . . “The principle of the *Hotchkiss* case applies to the adaptation or combination of old or well known devices for new uses.”

. . . .

We assume that the usual presumption against retroactivity would have applied to § 103, had the purpose not been so explicit to make the Act retroactive This interpretation is, moreover, confirmed by the report of the House as to § 103 Therefore, we can see no escape from accepting the text as it reads, except as “at a later time * * * some criteria * * * may be worked out.”⁵⁰¹

The idea of continued authority of *Hotchkiss v. Greenwood* expressed by Judge Hand was also supported by a “Study of the Subcommittee on Patents, Trademarks and Copyrights of the Committee on the Judiciary” of the United States Senate, published in 1958, which specifically stated that two early bills⁵⁰² regarding “novelty,” “utility,” and “routine skill” tests were

an attempt to incorporate into the code the rule of *Hotchkiss v. Greenwood* to the effect that in order to find patentable invention something more than the skill and ingenuity possessed by an ordinary mechanic acquainted with the business must be present.⁵⁰³

In 1960, Judge Hand, again addressed the history and policy behind enactment of section 103:

We still cannot escape the conclusion—as we could not when *Lyon v. Bausch & Lomb* . . . was decided in 1955—that Congress deliberately meant to restore the old definition, and to raise it from a judicial gloss to statutory command. It is not for us to decide what “discoveries” shall “promote the progress of science and useful arts” sufficiently to grant any “exclusive right” of inventors Nor may we approach the interpretation of § 103 of the Title 35 with a predetermined bias.⁵⁰⁴

501. *Id.* at 534-35 (2d Cir. 1955) (citation omitted) (quoting *Cuno Eng'g. Corp. v. Automated Devices Corp.*, 314 U.S. 84, 90-91 (1941)).

502. S. 2518, 81st Cong. (1952); H.R. 6436, 81st Cong. (1952).

503. STUDY OF THE SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE S. COMM. ON THE JUDICIARY, 85TH CONG., EFFORTS TO ESTABLISH A STATUTORY STANDARD OF INVENTION 9 (Comm. Print 1958) (citation omitted) [hereinafter STATUTORY STANDARD].

504. *Reiner v. I. Leon Co., Inc.*, 285 F.2d 501, 503 (2d Cir. 1960) (emphasis added).

Judge Hand acknowledged the “misty” nature of the statutory test under section 103, but pointed to some sign posts evidencing more than “ordinary skill” in the “art”:

The test laid down is indeed misty enough. It directs us to surmise what was the range of ingenuity of a person “having ordinary skill” in an “art” with which we are totally unfamiliar To judge on our own that this or that assemblage of old factors was, or was not, “obvious” is to substitute our ignorance for the acquaintance with the subject of those who were familiar with it. There are indeed some sign posts: e.g., how long did the need exist; how many tried to find the way; how long did the surrounding and accessory arts disclose the means; how immediately was the invention recognized as an answer by those who used the new variant?⁵⁰⁵

Complexity was clearly excluded by Judge Hand as a criterion. Judge Hand stated that “[u]nless we are to measure invention by the size and complexity of the product, this new article fulfilled the qualifications for a patent.”⁵⁰⁶

The first Supreme Court cases directly addressing section 103 were decided in 1966. In *Graham v. John Deere Co.*,⁵⁰⁷ Justice Clark reiterated statutory patentability under the Patent Act of 1952 as a codification “embracing the principle long ago announced by this Court in *Hotchkiss v. Greenwood*”:

We have concluded that the 1952 Act was intended to codify judicial precedents embracing the principle long ago announced by this Court in *Hotchkiss v. Greenwood*, and that, while the clear language of § 103 places emphasis on an inquiry into obviousness, the general level of innovation necessary to sustain patentability remains the same.⁵⁰⁸

The Court, however, like Judge Rich in the lectures he gave, recognized the “difficulties in applying the nonobviousness test,” and asserted a “belief,” fourteen years after enactment of the statutory requirement, that “uniformity and definiteness” would result:

What is obvious is not a question upon which there is likely to be uniformity The difficulties, however, are comparable to those encountered daily by the courts in such frames of reference as negligence and scienter, and should be amenable to a case-by-case development. We believe that strict observance of the requirements

505. *Id.* at 503-04.

506. *Id.* at 504.

507. *Graham v. John Deere Co.*, 383 U.S. 1 (1966).

508. *Id.* at 3-4 (citation omitted).

laid down here will result in that uniformity and definiteness which Congress called for in the 1952 Act.⁵⁰⁹

The three cases joined under *Graham* included two separate patents, one to a spring clamp for a chisel plow, U.S. 2,627,798 (the ‘798 patent),⁵¹⁰ and the other, U.S. 2,870,943 (the ‘943 patent), which was directed to a “plastic finger sprayer with a single ‘hold-down’ lid used as a built-in dispenser for containers or bottles packaging liquid products.”⁵¹¹ The claimed spring clamp of the ‘798 patent was distinguished from the prior art by “interchanging of the shank and hinge plate and the consequences flowing from this arrangement.”⁵¹² The Court summarized that the patented arrangement “permits the shank to flex under stress for its *entire* length,”⁵¹³ which, according to the patentees, “effectively absorbs the tremendous forces of the shock of obstructions whereas prior art arrangements failed.”⁵¹⁴ With respect to the sprayer cases,⁵¹⁵ the only distinction identified by the Court was a “rib and shoulder seal” of the claimed device in place of a “tongue and groove technique” in the prior art.⁵¹⁶ The prior art technique was considered by the Court to be “inherently a more stable structure, forming an interlock that withstands distortion of the overcap when subjected to rough handling.”⁵¹⁷

In holding the patent claims at issue in all three cases to be invalid,⁵¹⁸ the Court considered whether they represented improvements in performance. Specifically, with respect to the claimed plow clamp, the Court referred to testimony alleging that the advantages associated with improved flexing were not significant:

Moreover, the clear testimony of the petitioner’s expert shows that the flexing advantages flowing from the ‘798 patent arrangement are not, in fact, a significant feature in the patent.

. . . .

509. *Id.* at 18.

510. *Id.* at 19-20.

511. *Id.* at 26.

512. *Id.* at 23.

513. *Id.*

514. *Id.* at 24.

515. *Id.* at 26 n.14. The ‘943 patent was assigned to Cook Chem. Co. Baxter I. Scoggin was the inventor of the ‘943 patent. In the second case, Calmar was the manufacturer of the infringing device (Case. No. 37), and Colgate was a customer of Calmar and user of the device (Case No. 43).

516. *Id.* at 31.

517. *Id.* at 31-32.

518. *Id.* at 37.

“Q. Do you think that it is a substantial factor, a factor of importance in the functioning of the structure? A. Not a great factor, no.”⁵¹⁹

The Court also referred to art that was not before the Examiner, and wherein, according to the Court, “the mechanical operation is identical,” and distinguished “operative mechanical distinctions” from “nonobvious differences”:

We find no nonobvious facets in the ‘798 arrangement. The wear and repair claims were sufficient to overcome the patent examiner’s original conclusions as to the validity of the patent. However, some of the prior art, notably Glencoe, was not before him. There the hinge plate is below the shank but, as the courts below found, all of the elements in the ‘798 patent are present in the Glencoe structure. Furthermore, even though the position of the shank and hinge plate appears reversed in Glencoe, the mechanical operation is identical The mere shifting of the wear point to the heel of the ‘798 hinge plate from the stirrup of Glencoe—itsself a part of the hinge plate—presents *no operative mechanical distinctions*, much less nonobvious differences.⁵²⁰

Similarly, with respect to the ‘943 patent of the Cook Chemical cases, the Court referenced reliance by the inventor, Scoggin, during prosecution of the patent application, “entirely upon the sealing arrangement as the exclusive patentable difference” over the prior art considered by the Examiner, which did not include a patent to Livingstone.⁵²¹ The Court found Scoggin’s rib to be “fully disclosed and dedicated to the public,” by virtue of the Livingstone patent.⁵²² Despite the fact that the ‘943 patent was directed to a liquid container having a pump sprayer rather than a pouring spout as taught by Livingstone, the Court found that both devices solved “mechanical closure problems” and, therefore, were part of the same art:

Cook Chemical argues, however, that Livingstone is not in the *pertinent* prior art because it relates to liquid containers having pouring spots rather than pump sprayers. . . . The problems confronting Scoggin and the insecticide industry were . . . mechanical closure problems. Closure devices in such a closely related art as pouring spouts for liquid containers are at the very least pertinent references.⁵²³

519. *Id.* at 25 & n.13.

520. *Id.* at 25-26 (emphasis added).

521. *Id.* at 32, 35.

522. *Id.* at 35.

523. *Id.*

As with the clamp for the chisel plow, the Court found that the difference between Scoggin's claimed invention and the prior art "rests upon succeedingly small and quite non-technical mechanical differences."⁵²⁴

In effect, the Court found that both the claimed clamp and pump sprayer lacked patentability because there were no "operative" or "mechanical" differences between the claimed devices and the relevant prior art. Specifically, the claimed clamp did not meet the minimum threshold condition of "nonobviousness" because the Court found "no operative mechanical distinctions, much less nonobvious differences."⁵²⁵ Similarly, the Court characterized the novelty of the claimed pump sprayer as "non-technical mechanical differences," and only then made reference to what "would have been obvious to a person reasonably skilled in that art."⁵²⁶ Failure to find "operative" or "mechanical" distinction appears remarkably like the language of "mode of operation" and "new application of principle" employed in cases dating from the early English cases. These cases, including *Boulton v. Bull*⁵²⁷ formed the basis for early nineteenth century holdings of patentability in the United States, well before *Hotchkiss*.

The companion case to *Graham, United States v. Adams*,⁵²⁸ which was decided on the same day, upheld the validity U.S. Patent 2,322,210, directed to a water-activated constant potential battery having a magnesium electropositive electrode (anode) and a fused cuprous chloride electronegative electrode (cathode).⁵²⁹ The battery was useful because it could be stored for long periods of time without deterioration, and was activated by simply adding either plain or salt water as an electrolyte.⁵³⁰ The battery had a large capacity for generating current and exhibited a constant voltage regardless of current.⁵³¹ Further, the battery was "operable from 65 degrees below zero Fahrenheit to 200 degrees Fahrenheit."⁵³² The Government entered into several contracts with companies to produce the battery

524. *Id.* at 36.

525. *Id.* at 26.

526. *Id.* at 36-37.

527. *See supra* 121-153 and accompanying text.

528. *United States v. Adams*, 383 U.S. 39 (1966).

529. *Id.* at 42-43.

530. *Id.* at 42.

531. *Id.* at 43.

532. *Id.*

during World War II despite initial reports suggesting serious doubts of the inventor's claims to the battery's performance capability.⁵³³

The inventor, Adams, sued the Government after his request for compensation was denied in 1960, five years after he had learned that the Government not only changed its opinion of the utility of the battery, but made extensive use of it, as well.⁵³⁴ In its defense, the Government argued that Adams' patent was invalid for lack of novelty under 35 U.S.C. § 102(a) and obvious under 35 U.S.C. § 103.⁵³⁵ Regarding lack of novelty, no single reference was identified that included all of the elements of Adam's claimed battery. Instead, the Government based its argument, in part, on equivalence of prior art batteries with component parts of Adam's claimed battery. According to the Government, despite "the fact that, wholly unexpectedly, the battery showed certain valuable operating advantages over other batteries [these advantages] would certainly not justify a patent on the essentially old formula."⁵³⁶ Several references cited by the Government were either inoperable or failed to identically disclose Adams' claimed combination of a magnesium anode and a cuprous chloride cathode.⁵³⁷ The Court identified teachings absent from each of the references, including lack of "indication" or "suggestion" of substitutions in component parts of the prior art battery cells that would be necessary to obtain Adams' claimed invention. For example, the Court rejected combination of a patent to Wood with a treatise by Niaudet in part for lack of an "indication of its use with cuprous chloride" or "any indication that a magnesium battery could be water-activated."⁵³⁸ The Court also

533. *Id.* at 44.

534. *Id.*

535. *Id.* at 48.

536. *Id.* The Court further stated that the Government's position "concludes that wet batteries comprising a zinc anode and silver chloride cathode are old in the art; and that the prior art shows that magnesium may be substituted for zinc and cuprous chloride for silver chloride." *Id.*

537. *See id.* at 45-48. One reference, Skrivanoff, taught a magnesium electrode and a cathode "faced with" a paste that included cuprous chloride. The Court found that there was no evidence that the cathode "as placed in the battery" would actually contain cuprous chloride. Moreover, an attempt at assembling the battery taught by Skrivanoff resulted in fire and an explosion, and so was inoperable. *Id.* at 47-48.

538. *Id.* at 47. The Court stated the following:

The Niaudet treatise describes the Marie Davy cell invented in 1860 and De La Rue's variations on it. The battery comprises a zinc anode and a silver chloride cathode. . . .

The Wood patent is relied upon by the Government as teaching the substitution of magnesium, as in the Adams patent, for zinc. . . . There is no

rejected combination of these references with a treatise by Codd because “[h]e does not teach that magnesium could be combined in a water-activated battery Nor does he suggest, as the Government indicates, that cuprous chloride could be substituted for [the] silver chloride [cathode taught by Niaudet].”⁵³⁹ Instead, according to the Court, Codd “merely refers to the cuprous *ion*—a generic term which includes an infinite number of compounds—and in no way suggests that cuprous chloride could be employed in a battery.”⁵⁴⁰ The Court also found that the component substitutions necessary in each of the references were not “merely equivalent substitutions” in view of the fact that Adams’ battery, as “the Government apparently admits . . . ‘wholly unexpectedly’ has shown ‘certain valuable operating advantages over other batteries’ while those from which it is claimed to have been copied were long ago discarded.”⁵⁴¹ In other words, the Court’s equivalency analysis relied on unexpectedly improved performance as evidence that Adams’ claimed battery operated by virtue of an application of principle not found in any of the relevant prior art. The claimed battery, therefore, in the eyes of the Court, was novel, at least in part, because it lacked an equivalent in the prior art:

We believe the Court of Claims was correct in concluding that the Adams battery is novel. . . . An inoperable invention or one which fails to achieve its intended result does not negative novelty. . . .

Nor is the Government’s contention that the electrodes of Adams were mere substitutions of pre-existing battery designs supported by the art. . . . For these reasons we find no equivalency.⁵⁴²

The Court’s conclusion of non-obviousness was considered separately from novelty:

We conclude the Adams’ battery was *also* non-obvious. As we have seen, the operating characteristics of the Adams battery have been shown to have been unexpected and to have far surpassed then-existing wet batteries. . . . This is not to say that one who merely finds new uses for old inventions by shutting his eyes to their prior disadvantages thereby discovers a patentable innovation.

indication of its use with cuprous chloride, nor was there any indication that a magnesium battery could be water-activated.

Id. at 45-46.

539. *Id.* at 47.

540. *Id.*

541. *Id.* at 51.

542. *Id.* at 50-51.

We do say, however, that known disadvantages of old devices which would naturally discourage the search for new inventions may be taken into account in determining obviousness.

Nor are these the only factors bearing on the question of obviousness. We have seen that at the time Adams perfected his invention noted experts expressed disbelief in it. Several of the same experts subsequently recognized the significance of the Adams invention, some even patenting improvements on the same system.⁵⁴³

The factors considered by the Court in *Adams*, as relevant to non-obviousness, were also those associated with evidence of unexpected results relied upon by the Court in its novelty analysis. The Court concluded that Adams' battery was not equivalent to those in the prior art. Therefore, just as with the claimed plow clamp and pump sprayer of *Graham*, the Court in *Adams* could have come to the same conclusion regarding the patentability of Adams' battery without separately addressing "non-obviousness."

Anderson's-Black Rock, Inc. v. Pavement Salvage Co., Inc.,⁵⁴⁴ continued the theme of first searching for a new application of principle, if any, and then determining, as a separate issue, patentability under the non-obviousness standard of section 103 as a conclusory assessment founded on the result of that search.⁵⁴⁵ At issue was the validity of a patent, U.S. 3,055,280, directed to an apparatus that included, with a conventional bituminous paver, a radiant heat burner that would prepare the edge of a previously laid cold strip of pavement in order to prevent the formation of what was known as a "cold joint" between sequentially laid strips of "black top."⁵⁴⁶ Use of radiant heat burners to lay asphalt pavement was previously known, as was the use of radiant heat burners to patch limited areas of asphalt.⁵⁴⁷ The patentee's placement of a radiant heat burner on an otherwise known device for laying strips of asphalt was not considered by the Court to produce a "'new or different function,' . . . within the test of validity of combination patents."⁵⁴⁸ The Court relied on *Graham* for the standard of patentability to be applied to a

543. *Id.* at 51-52 (emphasis added).

544. *Anderson's-Black Rock, Inc. v. Pavement Salvage Co., Inc.*, 396 U.S. 57 (1969).

545. *Id.*

546. *Id.* at 57.

547. *Id.* at 58-59.

548. *Id.* at 60 (quoting *Lincoln Eng'g Co. v. Stewart-Warner Corp.*, 303 U.S. 545, 549 (1938)).

combination of known elements.⁵⁴⁹ Specifically, the Court quoted *Graham* for its test of obviousness, reciting the steps of determining the scope and content of the prior art, differences between the prior art and claims at issue, and the level of ordinary skill in the pertinent art.⁵⁵⁰ The Court then came to separate conclusions that the claimed apparatus “added nothing to the nature and quality of the radiant-heat burner already patented,” and that “the use of the old elements in combination was not an invention by the obvious-nonobvious standard”:

We conclude that while the combination of old elements performed a useful function, it added nothing to the nature and quality of the radiant-heat burner already patented. *We conclude further* that to those skilled in the art the use of the old elements in combination was not an invention by the obvious-nonobvious standard.⁵⁵¹

Therefore, as in *Graham* and *Adams*, the Court assessed novelty in application of principle, and then followed up closely thereafter with a distinct conclusion regarding obviousness under section 103.

In like manner, the Court concluded that a claimed “machine system for automatic record keeping of bank checks and deposits,” was unpatentable as obvious under 35 U.S.C. § 103 in *Dann v. Johnston*.⁵⁵² There, the Court held that, although the claimed system was not “equivalent” to a prior art “automatic data processing system . . . for use in a large business organization,” it was “closely analogous,” whereby “each shares a similar capacity to provide breakdowns within its ‘Item Groups’ or category numbers.”⁵⁵³ The Court concluded that “[w]hile the [prior art] invention is not designed specifically for application to the banking industry many of its characteristics and capabilities are similar to those of respondent’s system.”⁵⁵⁴ Following the analysis of the Court in *Graham*, *Adams* and *Anderson’s Black Rock*, the Court in *Dann* clearly partitioned equivalence in component parts from determinations of obviousness under section 103:

549. *Id.* at 61-62 (“In this case the question of patentability of the combination turns on the meaning of 35 U.S.C. § 103 which the Court reviewed in the *Graham* case.”).

550. *Id.* at 62.

551. *Id.* at 62-63 (emphasis added).

552. *Dann v. Johnston*, 425 U.S. 219, 220, 229 (1976).

553. *Id.* at 228-29.

554. *Id.*

[R]espondent's invention does something other than "provide a customer with . . . a summary sheet consisting of net totals of plural separate accounts which a customer may have at a bank." However, it must be remembered that the "obviousness" test of § 103 is *not* one which turns on whether an invention is equivalent to some element in the prior art but rather whether the difference between the prior art and the subject matter in question "is a difference sufficient to render the claimed subject matter unobvious to one skilled in the applicable art."⁵⁵⁵

Nevertheless, by drawing an analogy with a patented system directed to departments at business organizations, the Court found an avenue that rendered meaningless the differences between the claimed inventions. As in the previous Supreme Court cases applying the statutory requirement of non-obviousness, the conclusion of non-obviousness followed directly from the Court's apparent exclusion of principle as a distinction from the prior art:

Respondent makes much of his system's ability to allow "a large number of small users to get the benefit of large-scale electronic computer equipment and still continue to use their individual ledger format and bookkeeping methods." It may be that that ability is not possessed *to the same extent* either by existing machine systems in the banking industry or by the Dirks system. But the mere existence of differences between the prior art and an invention does not establish the invention's nonobviousness. The gap between the prior art and respondent's system is simply not so great as to render the system nonobvious to one reasonably skilled in the art.⁵⁵⁶

The last Supreme Court decision prior to *KSR International Co. v. Teleflex, Inc.*⁵⁵⁷ that directly addressed patentability under the non-obviousness requirement of 35 U.S.C. § 103 was *Sakraida v. Ag Pro, Inc.*⁵⁵⁸ The patent at issue in *Sakraida* claimed a system for removing cow manure from the floor of a dairy barn.⁵⁵⁹ Use of water, delivered from tanks or pools to barn floors by means of high pressure hoses or pipes, was known.⁵⁶⁰ The Court phrased the only point of novelty as a "provision for abrupt release of the water from the tanks or pools directly onto the barn floor, which causes the flow of a sheet of water

555. *Id.* at 228 (citations omitted) (emphasis added).

556. *Id.* at 229-230 (emphasis added).

557. *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007).

558. *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273 (1976).

559. *Id.* at 273-74.

560. *Id.* at 276-77.

that washes all animal waste into drains within minutes and requires no supplemental hand labor.”⁵⁶¹ The Court, however, held that this was nothing more than extension of the previously applied principle of gravity and, therefore, “would be obvious to any one skilled in the art of mechanical application”:

Exploitation of the principle of gravity adds nothing to the sum of useful knowledge where there is no change in respective functions of the elements of the combination; this particular use of the assembly of old elements would be obvious to any one skilled in the art of mechanical application.⁵⁶²

Therefore, once again, even after statutory recognition of *Hotchkiss* as providing a threshold requirement of patentability distinct from novel application of principle, the Court’s conclusion of obviousness followed the Court’s inability to identify any such new application.

VI. KSR INTERNATIONAL CO. V. TELEFLEX, INC. AND “COMMON SENSE”

A. A “Common Sense” Approach

Most recently, the Supreme Court invalidated a patent directed to an adjustable foot pedal assembly for use in automobiles. The Court, in *KSR International Co. v. Teleflex, Inc.*, reversed a decision by the Federal Circuit, in *Teleflex, Inc. v. KSR International, Co.*,⁵⁶³ which held that the district court, in turn, “erred as a matter of law by applying an incomplete teaching-suggestion-motivation test to its obviousness determination.”⁵⁶⁴ The Federal Circuit, in reversing the district court, recited teachings of several references relied upon during prosecution of the ‘565 patent, and an additional reference, U.S. 5,010,782, issued to Asano, et al., which was not cited or relied upon during prosecution of the ‘565 patent at the United States Patent and Trademark Office. The Federal Circuit stated that the “district court was required to make specific findings as to whether there was a suggestion or motivation to combine the teachings of Asano with an electronic control in the particular manner claimed by claim 4 of the ‘565 patent” and “was required to make specific findings as to a suggestion or motivation to attach an electronic control to the support

561. *Id.* at 277.

562. *Id.* at 282.

563. *Teleflex, Inc. v. KSR Int’l, Co.*, 119 F. App’x. 282 (Fed. Cir. 2005), *rev’d*, 127 S. Ct. 1727 (2007).

564. *Id.* at 290.

bracket of the Asano patent assembly.”⁵⁶⁵ The Federal Circuit concluded that application of the “teaching-suggestion-motivation test” by the district court was incomplete because it failed to make any “findings as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of [the] invention to make the combination in the manner claimed.”⁵⁶⁶

The Supreme Court agreed with the Federal Circuit’s summary of the District Court decision, that “Asano taught everything contained in claim 4 except the use of a sensor to detect the pedal’s position and transmit it to the computer controlling the throttle,” and that “[t]hat additional aspect was revealed in sources, such as the ‘068 patent and the sensors used by Chevrolet.”⁵⁶⁷ Further, the Court summarized the Federal Circuit decision as being based on a finding that “District Court had not been strict enough in applying the [teaching-suggestion-motivation] test” and that the “District Court was incorrect that the nature of the problem to be solved satisfied this requirement because unless the ‘prior art references addressed the precise problem that the patentee was trying to solve,’ the problem would not motivate an inventor to look at those references.”⁵⁶⁸ The Supreme Court also noted that the Federal Circuit found irrelevant that “it might have been obvious to try the combination of Asano and a sensor . . . because ‘obvious to try’ has long been held not to constitute obviousness.”⁵⁶⁹

The Court began its own analysis by quoting the policy of the Court in *A&P* of proscribing unwarranted diminishment of “resources available to skillful men”:

Neither the enactment of § 103 nor the analysis in *Graham* disturbed this Court’s earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art. For over half a century, the Court has held that a “patent for a combination which only unites old elements with no change in their respective functions . . . obviously withdraws what is already known into the field of its monopoly and diminishes the resources available to skillful men.” This is a

565. *Id.* at 288.

566. *Id.* (quoting *In re Kotzab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000)).

567. *Teleflex*, 127 S. Ct. at 1738.

568. *Id.* (quoting *Teleflex*, 119 F. App’x at 288).

569. *Id.* at 1739 (quoting *Teleflex*, 119 F. App’x at 289).

principle reason for declining to allow patents for what is obvious.⁵⁷⁰

The Court then summarized *Adams*, *Anderson's-Blackrock*, and *Sakraida* as illustrating the doctrine that “combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”⁵⁷¹ Also, although “the Court of Customs and Patent Appeals [in *In re Bergel*] captured a helpful insight”⁵⁷² in establishing a requirement of a “teaching, suggestion, or motivation to combine known elements, in order to show that the combination is obvious,” the Court noted that, nevertheless, “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.”⁵⁷³ The Supreme Court clearly relied upon identifying motivation in the art to combine known elements, and upon its belief that the motivation might take several different forms:

Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. . . . As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.⁵⁷⁴

For example, “a known problem for which there was an obvious solution encompassed by the patent’s claims” was provided by the Court as an example of “[o]ne of the ways in which a patent’s subject matter can be proved obvious.”⁵⁷⁵ Further, the Court generalized the source of motivation to “any need or problem known in the field of endeavor at the time of invention and addressed by the patent.”⁵⁷⁶ Even more fundamentally, the Court grounded obviousness of a

570. *Id.* (quoting *Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp.*, 340 U.S. 147, 152-53 (1950)).

571. *Id.*

572. *Id.* at 1741 (referencing *In re Bergel*, 292 F.2d 955, 956-57 (C.C.P.A. 1961)).

573. *Teleflex*, 127 S. Ct. at 1741.

574. *Id.* at 1740-41.

575. *Id.* at 1742.

576. *Id.*

combination of known elements on common sense by stating that “[c]ommon sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill would be able to fit the teachings of multiple patents together like pieces of a puzzle.”⁵⁷⁷ The Court invoked “common sense” a second time as a measure of statutory obviousness, particularly with respect to requisite motivation in combining known elements to solve a problem:

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.⁵⁷⁸

The Federal Circuit’s strict adherence to an explicit finding of a teaching, suggestion or motivation in the prior art to combine elements was held by the Court to be a misunderstanding of earlier precedent that provided for “recourse to common sense.”⁵⁷⁹

As applied to the facts of the case, the Court stated that the issue was “[w]hether a pedal designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, would have seen a benefit to upgrading Asano with a sensor.”⁵⁸⁰ The Court answered in the affirmative, namely, that “designers might have decided to design new pedals from scratch; but they also would have had reason to make pre-existing pedals work with the new engines.”⁵⁸¹ Presuming then, that a designer would start with Asano, the Court queried “whether a pedal designer of ordinary skill starting with Asano would have found it obvious to put the sensor on a fixed pivot point.”⁵⁸² Then, noting the “wire chaffing problems of Rixon and Smith’s teaching [in the prior art] that ‘the pedal assemblies must

577. *Id.*

578. *Id.*

579. *Id.* The Court stated that “[r]igid preventative rules that deny fact finders recourse to common sense, however, are neither necessary under our case law nor consistent with it. . . . [T]he fundamental misunderstandings identified above led the Court of Appeals in this case to apply a test inconsistent with our patent law decisions.” *Id.* at 1742-43.

580. *Id.* at 1744.

581. *Id.*

582. *Id.*

not precipitate any motion in the connecting wires,”⁵⁸³ the Court concluded that “the designer would know to place the sensor on a nonmoving part of the pedal structure,” and that the “most obvious nonmoving point on the structure from which a sensor can easily detect the pedal’s position is a pivot point.”⁵⁸⁴ From this, and a lack of “secondary factors,” the Court held that the subject matter of claim 4 failed to meet the requirement of section 103:

Teleflex has shown no secondary factors to dislodge the determination that claim 4 is obvious. Proper application of *Graham* and our other precedents to these facts therefore leads to the conclusion that claim 4 encompassed obvious subject matter. As a result, the claim fails to meet the requirement of § 103.⁵⁸⁵

The opinion of the Court concluded with the now familiar-sounding refrain that “results of ordinary innovation are not the subject of exclusive rights under the patent laws” and asserted that *Hotchkiss* established “the bar on patents claiming obvious subject matter” on the premise that “[w]ere it otherwise patents might stifle, rather than promote, the progress of useful arts,” contrary to the stated intent of the Constitution:

We build and create by bringing to the tangible and palpable reality around us new works based on instinct, simple logic, ordinary inferences, extraordinary ideas, and sometimes even genius. These advances, once part of our shared knowledge, define a new threshold from which innovation starts once more. And as progress beginning from higher levels of achievement is expected in the normal course, the results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise patents might stifle, rather than promote, the progress of useful arts. These premises led to the bar on patents claiming obvious subject matter established in *Hotchkiss* and codified in § 103. Application of the bar must not be confined within a test or formulation too constrained to serve its purpose.⁵⁸⁶

B. Common Sense as Applied to Patentability

Title 35 of United States Code limits patents to any “process, machine, manufacture, or composition of matter, or any new and

583. *Id.* (quoting U.S. Patent No. 5,063,811 col.1 1.36-37 (filed June 9, 1990)).

584. *Id.* at 1744-45.

585. *Id.* at 1745.

586. *Id.* at 1746 (citation omitted).

useful improvement thereof.”⁵⁸⁷ Casting the source of motivation so broadly as to include an “apparent reason to combine the known elements”⁵⁸⁸ to address a “problem known in the field of endeavor at the time of invention”⁵⁸⁹ as outlined at least in dicta by the Supreme Court in *KSR*, is to provide a basis for finding any beneficial combination of known components obvious. The fundamental distinctions between obvious and non-obvious subject matter, as articulated by the Court, are “real innovation”⁵⁹⁰ and “common sense,” which are inherently rhetorical terms that provide little practical guidance.

Motivation was not a consideration of the Court in *Hotchkiss*. During their supporting argument, the patentees actually presumed that the claimed invention entailed a combination that one skilled in the art would be motivated to make:

Knobs had been in use many hundred years; potter’s ware and porcelain, many thousands; but no one ever before *succeeded* in uniting the clay and the iron so as to make of the two a substantial and useful article. There are many difficulties in uniting them, which can be best explained by a careful examination of the new manufacture itself⁵⁹¹

Instead, consideration of skill beyond that of the ordinary mechanic hinged on the relationship between a substituted or added component and the remainder of the patented subject matter. The Court considered mere substitution of “materials better adapted to the purpose” to be a legally inadequate basis for patent protection.⁵⁹²

As discussed above, the Court has employed parallel language concluding that there were (1) “no operative mechanical distinctions”

587. 35 U.S.C. § 101 (2000) The full text of section 101 reads: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”

588. *Teleflex*, 127 S. Ct. at 1741.

589. *Id.* at 1742.

590. *Id.* at 1741 (“Granting patent protection to advances that occur in the ordinary course without real innovation retards progress and may in the case of patents combining previously known elements, deprive prior inventions of their value or utility.”).

591. *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248, 254 (1850) (emphasis added).

592. *Id.* at 266. The Court stated:

But this, of itself, can never be the subject of a patent. No one will pretend that a machine, made, in whole in part, of materials better adapted to the purpose for which it is used than the materials of which the old one is constructed, and for that reason better and cheaper, can be distinguished from the old one; or, in the sense of the patent law, can entitle the manufacturer to a patent.

Id.

in *Graham*,⁵⁹³ (2) systems that were “closely analogous,” having “characteristics and capabilities [that] are similar. . . [although] not possessed to the same extent” in *Dann*,⁵⁹⁴ (3) no “new or different function[s]” in *Andersons Black-Rock*,⁵⁹⁵ and (4) “no change in the respective functions of the elements of the [claimed] combination” in *Sakraida*.⁵⁹⁶ In all four cases, the Court was looking for novelty in the form of a new application of principle as reflected by the functional relationship between novel combinations of components. In other words, simple substitution of one component for another that was known, or addition of another part that merely extends a principle of operation, did not reflect any new application of principle. This resulted even if the alteration yielded an improvement in the results, particularly as occurred in *Anderson’s Black Rock* and *Sakraida*. The Court in *Adams*, on the other hand, in concluding that there were no “equivalent substitutions” or “equivalent operating characteristics”⁵⁹⁷ in the prior art references, found a new application of principle in that none of the operative principles in any of the prior art references could account for the performance of Adams’ battery. Motivation in the art to build a dry battery having superior performance characteristics, then, far from providing a basis for declaring Adam’s claimed battery to be obvious, supported the conclusion by the Court that it was not.

Hotchkiss was not the first Supreme Court decision to mandate more than a novel combination of component parts. Early in the nineteenth century, Justice Marshall, in *Evans v. Eaton*⁵⁹⁸ approved of Oliver Evans’ new application of principles as his basis for patentable distinction, where “[h]e asserts himself to be the inventor of the machines and claims the application of these principles, to the improvement of the process of manufacturing flour, and other purposes, as his invention and improvement in the art.”⁵⁹⁹ Prior to *Evans*, Justices Washington and Story, at the circuit court level,

593. *Graham v. John Deere Co.*, 383 U.S. 1, 26 (1996).

594. *Dann v. Johnston*, 425 U.S. 219, 229 (1976).

595. *Anderson’s-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 60 (quoting *Lincoln Eng’g. Co. v. Stewart Warner Corp.*, 303 U.S. 545, 549 (1938)).

596. *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282 (1976).

597. *United States v. Adams*, 383 U.S. 39, 51 (1966).

598. *See supra* notes 170-176 and accompanying text.

599. 16 U.S. (Wheat. 3) 454, 515 (1818). Agreeing with Mr. Evans, Chief Justice Marshall stated that “[i]t is, then, the opinion of this court, that Oliver Evans may claim, under his patent, the exclusive use of his inventions and improvements in the art of manufacturing flour and meal, and in the several machines which he has invented, and in his improvements on machines previously discovered.” *Id.* at 517 (Marshall, C.J., concurring).

likewise distinguished mere changes in form or proportion from patentable distinction.⁶⁰⁰ Even Thomas Jefferson, in a letter to Isaac McPherson referencing Oliver Evans' improved Hopper-boy, distinguished principle from form: "But it is the principle, to wit, a string of buckets, which constitutes the invention, not the form of the buckets, round, square, or hexagon; nor the manner of attaching them, nor the material of the connecting band, whether chain, rope, or leather."⁶⁰¹

The idea that patentability lay in a new application of principle was founded in the Patent Act of 1793.⁶⁰² Development of this idea in the United States borrowed heavily from jurisprudence of the English courts, such as *Boulton v. Bull*,⁶⁰³ dating from the 1790's and continuing into the early nineteenth century. The distinction between a new application of principle, which could be embodied in a combination of parts, each known in the art, as patentable subject matter, and its absence, represented, for example, by novel changes only in form or proportion, which was not patentable, was well-developed by the time *Hotchkiss* was decided. Further, reference by the Court in *Hotchkiss* to ordinary skill was not new, having been the fundamental premise for denying patentability for mere changes in form or proportion as early as Thomas Jefferson's tenure as Secretary of State under the Patent Act of 1790.⁶⁰⁴ The Court in *Hotchkiss* also did not change the fundamental requirements of patentability; the Supreme Court relied on new application of principle for patentable distinction well into the twentieth century, albeit sporadically at times. Even more convincing is that, although *Hotchkiss* was occasionally cited among many other Supreme Court cases in subsequent decisions, broad acceptance of *Hotchkiss* as being the first case to establish "that if an improvement is to obtain the privileged

600. For an opinion by Justice Washington, see *Park v. Little*, 18 F. Cas. 1107, 1108 (C.C.Pa. 1813) (No. 10,715) ("Is it an improvement in the principle or in the form? If the former, then it is no invasion of the plaintiff's privilege—if the latter, it is."). For an opinion by Justice Story, see *Woodcock v. Parker*, 30 F. Cas. 491, 492 (C.C.Mass. 1813) (No. 17,971) ("A mere change of former proportions will not entitle a party to a patent. If he claim a patent for a whole machine . . . it must be a new mode, method, or application of mechanism, to produce some new effect, or to produce an old effect in a new way.").

601. Jefferson, *supra* note 7, at 329.

602. Patent Act of 1793, ch.11, § 2, 1 Stat. 318-23 (1793) (repealed 1836) ("Provided always, and be it further enacted, that any person, who shall have discovered an improvement in the principle of any machine, or in the process of any composition of matter, which shall have been patented . . .").

603. *Boulton v. Bull*, 2 H.B. 463, 463 (1795).

604. Jefferson, *supra* note 7, at 335.

position of a patent more ingenuity must be involved than the work of a mechanic skilled in the art,” only occurred after the Supreme Court decision of *Cuno*, ninety years later.⁶⁰⁵ And even after *Hotchkiss* was firmly established as a watershed decision, Supreme Court decisions since the Patent Act of 1952, until *KSR*, arguably looked to new application of principle, as contrasted with differences in form only, as a conclusion penultimate to holdings regarding obviousness under section 103.

In *KSR*, the Court did not need to rely on motivation, regardless of its source, or notions of “real innovation,” “common sense,” or even “ordinary skill.” Under the facts of *KSR*, it was enough that the only element not taught by Asano was the use of a sensor.⁶⁰⁶ As noted above, neither the Federal Circuit nor the Supreme Court disagreed with the district court’s assessment of the prior art, despite the fact that both embodiments of Asano et al. appear to be much more complicated than that of the ‘565 patent.

An even more basic question of patentability therefore could have been whether substitution of electronic control (i.e., a sensor) for a cable presented any operative mechanical distinctions.⁶⁰⁷ Evidence that this substitution is, in the words of the Supreme Court in *Adams*, an “equivalent substitution”⁶⁰⁸ can be found in the specification of the ‘565 patent, which provides for use of a cable attachment member in place of electronic throttle control 28:

A cable attachment member can optionally be supported on one of the [fixed] pivot members to support a cable assembly for attachment to the engine throttle. This configuration would be used in place of the electronic throttle control 28; i.e., the configuration is used with a pedal assembly having a mechanical link to the throttle.⁶⁰⁹

In short, the specification of the ‘565 patent supports replacement of a cable linked to a fixed pivot as taught by Asano et al., with an

605. *Cuno Eng’g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 90 (1941).

606. *Teleflex Inc. v. KSR Int’l Co.*, 127 S. Ct. 1738, 1743 (2007).

607. *Graham v. John Deere Co.*, 383 U.S. 1, 26.

608. *United States v. Adams*, 383 U.S. 39, 50. As stated by the *Adams* Court:

Nor is the Government’s contention that the electrodes of *Adams* were mere substitutions of pre-existing battery designs supported by the prior art. If the use of magnesium for zinc and cuprous chloride for silver chloride were merely equivalent substitutions, it would follow that the resulting device—*Adams*’—would have equivalent operating characteristics. But it does not.

Id. at 50-51.

609. U.S. Patent No. 6,237,565 col.4 l.62-67 (filed Aug. 22, 2000) (claim numbers omitted).

electronic throttle control attached to a support of a pedal assembly, as in claim 4 of the '565 patent. To quote the Court in *Sakraida*, this substitution is an “[e]xploitation of . . . principle . . . [that] adds nothing to the sum of useful knowledge where there is no change in the respective functions of the elements of the [claimed] combination”⁶¹⁰ Just as reversal of the shank and hinge plate in *Graham* resulted in mechanical operation identical to the prior art reference by Glencoe, so, also, substitution of a cable linkage to a fixed pivot with an electronic throttle control to a support, presented “no operative mechanical distinctions.”⁶¹¹ The subject matter of claim 4 of the '565 patent embodied no new application of principle as that standard has existed since the Patent Act of 1793, and in accordance with the “common sense and common life” as expressed by Justice Story.⁶¹²

VII. ELIMINATING THE “MYTHICAL MAN”

On November 30, 1949, two months before P.J. Federico’s draft “Proposed Revision and Amendment of the Patent Laws,” of which Section 23, after revision, became Section 103 of the Patent Act of 1952, was “widely circulated,”⁶¹³ a trio of papers was presented before the New York Patent Law Association,⁶¹⁴ one entitled “Standards of Invention in Mechanical Cases,” by Conder C. Henry,⁶¹⁵ and another entitled, “The Concept of Patentable Invention,” by P.J. Federico.⁶¹⁶ In his paper, Federico acknowledged that “*Hotchkiss v. Greenwood*, is usually cited as the first case” to apply “the concept of invention as we use it today.”⁶¹⁷ Amazingly, however, he asserted that the Supreme Court’s decision in *Hotchkiss* was based on novelty:

One quotation from the decision is significant. The court said:

No one will pretend that a machine, made, in whole or in part, of materials better adapted to the purpose for which it is used

610. *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282 (1976).

611. *Graham*, 383 U.S. at 26.

612. See text at note 203.

613. See STATUTORY STANDARD, *supra* note 503, at 9

614. All three papers appear in *Forum of The New York Patent Law Association on the Subject of 'Patentable Invention,'* 32 J. PAT. OFF. SOC'Y 89 (1950).

615. See Henry, *supra* note 11.

616. See P.J. Federico, *The Concept of Patentable Invention*, 32 J. PAT. & OFF. SOC'Y 118 (1950). For the third paper presented, but not discussed here, see Daniel H. Kane, *Patentable Invention and Our Political Economy*, 32 J. PAT. OFF. SOC'Y 89 (1950).

617. *Id.* at 121. The paper is a summary of Mr. Federico’s presentation.

than the materials of which the old one is constructed, and for that reason better and cheaper, *can be distinguished from the old one*; or, in the sense of the patent, can entitle the manufacturer to a patent.

This places the matter on the basis of novelty, the new machine cannot be distinguished from the old one, hence is the same, is not novel. The court goes on to say:

The difference is formal, and *destitute of ingenuity or invention*. It may afford evidence of judgment and skill in the selection and adaptation of the materials in the manufacture of the instrument for the purpose intended, but nothing more.

This phrase introduces the concept of lack of invention as we use it today.⁶¹⁸

Federico also surmised that, even before *Hotchkiss*, not every novel combination was deemed patentable:

What was done before the decision of the Supreme Court? It is inconceivable that patents were granted and sustained for everything different, but not very much information is available. . . . In the case of combinations of old elements, the combination might simply be held not new in the absence of any new cooperative relationship, and similarly with the substitution of known devices or materials.

Despite the lack of information, it is believed that the realization that a patent could not be granted or sustained for every change must have come early. We find Thomas Jefferson writing in 1814 of such things as unpatentable combinations, substitution of material, and new uses of old machines.⁶¹⁹

Federico concludes with a “fundamental axiom that something new and different cannot be patented merely because it is new and different, and without regard to the quantum of novelty.”⁶²⁰

Conder C. Henry, a former Assistant Commissioner of Patents, used machines as a model for explaining patentability in his paper. He began by outlining the “distinctive characteristics of a machine” as having “at least some moving parts and the parts must move relative to each other with definite motions,” or “an internal rule of operation of its own.”⁶²¹ He contrasted these alternative characteristics from aggregations which “designate mechanisms consisting of an

618. *Id.*

619. *Id.* at 122.

620. *Id.*

621. Henry, *supra* note 11, at 101.

assemblage of mechanical elements which do not cooperate to produce any unitary result.”⁶²² Henry noted that improvements on old or “exhausted” combinations “must involve some new mechanical principle or mode of action in the machine itself.”⁶²³ At a time antecedent to any statutory recognition of “non-obviousness” as a prerequisite to patentability, Henry articulated two classes of anticipation: “(1) Where the references disclose exactly the same parts associated and functioning in the same way to produce the same operative result as the invention it is desired to anticipate, and (2) Where such art differs from the claimed invention in structure, or in function, or in result.”⁶²⁴

The first class is now commonly understood to be novelty. The second class appears to be Henry’s understanding of a type of novelty which he describes as lacking when “the public has knowledge of the invention as evidenced by a single reference on the ground that the differences are immaterial and obvious.”⁶²⁵ In one instance of the second class, described by Henry as the “most usual situation . . . one reference is modified in view of others.”⁶²⁶ According to Henry, a finding of anticipation under the second class is unwarranted “[i]f after making the substitution the parts of the resulting mechanism interact differently from the parts of the principle reference, regardless of the result,” or, alternatively, “[w]here it is necessary to modify materially the substituted element to adapt it for substitution.”⁶²⁷

A difference that is “material and unobvious,” according to Henry, occurs when the result is a “new mechanical structure, or causes the machine to function in a new way, or to produce a new or improved result.”⁶²⁸ In the case of either substitution or modification, Henry’s test is “not whether equivalency exists but whether something else exists,” and the questions are “of invention and not of anticipation.”⁶²⁹ However, Henry recognized the problem of gainsaying obviousness conclusively or after the fact: “All too frequently the grants of patents are refused and patents are held invalid on this ground without sufficient explanation or justification.

622. *Id.*

623. *Id.* at 102.

624. *Id.* at 104.

625. *Id.*

626. *Id.* at 106.

627. *See Henry, supra* note 11, at 106.

628. *Id.* at 104.

629. *Id.* at 107.

To rule capriciously that claimed differences are obvious is to pronounce judgment without inquiry as to the facts.”⁶³⁰ In effect, he questioned estimations of the ability of the “average engineer,” and proposed an alternative:

Would it be easier by its adoption and less expensive in a disputed case to prove, for example, that the average engineer solely from the knowledge of mechanics existing at the time could not have designed a particular machine, than to prove that such machine differs from prior art mechanisms by its internal rule of operation? I do not think so.⁶³¹

Henry proposed a bill “designed to eliminate the mythical man endowed with the speculative skill of the art”⁶³² The Bill would have amended Section 4886 of the Revised Statutes⁶³³ by adding the following sentence:

Without prejudice to any other patentability determining factor, invention shall be found present in a mechanical combination whenever any new functional relationship or mode of operation shall be found to exist between any of the elements or parts of such combination required for rendering it practically operative to produce a new or improved and useful result.⁶³⁴

Although the proposed additional language is limited to a “mechanical combination,” the phrases “new functional relationship” and “mode of operation,” have been applied synonymously with “new application of principle,” and in many different contexts beyond interaction between component parts of machines.

There is no mention in the Study of the Subcommittee of Patents, Trademarks and Copyrights published in 1958 of Henry or of substituting for “subjective” determinations of the abilities of the “common man skilled in the art.” However, his presentation is at least circumstantial evidence that, as late as 1949, “principle” or “mode of operation” was at least anecdotally related to notions of patentability, which could be assessed independently of, and even as an alternative to, assessments of “ordinary skill in the art,” in determining the patentability of claimed subject matter.

630. *Id.* at 105.

631. *Id.* at 117.

632. *Id.* at 118.

633. The pertinent part of section 4886 the Revised Statutes stated that “[a]ny person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, may obtain a patent therefor.” 18 Stat. 953, 954 (1875).

634. Henry, *supra* note 11, at 118.

CONCLUSION

Exclusivity as an award for merit has always required more than simple novelty of any component or combination of parts. However, measurement of the merit required to obtain the award of exclusive rights has been founded upon contribution to the public domain and upon the idea that not all novel subject matter constitutes contribution, even though it may be useful. Contribution has been associated with ingenuity since establishment of the Venetian system of exclusionary grant. Language of the United States Patent Acts of 1790 and 1793 drew from both the English and French systems. Furthermore, early case law in the United States frequently cited English cases, all of which agreed that a contribution sufficient to merit grant of exclusionary rights was a reflection of something more than bare novelty. Invention generally was gauged by the presence of a new application of principle or new “mode of operation,” and could be embodied by a new operative combination among known component parts.

The Supreme Court in *Hotchkiss* did not supplant the framework of patentability relied upon under existing or earlier patent acts, nor did it apply an additional condition for patentability not previously conceived. Rather, the Court, consistent with the maxim that patentability did not consist of mere changes in form or proportion, reflected Justice Story’s distinction between an ordinary artisan’s testimony as evidence of enablement, and that of a “person trained in the science to which it belonged” as a test of patentability.⁶³⁵ Evidence that *Hotchkiss* was not a watershed decision can be found in the many of the following cases that continued to maintain that a new application of principle or new mode of operation constituted patentable distinction over prior art.

The Court in *Cuno* asserted otherwise. It was at this time that President Roosevelt appointed the National Patent Planning Commission which concluded in 1948 that “[o]ne of the greatest technical weaknesses of the patent system . . . is the lack of a definitive yard stick as to what is invention.”⁶³⁶ The assertion by the Court in *Cuno*, that *Hotchkiss* established the requirement that “if an improvement is to obtain the privilege[d] position of a patent more ingenuity must be involved than the work of a mechanic skilled in the art,”⁶³⁷ likely would not have been a premise for establishing the

635. *Allen v. Blunt*, 1 F. Cas. 448, 450 (C.C. Mass. 1845) (No. 216).

636. See STATUTORY STANDARD, *supra* note 503, at 2.

637. *Cuno Eng’g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 90 (1941).

National Patent Planning Commission. On the other hand, the Court's statement, in dicta, that a "new device, however useful it may be, must reveal the flash of creative genius, not merely the skill of the calling,"⁶³⁸ probably contributed to the general impression that the standard for "invention" was vague. Regardless, efforts subsequent to the National Patent Planning Commission's report, which issued in 1943,⁶³⁹ appear to be based on a presumption that the Court in *Cuno* was correct with respect to the precedential significance of *Hotchkiss* and were directed to crafting statutory language that would make the construed understanding of *Hotchkiss* more explicit in the hope of making its application consistent and, thus, more predictable.

Judge Rich's subsequent speeches lamenting the "mish-mash"⁶⁴⁰ that ensued after enactment of the Patent Act of 1952 strongly suggests, even by the admission of one of its strongest proponents, that § 103, by denying patentability to "subject matter [that] as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains,"⁶⁴¹ was not having the desired effect. Even the Supreme Court in *Graham*, despite expressing belief that uniformity would result from the guidelines laid down in that case, conceded that determinations of obviousness were subject to lack of "uniformity of thought."⁶⁴² If motivation is to be a consideration under a "common sense" standard, as propounded by the Court in *KSR*, then, arguably, any statutory subject matter under section 101 that contributes to the public domain can be found to be obvious since, almost by definition, there would be motivation in the art to effect the result of any new and useful combination of known elements.

The Supreme Court has, for the most part, invoked a requirement of a new application of principle, or new mode of operation, under the various Patent Acts since the Patent Act of 1793. Even under the Patent Act of 1790, Thomas Jefferson required some new application of principle apart from a mere change in form or proportion. The presence of a new application of principle in patented subject matter has often been expressed as a feature or contribution beyond the capability of one of "ordinary skill." Although ingenuity has always

638. *Id.* at 91.

639. REPORT OF THE NATIONAL PATENT PLANNING COMMISSION, H.R. Doc. 78-230, at 6, 10 (1943).

640. Rich, *supra* note 31, at 158.

641. 35 U.S.C. § 103(a) (2000).

642. *Graham v. John Deere Co.*, 383 U.S. 1, 18 (1966).

been affiliated with patent protection, it has never been the test, as evidenced by the many opinions which clearly express that the manner in which an invention is obtained, whether by insight, experimentation or accident, is immaterial. The plain meaning of the last sentence of section 103(a), that “[p]atentability shall not be negated by the manner in which the invention was made,”⁶⁴³ is consistent with earlier patent statutes and Supreme Court decisions addressing “invention.” This meaning provides for patentability regardless of the capabilities of the inventor in fact or in theory; patentability of claimed subject matter is an intrinsic feature possessed relative to the prior art existent at the time of conception and reduction to practice.

The presence of motivation in the art cuts as easily in favor of patentability as a secondary consideration under the dicta in *Graham* as it cuts against patentability as applied by the Supreme Court in *KSR*. In other words, consideration of motivating factors expands the subjective analysis to the quality of input that resulted in the claimed contribution and does not address or recognize the properties of that contribution, which may not reflect at all the manner in which it was produced. The fact that, under section 103, the manner in which an invention is made is immaterial, combined with general recognition of section 103 as a codification of judicial precedent, strongly suggests that the statutory test of non-obviousness continues to be the presence of a new application of principle embodied in a new functional relationship among component parts, albeit expressed from the view point of one of ordinary skill in the art.

Although put in the context of machines, Conder Henry had a point that could broadly be applied to all technologies and to all patentable subject matter. Henry’s address in 1949 rings as true after *KSR* as it did just prior to the 1952 Patent Act:

Hasn’t the time arrived when we should sponsor the adoption of a positive method of proving an invention in machines by avoiding the necessity of establishing subjectively and often by sheer guess work what the common man skilled in the art can or cannot do? And wouldn’t that method be to proceed directly to the proof of whether the patented machine in controversy has or has not a new functional relationship between its parts to produce a new result?⁶⁴⁴

Common sense.

643. 35 U.S.C. § 103(a) (2000).

644. Henry, *supra* note 11, at 117.