
George M. Sirilla
ARTICLES

35 U.S.C. § 103: FROM HOTCHKISS TO HAND TO RICH, THE OBVIOUS PATENT LAW HALL-OF-FAMERS

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The author is indebted to many people for their encouragement, assistance and support over the last seven years while this was a work in progress. First, the author would like to thank his wife, Floranne, for encouraging him to complete this work and for her patience in supporting his efforts. This work was initially inspired by the author's mentor, John W. Malley, now deceased, who argued and won the Lyon v. Bausch & Lomb case that set the stage for the Supreme Court's landmark Graham v. John Deere decision. The author must also acknowledge with deep appreciation the interviews generously extended to him by Judge Giles S. Rich on numerous occasions over the last several years, as well as the opportunity to review and copy documents from his valuable files that recorded key events in the 1940's and 1950's that related to the enactment of 35 U.S.C. § 103. He must also express his appreciation to Judge Rich for his encouragement and interest in this work as well as his thorough, painstaking review of the manuscript and the thoughtful and insightful edits that only he could have provided.

Jeffrey A. Simenauer also carefully reviewed the manuscript and offered helpful suggestions for improvement, for which the author is most grateful. In addition to the critical work of Maximilian Peterson and Rebecca Hale, others who assisted in research and cite checking, an to whom the author is grateful, include Thomas Blasey, Henry Daley and Holly Goo. Last but not least, a special note of thanks should go to Constance Stallings and Linda Hilton Rogers for their patient, competent and generous secretarial assistance.
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Habits are hard to break, especially the collective habits of a profession wherein all of the members constantly reinforce each other in the habit and see no need for change. And so it was for a century or more in the patent law prior to the Patent Act of 1952.

The habit was to say that to be patentable, an invention, in addition to being new and useful, had to be the result of "invention," not merely the result of the skill "possessed by an ordinary mechanic acquainted with business." This so called "requirement of invention" appears to have originated in, or at least to have been established by, the Supreme Court's opinion in Hotchkiss v. Greenwood,

1. 52 U.S. 248 (1850).

and the now classic "door knob" case wherein the only difference from what was known was the making of the knob per se from clay or porcelain instead of metal or other material. The majority affirmed the lower court holding of unpatentability, saying that "[t]he difference is formal, and destitute of ingenuity or invention." 2 There was, even then, a strong dissenting opinion by one justice.

In any event, the "invention" requirement became firmly established in the ensuing years. Toward the end of a century after Hotchkiss, however, in the late 1940's, considerable dissatisfaction developed with the test due to two factors: the vagueness of the test and a growing anti-patent sentiment in the courts. The vagueness of the test made it very easy for a judge to hold an invention unpatentable simply by saying he did not believe it amounted to an invention.

In the late 40's a number of bills were introduced in Congress with a view to getting a more satisfactory test, as by defining "invention," which the Supreme Court had once said was a term that was undefinable, or adopting one or more of the many "negative tests for invention" that had been developed by the text writers, etc. The organized patent bar at that time consisted of about two dozen local patent law associations based in larger cities in addition to the nation-wide American Patent Law Association and the ABA's PTC section.

One of the larger local organizations was the New York Patent Law Association which had a Patent Law and Practice Committee which closely followed legislation. I happened to be Chairman of it at the time. We considered the pending bills and decided they lacked merit and undertook to draft a proposal of our

2. Id. at 266.
I made the suggestion that one of the problems was the word "invention" itself and that in stating a new statutory requirement for patentability we should avoid its use. We drafted a substitute for one of the pending bills the wording of which I can no longer recall but it had in it the basic thoughts of present § 103. It got into the stream of numerous proposals which were organized by P. J. Federico of the Patent Office for the House Patents Subcommittee into the first draft of the bill which became the 1952 Patent Act. In his first draft, known as the "Committee Print," present § 103 was § 23.

On the day before the House Subcommittee brought out the Federico draft, the organized bar had created its "Coordinating Committee" (CC) with a two-man drafting committee, of which I was one. The mission of the CC was to assist the House and to see to it that any codification of Title 35, which they had proposed, met with the approval of the patent bar.

I recall that my first act as a member of the drafting committee on that first day of activity by the CC was to take a poll of the two dozen or so patent lawyers present, asking them bluntly whether or not they favored putting into the statute the requirement for invention or some other provision, such as Federico's § 23, to take its place. At the time, of course, there was nothing in the statutes on that judge-made requirement. The vote was in favor of inclusion by a healthy majority but far from unanimous. Some lawyers, it seems, like having uncertainty in the law. In about two years time Congress passed a new Title 35 in which we have since had § 103, which this work by George Sirilla is all about.

This book-length article tells you so much about all aspects of the statutory non-obvious requirement of 35 U.S.C. § 103, including many things I have said about it and forgotten, but which George has recorded for your benefit, that I will say no more except to tell you a couple of personal anecdotes which stick in my mind which fit into the story of long delays in establishment of the new "third requirement."

After my two year stint on the CC, helping to write the new patent statutes which came into effect in 1953, in 1956 I became a judge on the Court of Customs and Patent Appeals (CCPA) whose primary work then was hearing appeals from the Patent Office. In the beginning, I found I was working on cases in which the decision under review had been made before 1953. Shortly, however, I began to note that post-1953 decisions were still getting the same treatment—by attorneys, the Patent Office, and my court, "lack of invention." At a conference one day, I undertook to point out that there was no longer an "invention" requirement in the law, that the issue now was obviousness. "I don't understand," said one of my colleagues. "I thought that if it was an invention it
was patentable. Habit, and not atypical in the judiciary! And not surprising in view of the arguments we continued to get in briefs and oral argument—years after the new statute became effective, officially but not in reality.

One other example. About ten years after the enactment of the 1952 Patent Act, a visitor came to my chambers who happened to be one of the instructors in the Patent Office Academy wherein the new members of the examining corps are trained. "You might be interested in knowing," he volunteered, "that we have decided you are right and are sweeping 'invention' under the rug." Gratifying, and better late than never!

It was indeed a long haul of reeducation to break the old habits of thought. George Sirilla not only has kept the diary on it in what I believe to be a unique fashion, but he has also provided analysis and guidelines including model jury instructions, findings of fact and conclusions of law that are applicable to determinations under 35 U.S.C. § 103. His work should prove to be a useful reference for the judiciary as well as the patent practitioner since, according to a recent survey, obviousness is still the most popular and the most successful defense in patent litigation. Further, no one would question that it is still the most common rejection made by patent examiners.
I. INTRODUCTION

No one can doubt that patent litigation has changed dramatically since the United States Court of Appeals for the Federal Circuit was established in October 1982. Prior to that time only a handful of reported patent damage awards exceeded one million dollars. Even fewer awards exceeded ten million dollars. None even came close to one hundred million dollars. Since that time, however, we have seen patent damage awards of $873,158,971 and $211,499,731, to say nothing of the numerous other awards between 50 and 200 million dollars.

But, in another way, it can be said that patent litigation has remained the same even after the creation of the Federal Circuit Court of Appeals. For the patent owner to prevail when the patented invention is attacked as obvious, the asserted patent claim must still include at least one claimed difference over the closest prior art reference. Although that claimed difference may seem obvious or slight in isolation, this is not the test. Rather, the statutory test is whether the claimed subject matter, taken as a whole, would have been obvious to one of ordinary skill in the art at the time the invention was made. While the heavy burden of proving invalidity by clear and convincing evidence rests on the defendant, the plaintiff can enhance the prospects of winning the validity issue by establishing through objective evidence the existence of so-called "secondary considerations," sometimes also called indicia of unobviousness. Secondary considerations include, for example, a long-felt need for the claimed invention, prior unsuccessful attempts of others, commercial success, widespread use of the invention (e.g., licensing or infringement) in the industry, and access and copying by the defendant.

The 1952 enactment of § 103 of Title 35, United States Code, also deserves a large part of the credit for the current strength of

7. Sirilla et al., supra note 4, at 708 n.10.
our patent system.\textsuperscript{12} In the words of Judge Giles S. Rich, one of the authors of that section, it is "the heart of the patent system and the justification of patent grants."\textsuperscript{13} I doubt that any knowledgeable member of the patent community in this country today would seriously take issue with that 1972 characterization of § 103. Indeed, if anything, the last twenty-five years have fully confirmed it.

The present work will examine the development of the law to the point where it is now understood that your best chance to have a patented invention upheld as unobvious is to have not only a \textit{claimed} difference over the closest prior art reference, but also objective evidence of one or more of the "secondary considerations," mentioned above; and that, within certain limits, the stronger such objective evidence, the more difficult it will be for the patent challenger to prove that the claimed invention was obvious. Of course, the court will also have to determine the level of "ordinary skill in the art" and measure the inventive contributions by that skill in determining the question of unobviousness. In other words, strong secondary considerations, alone, will not necessarily and automatically transform a claimed difference over the closest prior art into a patentable and, therefore, unobvious invention if the level of skill in the art demonstrates that the claimed subject matter would have been obvious.

However, even if the claimed difference may seem slight or trivial in isolation, it may have been the very reason why the claimed invention, \textit{as a whole}, succeeded where others failed. While there is no definition in § 103 of what specific criteria or method should be used to determine the obviousness of the claimed invention, case law development has recognized objective evidence of "secondary considerations"\textsuperscript{14} as a way to help the Court decide that issue; that is, the issue of whether the claimed difference(s) over the prior art is (or are) "such that the subject matter as a whole [would not have been] obvious at the time the

\textsuperscript{12} Section 103 of the Patent Act of 1952 is entitled "Conditions for patentability; non-obvious subject matter," and part (a) reads:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in § 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. Patentability shall not be negated by the manner in which the invention was made.


\textsuperscript{13} Giles S. Rich, \textit{Laying the Ghost of the "Invention" Requirement}, 1 A.M. Pat. L. Ass'n Q. J. 26, 26 (1972) [hereinafter Rich, \textit{Laying the Ghost}].

invention was made to a person having ordinary skill in the art to which said subject matter pertains.\footnote{15}

The non-obviousness standard or condition for patentability of § 103, however, was long in coming. It has its roots in Thomas Jefferson's 1791 complaint that too many patents were being sought on trifles. He, therefore, proposed at that time amending the 1790 Patent Act to add, as a defense to a patent, that the invention "is so unimportant and obvious that it ought not be the subject of an exclusive right."\footnote{16}

As we near the golden anniversary of § 103, let us take a close look at this now healthy, mature and adult creature, namely, non-obviousness as a condition of patentability, and examine its tortuous odyssey through three centuries. That odyssey began with Thomas Jefferson's 18th century desire; then followed a journey to a 19th century conception in the Supreme Court, in its 1850 Hotchkiss v. Greenwood decision,\footnote{17} that led to a century-long gestation period culminating in a difficult labor in the 20th century. Then, thanks to the skill and unflagging zeal of the legal "physicians," Judge Learned Hand and Judge Giles S. Rich, that labor concluded in a successful delivery in 1952, a recovery in early teens from an inherited, chronic "invention" addiction, the development of sound and healthy criteria for determining nonobviousness and, finally, the healing of a pernicious and near fatal "synergism" virus.

To that end, this work will consider:

(1) a representative district court decision and representative jury instructions exemplifying the manner mandated by the Supreme Court and the Federal Circuit for determining obviousness under 35 U.S.C. § 103.

(2) the historical background of the standard of unobviousness\footnote{18} and the development of case law in the

18. Prior to the enactment of the 1952 Patent Act, there was no standard that was uniformly applied by the courts to determine whether the claimed subject matter of a patent was patentable over prior art, let alone a standard of nonobviousness. Rather, courts determined the validity of a patent by focusing the inquiry on whether there was "invention" without giving consideration to any objective evidence of unobviousness. See generally Rich, Laying the Ghost, supra note 13.
United States Supreme Court and lower federal courts prior to the enactment of the Patent Act of 1952;  

(3) the legislative history, surrounding circumstances, and the "Congressional intent" behind the Patent Act of 1952,\(^1\) and in particular, § 103;  

(4) the contributions of Judge Learned Hand's decisions that stressed the importance of looking at the objective evidence of unobviousness. Those decisions were handed down both before and after the 1952 Patent Act, and included a landmark 1955 decision\(^2\) that anticipated the Supreme Court's later 1966 interpretation of § 103 in *Graham v. John Deere Co.*,\(^3\) and last, but not least,  

(5) the contributions of Judge Giles S. Rich to the drafting and enactment of § 103; and his subsequent indispensable and invaluable role as a judge on the Court of Customs and Patent Appeals and its successor, the Court of Appeals for the Federal Circuit. In that capacity, he promulgated the standard of non-obviousness in his opinions. He also educated the PTO, the bench and the bar in his speeches and published articles. Indeed, one of his speeches in 1964 provided the basis for the much-needed and long-sought criteria adopted and mandated by the Supreme Court in 1966 for resolving the issue of unobviousness or not under § 103.  

II. HOW THE NON-OBSERVENESS STANDARD OF § 103 IS DECIDED TODAY  

Before beginning an examination of the historical roots of § 103, it might be useful to consider a representative district court, bench trial case decided under that statutory provision, and also representative jury instructions, exemplifying the manner mandated by the Supreme Court and the Federal Circuit Court of Appeals for determining the unobviousness of a patented invention.  

A. The Exemplary Case of Haworth, Inc., v. Steelcase, Inc.,  

The district court bench trial case we will examine is *Haworth, Inc., v. Steelcase, Inc.*,\(^4\) a case where there was at least


\(^{22}\) 867 F.2d 615 (Fed. Cir. 1989) (reversing a holding of no infringement
one claimed difference over the closest prior art, coupled with strong secondary considerations, an important combination for a determination of non-obviousness under 35 U.S.C. § 103.

The two Haworth patents in that case related to portable wall panels having a pre-wired power system in the base. They were used to divide office space into so-called work stations that were designed to be conveniently mechanically and electrically connected together, or disassembled and rearranged, in different configurations, as office needs changed, without requiring the services of a licensed electrician or the use of code-prohibited extension cords.

1. The Standards Governing the Obviousness Inquiry

At the trial, Steelcase attacked the asserted patent claims as invalid under 35 U.S.C. § 103, contending that the claimed subject matter would have been obvious to a person of ordinary skill in the art at the time the inventions were made. At the beginning of Judge Richard A. Enslen's analysis of the validity issue, he made the following statement about the obviousness inquiry, based on controlling Federal Circuit authority.

The Federal Circuit had recently summarized the appropriate standards governing the obviousness inquiry in Uniroyal, Inc., v. Rudkin-Wiley Corp. In that case, the court held:

Obviousness under 35 U.S.C. § 103 is a legal conclusion involving a preliminary determination of four factual inquiries: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of non-obviousness. Secondary considerations include objective indicia of nonobviousness such as commercial success, long-felt but unresolved need and failure of others.

As support for that statement of the appropriate standards in the Uniroyal case, the Federal Circuit cited the 1966 Supreme

and affirming a holding of enforceability; the lower court's holding that the patents were not proven invalid was not appealed).

23. Id. at 1426.
26. 837 F.2d 1044 (Fed. Cir. 1988).
In the Court decision, *Graham v. John Deere Co.*28 In that case, the Supreme Court laid down the following four steps as the criteria or basic factual inquiries to be considered in resolving the obviousness issue under 35 U.S.C. § 103:

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.29

In a speech given almost two years before *Graham v. John Deere Co.* was decided, Judge Rich suggested essentially the same four-step methodology for considering obviousness under § 103:

[T]he following potential issues of fact appear: (1) What are the differences between "the invention" and "the prior art"? (2) What is disclosed by the prior art presumed to have been available to the inventor? (3) What was the level of ordinary skill in the art at the time the invention was made? (4) Other fact issues relating to circumstances indicative of the presence or absence of obviousness, traditionally taken into account in determining "invention," such as long-felt need, immediate copying, sudden displacement of existing practices or devices, difficulty of achievement, failure of others, etc.

What this key four step analysis or criteria did was to provide a much needed specific methodology for courts to arrive at a judgment as to whether or not a claimed invention meets the requirements of § 103; a judgment that would be as free as possible from the objectionable use of hindsight and the subjective, personal views or philosophies of individual jurists. P.J. Federico, then an Examiner-in-Chief at the U.S. Patent Office, and one of the drafters of § 103 along with Judge Rich, offered the following prophetic comments in 1952.

29. Id. at 17-18 (citation omitted).
30. Giles S. Rich, *The Vague Concept of "Invention" As Replaced By Sec. 103 of the 1952 Patent Act*, 46 J. PAT. OFF. SOC'Y 855, 872 n.36 (1964) [hereinafter Rich, The Vague Concept of "Invention"]. It might be noted that in his step (1), Judge Rich refers to determining "the differences between 'the invention' and 'the prior art'." His reference to "the invention" obviously means the claimed invention. In *Graham v. John Deere Co.*, the Supreme Court describes that same step as the "differences between the prior art and the claims at issue are to be ascertained." 383 U.S. at 17. The similarity between the four steps or criteria enunciated by the Supreme Court in 1966 and earlier by Judge Rich in 1964 is unmistakable. How this came about will be explained later in this work.
The problem of what is obvious and hence not patentable is still of necessity one of judgment. The statute does not purport to categorize the particular criteria according to which the judgment is to be exercised, in fact, the Revision Note under § 103 indicates that the section would also serve as a basis for the addition at a later time of some criteria which may be worked out.31

a. The Scope and Content of the Prior Art; and Differences Between the Claims at Issue and the Prior Art

Let us return to the Haworth case, and see how Judge Enslen applied this four-step criteria in reaching the conclusion that the claimed inventions were not obvious. He first determined the scope and content of the prior art and then ascertained the differences between the claims at issue and the prior art.32 For example, he made the following statement about how two of the asserted claims distinguished over Siegal, the closest prior art: "Siegal teaches the use of flexible cords and conventional electrical components to accomplish handed electrical connections between adjacent panels. . . . Claims 5 and 29 of the '008 patent specify a non-handed connection."33

b. Level of Ordinary Skill in the Art

On the question of how to determine the level of ordinary skill in the art, to help resolve the obviousness issue, Judge Enslen again cited and followed controlling Federal Circuit authority:

Several factors must be considered in determining the level of ordinary skill in the art. These include: (1) the educational level of the inventor; (2) the type of problems encountered in the prior art; (3) prior art solutions to those problems; (4) the rapidity with which innovations are made; (5) the sophistication of the technology; and (6) the educational level of active workers in the field. Environmental Designs, Ltd. v. Union Oil of California, 713 F.2d 693, 696-97 (Fed. Cir. 1983); Orthopedic Equipment Co. v. All Orthopedic Appliances, Inc., 707 F.2d 1376, 1381-82 (Fed. Cir. 1983).34

Applying that standard to the evidence in the trial record, Judge Enslen described a person of ordinary skill in the art in question as follows:

Persons devising panel pre-wiring in the mid 1970's required no specialized training in pre-wiring of office divider panels. They would have needed some basic understanding of electrical and

33. Id. at 1436.
34. Id. at 1434.
mechanical engineering, but would not have needed advanced training in either field. They needed to have only a basic understanding of general wiring and electrical component skills. In designing such a system, they would have studied commercially available products and literature, used the National Electric Code as a design guide, consulted with Underwriters Laboratories and other code personnel to insure that their designs would receive approval and then redesign their system accordingly until the distribution and safety problems were solved.35

c. Secondary Considerations and the Requirement for a Nexus

Turning to the fourth step for determining obviousness or not, namely, secondary considerations, Judge Enslen noted first that the patent owner must establish a nexus between the claimed invention and the evidence offered on secondary considerations: "A nexus is required between the merits of the claimed invention and the evidence offered, if the evidence is to be given substantial weight enroute [sic] to conclusion on the obviousness issue."36

He went on to describe the principal secondary considerations as follows:

The principal "secondary considerations" which support findings of non-obviousness are: (1) whether the invention was commercially successful; (2) whether the invention represented a solution to a previously unsolved, but recognized problem in the industry; and (3) whether others had tried to devise a solution to that problem and failed. See, e.g., Alco Standard Corp. v. Tennessee Valley Authority, 808 F.2d 1490, 1500 (Fed. Cir. 1986); Rosemount, Inc. v. Beckman Instruments, Inc., 727 F.2d 1540, 1546 (Fed. Cir. 1984); Stratoflex Inc. v. Aeroquip Corp., 713 F.2d at 1538-40.37

He then observed the Federal Circuit’s mandates that “prior art, however, cannot be evaluated in isolation, but must be considered in light of the secondary considerations bearing on obviousness.”... Thus evidence rising out of the so-called ‘secondary considerations’ must always when present be considered en route to a determination of obviousness.”38

As we will see later in this work, Learned Hand had consistently cautioned against the danger, indeed, the error, of evaluating the patented invention and the prior art in isolation from the surrounding contemporaneous circumstances (i.e., secondary considerations) that led to the patented invention and the infringement. Stated differently, he believed the prior art should not be evaluated through hindsight and in isolation, using

35. Id. (citation to the record omitted).
36. Id. at 1437 (quoting Stratoflex, Inc., v. Aeroquip Corp., 713 F.2d 1530, 1539 (Fed. Cir. 1983)).
38. Id. (emphasis added) (citations omitted).
the patented invention as a guide to judging whether the claimed difference(s) over the prior art would have been obvious.

Again citing and following the Federal Circuit, Judge Enslen in the Haworth case rejected the use of hindsight and required something in the prior art as a whole to suggest the claimed modifications to the prior art that are now asserted to have been obvious:

The obviousness standard, while easy to expound, is sometimes difficult to apply. It requires the decisionmaker to return to the time the invention was made. "The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time. . . . That which may be made clear and thus 'obvious' to a court, with the invention fully diagrammed and aided . . . " by experts in the field, "may have been a breakthrough of substantial dimension when first unveiled." Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138 (Fed. Cir. 1985). . . . When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than hindsight gleaned from the invention itself." Interconnect Planning Corp., 774 F.2d at 1143. . . . Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 1462 (Fed. Cir. 1984).39

After considering the evidence, Judge Enslen concluded that Haworth's evidence had "demonstrated the proper nexus between the claimed invention and the secondary considerations it advances."40 That evidence included:

(1) That "[t]he need to develop a non-handed, pre-wired office panel was well-known in the industry at the time the Haworth invention was made."41

(2) That: this shows only that the problems were well understood in the office furniture industry. It does not show that anyone, including Steelcase, was able to devise an acceptable solution to these problems before the Haworth inventors did. . . . [Steelcase] was unable to devise a method for pre-wiring those panels until after the Haworth invention was on the market."42

(3) and that: [i]n short, the long recognized need in the industry for a panel system similar to the one devised by Haworth, as well as the commercial success Haworth's panel system had when it was introduced. . . . indicate to this Court that the invention, while it incorporated well-known design choices to solve problems long

39. Id. at 1433.
40. Id. at 1437.
41. Id.
recognized in the industry, represented an innovation which no one, prior to the Haworth inventors, had been able to devise. Thus, I find that Steelcase has failed to prove by clear and convincing evidence that the innovations disclosed in the Haworth patents would have been obvious to one reasonably skilled in the art at the time the invention was made. I conclude, therefore, that the patents in suit are not rendered obvious by the prior art cited by Steelcase, and are thus not invalid. 43

d. It is not the Magnitude of the Claimed Difference over the Prior Art, but the Claimed Invention "As a Whole" that Must be Considered

A close look at the Haworth case, therefore, demonstrates that Judge Enslen strove to observe and did, indeed, observe the requirements laid down by the Federal Circuit for determining whether or not the claimed invention had been shown by the alleged infringer to be directed to obvious subject matter under 35 U.S.C § 103." Of particular interest, as to the claimed difference (over the closest prior art) of non-handed electrical connections, he stated:

Steelcase argues that non-handedness was an obvious design choice, as opposed to a patentable innovation. While the concept of the non-handed electrical connections was well known in the relevant time period, the method for translating concept to reality was not. Haworth provided the first pre-wired, non-handed office panel. It thus achieved what others had not. The means by which it accomplished this goal is not [an obvious] design choice, .......

Hence, in comparing the differences between the prior art and the claims at issue, Judge Enslen specifically rejected the notion that the invention be equated with the claimed difference over the art, and held that:

[It is improper . . . to consider the difference as the invention. The "difference" may have seemed slight (as has often been the case with some of history's great inventions, e.g., the telephone), but it may also have been the key to success and advancement in the art resulting from the invention . . . . Hence the statute, the law established not by judges but by Congress, requires that the invention as claimed be considered "as a whole" when considering whether that invention would have been obvious when it was made. 35 U.S.C. § 103. 46

43. Id. at 1438.
B. Proposed Findings of Fact and Conclusions of Law on the Obviousness Issue for a Bench Trial

In the Haworth case, Judge Enslen had required the parties to submit proposed findings of fact and conclusions of law before the trial began. Selected portions of the proposed findings of fact and the proposed conclusions of law submitted by Haworth and directed to the obviousness issue, are provided at the end of this work, as Appendix A and Appendix B, respectively, for the convenience of the reader.

C. Sample Instructions on the Obviousness Issue for a Jury Trial

In a jury trial, even though the ultimate question of obviousness or not under 35 U.S.C. § 103 is a question of law, the parties and the court may ask the jury to decide that question, or the jury may be asked to decide only disputed factual issues that underlie the ultimate determination of nonobviousness.47

In a jury trial, whether the court or jury decides the ultimate legal question of obviousness, the jury will still have to decide, as factual matters, the four steps or criteria, discussed above in the Haworth case. That is, the jury will have to be instructed to determine from the evidence at trial the following factual matters: (1) the scope and content of the prior art relied upon by the alleged infringer; (2) the differences between the asserted patent claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) any secondary considerations of non-obviousness; as well as the existence of a causal connection or nexus between any such secondary considerations and the claimed invention.

If the jury is to decide the ultimate obviousness question, then it will have to decide, after making those factual determinations whether the claimed invention, as a whole, would have been obvious to a person of ordinary skill in the pertinent art at the time the invention was made. Hence, the jury will have to be given appropriate instructions about not using hindsight, about not evaluating the patented invention and the prior art in isolation, about the necessity for evaluating secondary considerations, and about the need for carefully looking at the prior art to determine whether it suggests the modification(s) necessary to make this claimed combination.


48. AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, GUIDE TO JURY INSTRUCTIONS IN PATENT CASES 25-29 (1990) [hereinafter GUIDE TO JURY INSTRUCTIONS].
the convenience of the reader, the AIPLA's instructions on obviousness that relate to the case where the jury makes the ultimate determination of obviousness or not under 35 U.S.C. § 103, including the four step analysis described above, are appended hereto, in their entirety, as Appendix C.\textsuperscript{49}

1. Level of Ordinary Skill

The AIPLA's model jury instructions identified the following factors to be considered in determining the level of ordinary skill in the pertinent art:

(1) the educational level of the inventor;
(2) the types of problems encountered in the art;
(3) the prior art patents and publications;
(4) the activities of others;
(5) prior art solutions to the problem encountered by the inventor;
(6) the sophistication of the technology; and
(7) the education of others working in the field.\textsuperscript{50}

2. Secondary Considerations

The AIPLA's model jury instructions contain the following statements on secondary considerations:

Before reaching your conclusion as to whether the defendant has established the obviousness you must consider the following evidence which may tend to negate defendant's evidence of obviousness: (use only the applicable)

1. Commercial success of products covered by the patent in suit due to the merits of the invention and not other factors such as advertising;
2. A long-felt need in the art which was satisfied by the invention of the patent in suit;
3. The failure of others to make the invention;
4. Copying of the invention by others in the field;
5. Unexpected results achieved by the invention;
6. Praise of the invention by the infringer or others in the field;
7. The taking of licenses under the patent by others;
8. Expressions of disbelief by experts and those skilled in the art; and

\textsuperscript{49} And, for the further convenience of the reader, appended hereto as Appendix D are selected jury instructions from 4 Leonard B. Sand et al., Modern Federal Jury Instructions § 86.03 (1995), which relate to a jury's determination of the four-step analysis, where the court will decide the ultimate legal question of whether the claimed invention was obvious.

\textsuperscript{50} GUIDE TO JURY INSTRUCTIONS, supra note 48, at 27 (citations omitted).
9. The patentee proceeded contrary to accepted wisdom of prior art.

You must be satisfied there is a causal connection between the evidence showing the existence of one or more of the listed facts and the claimed invention. For example, if you conclude that commercial success is due solely to advertising, promotion, salesmanship or the like, or is due to features of the product other than those claimed in the patent in suit, then it is not established that commercial success has a relation to the invention itself and should weigh against defendant's evidence on the question of obviousness.\(^{51}\)

3. Cautions Against Use of Hindsight and the Obvious-to-Try Test

The AIPLA's model jury instructions caution against the use of hindsight and an "Obvious-to-Try" test:

**OBVIOUSNESS-HINDSIGHT.** The question of nonobviousness is simple to ask, but difficult to answer. A person of ordinary skill in the art is presumed to have knowledge of the relevant prior art at the time of the patentee's invention. If you find the available prior art shows each of the elements of the claims in suit, you must determine whether it would then have been obvious to a person of ordinary skill in the art to combine or coordinate these elements in the same manner as the claims in suit. The difficulty that attaches to all honest attempts to answer this question can be attributed to the strong temptation to rely on hindsight while undertaking this evaluation. It is wrong to use the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.\(^{52}\)

**OBVIOUS TO TRY.** The evidence might indicate to you that what the inventors did was obvious to try. If so, this does not necessarily indicate the patent is invalid for obviousness. "Obvious to try" is not the standard. The standard is whether the invention as a whole would have been obvious to one of ordinary skill in the field to which the invention pertains at the time the invention was made.\(^{53}\)

**STATE OF THE ART—CANNOT USE HINDSIGHT.** You are instructed that when you consider the prior art, whether in the form of writings, physical exhibits, or patents, you must consider them for what they actually disclose to one of ordinary skill in the art, and no more. You cannot use hindsight to assemble the invention from parts made up of individual elements of the prior art devices, nor can you reconstruct any of the prior art devices or materials unless obvious.

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51. *Id.* at 27-28 (citations omitted).
52. *Id.* at 28 (citations omitted).
53. *Id.* (citations omitted).
III. HISTORICAL BACKGROUND TO THE NON-OBVIOUSNESS
STANDARD OF § 103

We will now examine the historical background leading up to the currently applied § 103 patentability standards discussed in the preceding section.

A. The Acts of 1790 and 1793 and Earle v. Sawyer

The earliest reference to a standard of patentability in the United States appears to be in the patent statute of 1790, which simply required the “invention” to be “sufficiently useful and important.” This vague standard was abandoned in 1793 in favor of a standard requiring only novelty and utility.

In the earliest reported patent decision found where the expression “obvious” to “one of ordinary skill” appears, the court essentially rejected the notion that, under the 1793 Act, anything more was needed for patentability than novelty and utility. That was the case of Earle v. Sawyer.

In that case, Circuit Justice Story denied a motion for a new trial after the jury found the plaintiff's patent valid and infringed and awarded damages in the amount of $300. The invention involved substitution of a circular saw for the perpendicular saw

54. Id. at 29 (citations omitted).
55. The standard of patentability itself has no Constitutional footing. The Constitutional grant to Congress of the power to confer patents does not provide any such standard. See U.S. CONST. art. I, § 8. There is merely a reference to the objective to be realized by the patent system. Rich, The Vague Concept of “Invention”, supra note 30, at 861 n.14a (reprint of speech delivered by Rich when he accepted the Kettering Award in 1963). The Kettering Award, named for the famous inventor, was given annually for some years by the Patent, Trademark and Copyright Institute of the George Washington University.
56. Patent Act of Apr. 10, 1790, ch. 7, § 1, 1 Stat. 109. Then Secretary of State, Thomas Jefferson, headed the three-of person agency empowered by the statute to issue patents. Jefferson was bothered by the fact that too many patents were being sought on frivolous or trifling devices, so he proposed a legislative change that would deny patents on inventions that were “unimportant and obvious.” WRITINGS, supra note 16, at 279.
57. As noted by the Supreme Court in Graham v. John Deere Co.:
Although the Patent Act was amended, revised or codified some 50 times between 1790 and 1950, Congress steered clear of a statutory set of requirements other than the bare novelty and utility tests reformulated in Jefferson's draft of the 1793 Patent Act.
383 U.S. 1, 10 (1966).
59. Id. The plaintiff's counsel in Earle v. Sawyer are identified simply as "Bliss and Webster." Id. at 254. It cannot be determined from the report whether the "Webster" was Daniel Webster.
in plaintiff's prior art shingle manufacturing machine. One of
the challenged jury instructions was "[t]hat if any man makes or
constructs a machine, which is new and useful, he is entitled to a
patent."

The defendant argued that there had to be more, namely, an
"invention," for the patent to be sustained. He submitted evidence
that the substitution of a circular saw for a perpendicular saw in
plaintiff's old machine "was so obvious to mechanics, that one of
ordinary skill... could scarcely fail to apply it in [that] mode." But
the court rejected that evidence and the related argument
that the 1793 Act required the court to undertake a "mode of
reasoning upon the metaphysical nature, or the abstract definition
of an invention." Rather, in upholding the verdict of validity and
the jury instruction that only novelty and utility are required,
Judge Story reasoned: "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 sense and
intendment of the legislature."

In spite of Earle v. Sawyer, courts thereafter began to
recognize and require "invention" as a third element, in addition to
novelty and utility, for a patent to be upheld. As we will see, the
result was that a vague standard of "invention" was applied to
invalidate patents in a large number of decisions. In many of
those cases, the stated reason for invalidating the patent was that
the patented subject matter did not rise to the level of "invention,"
or did not involve the exercise of the inventive faculty. But first,
the seminal case of Hotchkiss v. Greenwood.

60. Id. at 254.
61. Id. at 255.
62. Id. (emphasis added).
63. Earle, 8 F. Cas. at 255.
64. Id. 256. As support for rejecting a requirement for a third element
beyond novelty and utility, namely, some mental steps amounting to an
invention not obvious to one of ordinary skill, Justice Story cited English law
precedent:

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 inventor 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.

Id.
65. The use of the term "invention" to denote a new device or apparatus as
well as to articulate the standard used to determine the validity of patents
was an unfortunate development that led to much confusion, as discussed in
later sections of this work. See also Rich, Laying the Ghost, supra note 13.
66. Hotchkiss v. Greenwood, 52 U.S. 248 (1850). The case is commonly
known as "the door knob case." See Rich, Laying the Ghost, supra note 13, at
B. The Period from 1850 to 1891

1. The Hotchkiss Decision

In Hotchkiss v. Greenwood, perhaps its most important early decision relating to patents, the Supreme Court accepted a jury instruction that required more than novelty and utility to sustain the patent. The patent in that case was for a more durable and cheaper door knob made of clay.\(^7\) Although the material used in the construction of the new door knob was not a brand new material, it was attached to a shank and spindle structure like that used in prior door knobs that were constructed from metal or wood.\(^8\) The jury in the lower court had struck down the patent. In the Supreme Court's review, a particular jury instruction was at issue.\(^6\)

The Supreme Court did not cite any case law precedent to support the standard of patentability embodied in that instruction. Nevertheless, the Court upheld it and struck down the patent, noting that the material (clay) used in the new door knob and the manner of construction of the new door knob were well-known and in prior use in the United States. The "knob of clay was simply the substitution of one material for another."\(^7\) Thus, the Court was of the opinion that the use of clay may merely "afford evidence of judgment and skill in the selection and adaptation of the materials in the manufacture of the instrument for the purposes intended, but nothing more."\(^7\)

In striking down the patent, the Supreme Court accepted a third requirement for patentability, in addition to novelty and utility, that the invention must not merely substitute one material for another or merely afford evidence of judgment and skill in the selection and adaptation of materials. This requirement was later codified in the patent laws as a requirement for non-obviousness.

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68. *Id.* at 252.
69. The lower court had instructed the jury as follows:
[...]
70. *Id.* at 265.
71. *Id.* at 266.
utility, namely, passing the challenged instruction’s skill-of-“an ordinary mechanic acquainted with the business”-test:

unless more ingenuity and skill in applying the old method of fastening the shank and the 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 the skillful mechanic, not that of the inventor.72

The Court, however, provided no methodology or criteria to be applied by the courts to determine whether the improvement was within the province of the “ordinary mechanic.” Furthermore, it ignored the patent owner’s arguments about the difficulties encountered in trying to attach the clay door knob to the iron shank and spindle, and about the commercial success of the clay door knob (secondary considerations).73 And, in contrasting the “work of the skillful mechanic,” on the one hand, to that of “the inventor,” on the other hand, the Supreme Court was inviting future courts to equate “invention” with the exercise of more skill than that possessed by “an ordinary mechanic” in that art. In accepting that invitation, courts in subsequent patent cases seemed to focus first on a requirement for “invention” or the “exercise of the inventive faculty,” and, then, depending on whether or not that requirement was met, the court would decide whether the patented invention was obvious to one skilled in the art. In other words, while “invention” was treated as synonymous with something that was not obvious to one of ordinary skill in the art, it was still the principal, if not the only, test or standard that was applied. But, since the term “invention” is so broad, covering by its dictionary definition any product of the imagination,74 virtually any new “art, machine, manufacture or composition of matter” could qualify as an invention under that definition.

With such an amorphous, vague and ambiguous test, one could easily predict the confusing state of the law of patent validity that followed in the wake of Hotchkiss.

In his dissent in Hotchkiss, Justice Woodbury rejected any inquiry into the amount of skill and ingenuity involved in creating

72. Hotchkiss, 52 U.S. at 267 (emphasis added). At the time of this decision, the applicable patent statute was the “Act Creating the Patent Office” passed July 4, 1836, 5 Stat. 117. Section 6 of that act provided that a patent may be granted to “any person... having discovered or invented any new and useful art, machine, manufacture, or composition of matter.” Id. § 6 (emphasis added).
73. Id. at 254-55.
74. See, e.g., Webster’s Third New International Dictionary 1188 (1986) (including among its definitions of “invention”: “a product of creative imagination or fertile wit,” “an act of mental creation or organization: application of knowledge” and “a product of thought or mental synthesis”).
the patented invention. He observed that: "the true test of [the new invention] being patentable was, if the invention was new, and better and cheaper than what preceded it." This was essentially the same test that had been adopted in the lower circuit court opinion that Hotchkiss reversed. Justice Woodbury cited Earle v. Sawyer for the propositions (1) that the combination is patentable if new, even though it may be simple and obvious, and (2) that the mental process by which it was conceived is of no consequence.

The Hotchkiss decision, although decided almost one hundred and fifty years ago, has never been overruled. It contained the seeds, if not the embryo, of the later statutory provision for a standard of non-obviousness, independent of any test of "invention," and played an important role in the subsequent construction and interpretation of § 103 by the judiciary.

A major theme in this work is that the Supreme Court has been at best uneven in its treatment of patents and the standard of non-obviousness (or "invention") prior to the 1952 Patent Act. A study of the history of the high Court's cases reveals periods of leniency followed by periods of hostility toward patents, as well as many years when the Court's attitude toward patents vacillated, with the test of "invention" providing a convenient "nose of wax" that could be twisted and shaped to fit whichever way the court wanted to rule on patentability in a particular case. Understandably, this led to confusion among the lower courts and in the patent community at large.

2. 19th Century Cases after Hotchkiss

a. The Birth of the "Inventive Genius" Test

In Reckendorfer v. Faber, a case decided twenty five years after Hotchkiss, but also under the 1836 patent statute, the invention involved the combination of a pencil with a rubber eraser. Expanding the suggestion in Hotchkiss, the Court drew the following distinction between invention and mechanical skill: "An instrument or manufacture which is the result of mechanical skill merely is not patentable. Mechanical skill is one thing; invention is a different thing. Perfection of workmanship, however much it may increase the convenience, extend the use, or diminish expense, is not patentable."

The Court then sought to clarify this distinction further by introducing an "inventive genius" test: "The distinction between

75. Hotchkiss, 52 U.S. at 268.
76. Id. at 269-70.
77. Reckendorfer v. Faber, 92 U.S. 347 (1875).
78. Id. at 356-57 (emphasis added).
mechanical skill, with its conveniences and advantages and inventive genius, is recognized in all the cases." The Court adopted this language, which implies such an imposing and severe requirement, despite the fact that *Hotchkiss v. Greenwood* made no reference to any such criterion.

b. The Emergence of "Secondary Considerations"; Commercial Success, Long Felt Need and Failure of Others

In *Smith v. Goodyear Dental Vulcanite Co.*, a case decided a year after *Reckendorfer*, it is believed that the Supreme Court for the first time embraced what it would later call "secondary considerations" or "indicia of obviousness or non-obviousness." The patent in *Smith v. Goodyear Dental* related to dentures set in rubber. The common practice until then had been the use of metallic fixtures. The Court upheld the patent, describing the invention as "an object long and earnestly sought," which "had been a subject for frequent discussion among dentists and in scientific journals." The decision also recognized the commercial success of the invention by noting that "when revealed [the invention's] value was soon recognized."

In contrast to the strictness it had displayed in the *Reckendorfer* case, the Court placed importance on these factors, later called "secondary" considerations, and went on to say: "The evidence also shows that [the invention] has wrought a revolution in dental practice, and that many thousands of operators are using

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79. *Id.* at 357 (emphasis added).
80. Some 66 years later, however, although citing *Hotchkiss*, the Supreme Court suggested a "flash of creative genius" test for patentability. Cuno Eng'g Corp. v. Automatic Devices Corp., 314 U.S. 84, 90-91 (1941).
82. *See Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). These secondary considerations or indicia of unobviousness include long-felt need for the invention, failure of others to satisfy the need, copying by others, and commercial success. *See Note, Subtests of "Nonobviousness": A Non-technical Approach to Patent Validity*, 112 U. PA. L. REV. 1169 (1964). Judge Learned Hand also referred to these factors as "indicia of nonobviousness," or "signposts" of patentable invention. *See Reiner v. I. Leon Co.*, 285 F.2d 501 (2d Cir. 1960); Lyon v. Bausch Lomb Optical Co., 224 F.2d 530 (2d Cir. 1955). These cases are discussed in detail below.
83. *Goodyear Dental*, 93 U.S. at 490.
84. *Id.* at 494.
85. *Id.* at 495 (emphasis added).
86. *Id.*
87. The word "secondary" is placed in quotes because, as later articulated by the Court of Customs and Patent Appeals and the Court of Appeals for the Federal Circuit, the so-called secondary considerations are not really "secondary," but *must* be examined in every case as part of the determination of obviousness or not. *See, e.g.*, Stratoflex, Inc., v. Aeroquip Corp., 713 F.2d 1530 (Fed. Cir. 1983) (Markey, C.J.): *In re Khelghatian*, 364 F.2d 870 (C.C.P.A. 1966) (Rich, J.).
it in preference to older devices.” Thus, such “secondary” considerations were deemed probative evidence in determining whether there was “invention” and, therefore, a valid patent.

Later in the same year, in Dunbar v. Myers, the Supreme Court invalidated a patent for sawing lumber on the ground of lack of “invention.” There the Court held that the new device did not constitute “invention” because “change of form, proportions, or degree” and “mere carrying forward of an original patented conception” were not sufficient for patentable inventions.

Then, five years later, the Court seemed to favor patents again. In Loom Co. v. Higgins, the Court upheld a patent “for improvements in looms for weaving pile fabrics.” Writing for the Court, Justice Bradley rejected the attack on the patent:

But it is plain, from the evidence and from the very fact that it was not sooner adopted and used, that it did not, for years, occur in this light to even the most skillful persons. It may have been under their very eyes, they may almost be said to have stumbled over it; but they certainly failed to see it, to estimate its value and to bring it into notice. . . . At this point we are constrained to say 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. Now that it has succeeded, it may seem very plain to any one that he could have done it as well. This is often the case with inventions of the greatest merit. 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 [,] . . . and we think that the combination of elements by which this was effected, even if those elements were separately known before, was invention sufficient to form the basis of a patent.

Thus, the language in Loom not only showed the influence of such “secondary considerations” as long-felt need and the failure of others in determining obviousness or non-obviousness, but also criticized the use of hindsight to determine whether the patented

88. Goodyear Dental, 93 U.S. at 495.
89. Dunbar v. Myers, 94 U.S. 187 (1876).
90. Id. at 199. The so-called “aggregation of old elements” patents have fueled controversies resulting in many inconsistent decisions by the Supreme Court as well as lower courts. See, e.g., Sakraida v. Ag Pro, Inc. 425 U.S. 273 (1976) (holding patent for water flush system for cleaning cow barn floors invalid because all elements were known previously). The Sakraida decision used an “invention” test although it was decided some 25 years after the enactment of § 103, which was meant to do away with the “invention” standard, as will be discussed later. See Rich, Laying the Ghost, supra note 13.
92. Id. at 580.
93. Id. at 591-92 (emphasis added).
subject matter merited the title "invention."

In striking down patents in other cases before it during this same time frame, the Supreme Court sought to denounce "speculative schemers" who seek to secure patent monopolies on what the Supreme Court perceived to be "every trifling device, every shadow of an idea" and thereby "lay a heavy tax upon the industry of the country."94 The patent in *Atlantic Works* related to a dredge-boat, and in a drastic change of tone from his opinion in *Loom* where the patent was upheld, Justice Bradley, writing again for the Court, held the patent invalid:

The process of development in manufactures creates a constant demand for new appliances, which the skill of ordinary head-workmen and engineers is generally adequate to devise, and which, indeed, are the natural and proper outgrowth of such development. Each step forward prepares the way for the next, and each is usually taken by spontaneous trials and attempts in a hundred different places. To grant a single party a monopoly of every slight advance made, *except where the exercise of invention somewhat above ordinary mechanical or engineering skill* is distinctly shown, is unjust in principle and injurious in its consequences.

The design of 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. *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 art. It embarrasses the honest pursuit of business with fears and apprehensions of concealed liens and unknown liabilities to lawsuits and vexatious accountings for profits made in good faith.95

The *Loom* and *Atlantic Works* cases, while resulting in opposite holdings on patent validity, can be reconciled on the ground that the Court found the *Loom* invention not to be "so obvious as to merit no title to invention,"96 while the invention in *Atlantic Works* was viewed as something that "would naturally and spontaneously occur to any skilled mechanic [i.e., it was

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95. *Id.* at 199-200 (emphasis added).
obvious]."\textsuperscript{97}

The Supreme Court bolstered its approval of “secondary” considerations of non-obviousness as indicative of “invention” in \textit{Magowan v. New York Belting & Packing Co.}\textsuperscript{98} The patent in that case was for “improvements in vulcanized India rubber packing.”\textsuperscript{99}

In upholding the patent, Justice Blatchford wrote for the Court:

[We think that Gately [the inventor] made a substantial discovery or invention, which added to our knowledge, and made a step in advance in the useful arts. . . . [W]hat Gately did was \textit{not} merely the work of a skilled mechanic, who applied only his common knowledge and experience, and perceived the reason of the failure of [previous inventions], and supplied what was obviously wanting; and that the present case involves . . . the creative work of the inventive faculty.]\textsuperscript{100}

Thus, while referring to the skilled mechanic test of \textit{Hotchkiss}, the Court nonetheless sought to add a vague and undefined “creative work of the inventive faculty” standard to the requirement for patentability. Notably, the opinion did recognize the commercial success of the invention “as a fact not to be overlooked, and having much weight,”\textsuperscript{101} stating:

[The Gately packing went at once into such an extensive public use as almost to supersede all packings made under other methods. . . . It may also be added that the evidence shows that the Gately packing was put upon the market at a price from 15 to 20 per cent. higher than the old packings, although it cost 10 per cent. less to produce it.\textsuperscript{102}]

c. The Need for a Nexus between Commercial Success and the Patented Invention

But the Supreme Court’s enthusiasm for extensive use or sales, alone, in the \textit{Magowan} decision, was tempered by its decision the following week in \textit{McClain v. Ortmayer}, a case involving a patent on a pad for horse collars.\textsuperscript{103} Justice Brown, writing for the Court, now rejected the relevance of extensive sales where there was no evidence that the sales were due to the superiority of the invention rather than the result of energetic advertising and marketing:

That the extent to which a patented device has gone into use is an

\textsuperscript{97} \textit{Atlantic Works}, 107 U.S. at 200.
\textsuperscript{98} 141 U.S. 332 (1891).
\textsuperscript{99} \textit{Id.} at 333.
\textsuperscript{100} \textit{Id.} at 343 (emphasis added).
\textsuperscript{101} \textit{Id.}
\textsuperscript{102} \textit{Id.}
\textsuperscript{103} 141 U.S. 419 (1891).
unsafe criterion, even of its actual utility, is evident from the fact that the general introduction of manufactured articles is as often effected by extensive and judicious advertising, activity in putting the goods upon the market, and large commissions to dealers, as by the intrinsic merit of the articles themselves. . . . The very case under consideration is not barren of testimony that the great success of the McClain pads and clasping hooks [a second patent in the case]—a large demand for which seems to have arisen and increased year by year—is due, partly at least, to the fact that he was the only one who made the manufacture of sweat-pads a specialty; that he made them of a superior quality, advertised them in the most extensive and attractive manner, and adopted means of pushing them upon the market, and thereby largely increased the extent of their sales. Indeed, it is impossible from this testimony to say how far the large sales of these pads is due to their superiority to others or to the energy with which they were forced upon the market.104

McClain will thus be seen to stand for the proposition that the patent owner must establish a causal connection or nexus between the claimed subject matter and commercial success. Without such a nexus, the Court opined, evidence of extensive sales might result in affirming patents on trifling devices or variations:

If the generality of sales were made the test of patentability, it would result that a person, by securing a patent upon some trifling variation from previously known methods, might, by energy in pushing sales or by superiority in finishing or decorating his goods, drive competitors out of the market, and secure a practical monopoly, without in fact having made the slightest contribution of value to the useful arts.105

Only a year after the McClain decision the Court returned to a consideration of commercial success in Washburn & Moen Manufacturing Co. v. Beat 'Em All Barbed-Wire Co.106 The inventor in Washburn improved the last step in the process of making barbed wire used in fences.

Writing for the Court, Justice Brown reversed the lower court and upheld the patent by first recognizing that the patented improvement was the reason for the commercial success, that is, the patent owner had proven a nexus between the patented invention and commercial success:107

It is true that the affixing of barbs to a fence-wire does not

104. Id. at 428 (emphasis added).
105. Id.
106. 143 U.S. 275 (1892).
107. Recall that Justice Brown authored the Court's opinion in McClain v. Ortmayer, 141 U.S. 419 (1891). See supra notes 103-105 and accompanying text, where he failed to find any such nexus.
apparently give a wide scope to the ingenuity of the inventor; but from the crude device of Hunt [previous inventor] to the perfected wire of Glidden [the patent owner], each patent has marked a step in the progress in the art. The difference between the Kelly fence and the Glidden fence is not a radical one, but, slight as it may seem to be, it was apparently this which made the barbed-wire fence a practical and commercial success.108

The Court not only noted the commercial success of the new invention, but deemed significant the prior unsuccessful attempts of others:

There are many instances in the reported decisions of this court where a monopoly has been sustained in favor of the last of a series of inventors, all of whom were groping to attain a certain result, which only the last one of the number seemed able to grasp. . . .

It is quite evident, too, that all or nearly all these experiments were subsequently abandoned. But it was Glidden, beyond question, who first published this device, put it upon record, made use of it for a practical purpose, and gave it to the public, by which it was eagerly seized upon, and spread until there is scarcely a cattle-raising district in the world in which it is not extensively employed."109

3. Summary

The decisions of the Supreme Court from the Hotchkiss case in 1850 to 1891 (when, incidentally, Congress created the regional United States Circuit Courts of Appeals), were at best inconsistent, and at worst confusing, with respect to any methodology for determining whether or not a patented device amounted to a truly patentable “invention.” Plainly, there was no uniformly applied standard or test for patentability in these cases.

The Washburn case stands out, however, as an early recognition that the merits of a patented invention should not be determined in a vacuum divorced of all the surrounding circumstances, but rather should be evaluated in the context of the surrounding circumstances in the industry; that is, a court should look to objective evidence in the record of “secondary considerations” or “indicia of non-obviousness.”

In Washburn, the Court clearly recognized that an invention which may seem to involve only a slight, not radical, difference over the prior art may, nevertheless, satisfy the requirements for a valid patent monopoly where that slight difference made the product “a practical and commercial success” and where others had failed. This decision, therefore, should be contrasted with Atlantic Works and McLain where the Court criticized patents on

108. Washburn, 143 U.S. at 282 (emphasis added).
109. Id. at 283.
110. Id. at 292.
devices that were considered trifling, apart from any examination of the surrounding circumstances.

The approach and thinking in these cases may have given rise to the two schools of judicial thought that later developed in the twentieth century: one where an invention was evaluated against the backdrop of surrounding circumstances or relevant contemporaneous events in the industry, e.g., secondary considerations; and the other where an invention was evaluated essentially in isolation from surrounding circumstances, that is, only against the prior art references, using hindsight, and without looking at what was going on in the industry prior to and after the invention.

Judges Learned Hand and Giles S. Rich were the champions of the former school of thought and their views ultimately prevailed.

C. The Period from 1892 to 1930

After the creation of the Circuit Courts of Appeal in 1891 and the enactment of the statutory provision for writs of certiorari, the Supreme Court was able to limit both the number and type of patent cases that came before it. Nevertheless, the Court displayed a mixed attitude toward patents from 1892 to about 1930, as indicated by the following discussion of some of the cases decided during this period.

Justice Brown continued to embrace "secondary" considerations, such as commercial success of the patented device and the fact that it supplanted other devices, in C. & A. Potts & Co. v. Creager. In that case, writing for the Court, he stated: "[T]he fact that the device has gone into general use, and displaced other devices employed for a similar purpose, is sufficient to turn the scale in favor of the invention...."

1. The Hotchkiss "Skillful Mechanic" is Charged with Knowledge of All Prior Art

In Mast, Foos, & Co. v. Stover Manufacturing Co., however, the Court struck down the patent-in-suit and applied the Hotchkiss hypothetical "skillful mechanic" test along with a presumption that the skillful mechanic is charged with constructive knowledge of all of the prior art: "Having all these various devices before him, and whatever the facts may have been, he is chargeable with a knowledge of all preexisting devices...."

112. See Washburn, 143 U.S. at 275.
114. Id. at 609.
115. 177 U.S. 485, 493 (1900) (emphasis added).
The Court even extended that presumption to the patentee: "[W]e must presume the patentee was fully informed of everything which preceded him, whether such were the actual fact or not."\(^{116}\)

2. Simultaneous Solution by Others and Rejection of the Use of Hindsight

The Supreme Court later revisited the "inventive genius" test of Reckendorfer v. Faber in Concrete Appliances Co. v. Gomery.\(^{117}\) The patent in that case was for covered apparatus designed for use in transferring concrete or other plastic materials at a work site.\(^{118}\)

In an opinion of Justice Stone, the Court obliquely affirmed the "inventive genius" test of Reckendorfer:

The adaptation independently made by engineers and builders of these familiar appliances to the movement and distribution of concrete cement in building operations and the independent patent applications, within a competitively short space of time, for devices for that purpose are in themselves persuasive evidence that this use, in combination of well known mechanical elements was the product only of ordinary mechanical or engineering skill and not of inventive genius.\(^{119}\)

The rationale of the decision appears to be the fact that a number of engineers arrived at the same solution at about the same time, thus supporting the defense of simultaneous solution (by a number of different, independent inventors) to demonstrate the level of skill in the art, and obviousness. Hence, the analyses in some of the cases in this period will be seen to form the foundation for some modern patent doctrines.

In addition to those cases noted above, in Diamond Rubber Co. v. Consolidated Rubber Tire Co., the Court reaffirmed its criticism of the use of what amounted to hindsight in determining whether there was a patentable invention.\(^{120}\) The patent in that case was for "improvements in rubber tire wheels . . . designed for use on ordinary vehicles, such as wagons, buggies, and carriages."\(^{121}\) In rejecting hindsight and upholding the patent's validity, Justice McKenna acknowledged the presence of "invention" as follows:

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

\(^{116}\) Id. at 494 (emphasis added).
\(^{117}\) 269 U.S. 177 (1925).
\(^{118}\) Id. at 178.
\(^{119}\) Id. at 185.
\(^{120}\) 220 U.S. 428 (1911).
\(^{121}\) Id. at 430.
attention. But the law has other tests of the invention than subtle conjectures of what might have been seen and yet was not.\textsuperscript{122}

The opinion implicitly rejected the "inventive genius" test or any flash of genius standard for patentability, by stating that the invention:

[M]ay be the successor, in a sense, of all that went before, a step only in the march of improvement, and limited, therefore, to its precise form and elements, as the patent in suit is conceded to be. \textit{In its narrow and humble form it may not excite our wonder as may the broader or pretentious form, but it has as firm a right to protection. Nor does it detract from its merit that it is the result of experiment and not the instant and perfect product of inventive power.} A patentee may be baldly empirical, seeing nothing beyond his experiments and the result; \textit{yet if he has added a new and valuable article to the world's utilities, he is entitled to the rank and protection of an inventor.} And how can it take from his merit that he may not know all of the forces which he has brought into operation?\textsuperscript{123}

Justice McKenna also appears to have given weight to the commercial success of the invention by recognizing that "His [the inventor's] success is his title to consideration."\textsuperscript{124} The Court rejected the notion that advertising and marketing accounted for the invention's success. Rather, the Court reasoned "some advertising was necessary to bring it into notice, and give it a certain use, but the extensive use which it attained, and more certainly the exclusive use which it attained, could only have been the result of its essential excellence, indeed, its pronounced superiority over all other forms."\textsuperscript{125} Thus, the Court concluded that there was a \textit{nexus} between the patented invention and commercial success, and that "the effect of advertising is mere speculation."

The \textit{Diamond Rubber} decision was significant, therefore, in recognizing that even what may appear to be small improvements over the prior art may be entitled to patent protection. That approach was reaffirmed in \textit{Eibel Process Co. v. Minnesota & Ontario Paper Co.}, where the Court reversed the decision of the First Circuit Court of Appeals and held the patent valid and infringed.\textsuperscript{127} That case involved an invention to improve the speed of paper-making machines.\textsuperscript{128} The difference over the prior art was raising the pitch of the moving screen or "paper-making wire" from two to three inches to twelve inches to give the moving paper stock

\textsuperscript{122.} \textit{Id.} at 435 (emphasis added).
\textsuperscript{123.} \textit{Id.}
\textsuperscript{124.} \textit{Id.} at 437.
\textsuperscript{125.} \textit{Diamond Rubber}, 220 U.S. at 442.
\textsuperscript{126.} \textit{Id.} at 442.
\textsuperscript{127.} 261 U.S. 45 (1923).
\textsuperscript{128.} \textit{Id.} at 46.
the added force of downhill flow. Justice Taft wrote for the Court:

In administering the patent law, the court first looks into the art, to find what the real merit of the alleged discovery or invention is, and whether it has advanced the art substantially. If it has done so, then the court is liberal in its construction of the patent, to secure to the inventor the reward he deserves. If what he has done works only a slight step forward, and that which he says is a discovery is on the border line between mere mechanical change and real invention, then his patent, if sustained, will be given a narrow scope... In the case before us..., we think that Eibel made a very useful discovery, which has substantially advanced the art. His was not a pioneer patent, creating a new art; but a patent which is only an improvement on an old machine may be very meritorious, and entitled to liberal treatment.

The Court once again implicitly rejected subjective and unworkable tests like "inventive genius," opting instead for adjusting the scope of the resulting patent in accordance with the measure of its contribution to the art. Justice Taft also took note of "secondary" considerations such as the adoption of the new device by the industry and the failure of previous attempts. Other Supreme Court decisions of this period also recognized and emphasized "secondary" considerations.

3. Summary

The attitude of the Supreme Court toward patents from the turn of the century to before 1930 was mixed. At times, the Court used the Hotchkiss test, or variations of it, and at other times it used the so-called subjective tests, such as the "inventive genius" test, the "creative faculties" test, and the like.

One factor that may have contributed to the Court's use of various tests for determining the existence of "invention" was the advances in technology. As inventions became more technologically sophisticated, the courts may have felt it necessary to refine the tests of patentable "invention" they had used at an earlier time.

Despite many judicial attempts, however, there still emerged no satisfactory, workable test of "patentability." Nevertheless, the tests were frequently based on the Hotchkiss "skillful mechanic"
obvious patent hall-of-famers

approach, and generally required the presence of “invention,” without attempting a universally applicable definition of “invention.”

Some cases added refinements to the basic Hotchkiss test.\textsuperscript{133} Some of these refinements were better-suited to determining the validity of patents than others. The basic requirement, however, still seemed to be the malleable “invention” standard.

While some cases seemed to recognize and embrace the importance of protecting inventors’ rights, others expressed a negative and distrusting view towards patents and monopolies. Moreover, the way a court treated the circumstances surrounding the invention varied from case to case. Overall, the Supreme Court’s inconsistent approach to the determination of patent validity provided little stability and guidance to the lower courts.

D. 1930 to 1952: The Beginning of the Supreme Court’s Hostility Toward Patents

I. The Great Depression and the Roosevelt Administration

Starting around 1930 the Supreme Court embarked on a period of what can only be termed disfavor of, if not outright hostility toward, patents. During that period, the Court seemed to have no difficulty in finding ways to invalidate the patents that came before it. Commentators have suggested several explanations.

One is that the Great Depression and the extreme economic difficulties facing the nation, together with a prevailing distrust of monopolies, provided a fertile ground for the Court’s antagonism toward patents.\textsuperscript{134} Indeed, referring to this negative attitude toward patents, Judge Learned Hand later stated: “I think a great deal of the odium that has surrounded the subject is because patents are monopolies.”\textsuperscript{135} It is entirely possible that the Great Depression and the nation’s economic woes prior to the New Deal influenced the judiciary’s, and particularly, the Supreme Court’s attitude toward patents.

The election of President Franklin D. Roosevelt in 1932 was also influential in the direction of the Court. The New Deal was Roosevelt’s main domestic focus. However, as is apparent from some of the Supreme Court’s decisions of the era, several Justices did not initially approve of the New Deal.\textsuperscript{136}

\textsuperscript{133} See, e.g., Mast, Foos, & Co. v. Stover Mfg. Co., 177 U.S. 485, 485 (1900) (charging the patentee with “knowledge of all pre-existing devices”).

\textsuperscript{134} See Edward B. Gregg, Tracing the Concept of “Patentable Invention”, 13 Vill. L. Rev. 98 (1967).

\textsuperscript{135} Hearings on S. Res. 92 Before the Subcomm. on Patents, Trademarks and Copyrights of the Senate Comm. on the Judiciary, 84th Cong. 114 (1955).

\textsuperscript{136} The New Deal called for the vesting of great powers in the federal
In an effort to secure more favorable rulings from the Court, President Roosevelt outlined his so-called "court-packing" plans in 1937. The plan called for adding a new seat on the court for each Justice over the age of seventy. In effect, this would have given President Roosevelt six immediate appointments to the Court and a sympathetic majority of ten out of the fifteen justices.

Whether the threat of court-packing had the effect sought by the President, or whether some of the Justices simply changed their views toward the New Deal of their own accord, is not clear. However, the Supreme Court's subsequent decisions showed a marked change. In that same year, 1937, Justice Roberts and Chief Justice Hughes now joined the Court's liberal bloc in *NLRB v. Jones & Laughlin Steel Corp.*, to sustain President Roosevelt's "broad national intervention in the economy."

Another factor contributing to the Supreme Court's inhospitable attitude toward patents was probably the influence of certain Roosevelt-appointed Justices on the Court during the two decades prior to the Patent Act of 1952. For example, the influence of Justices Black and Douglas, appointed by President Roosevelt in 1937 and 1939, respectively, was instrumental in the Supreme Court's continued war on patents.


137. BARRON ET AL., supra note 136, at 96.
138. *Id.* Ironically, it was his implicit criticism of judges over seventy that later prevented Roosevelt from appointing to the Supreme Court one of the great legal and judicial minds of the period, Justice Learned Hand. The reason: Hand was over 70 at that later time. Gerald Gunther, LEARNED HAND: THE MAN AND THE JUDGE 559 (Albert A. Knopf 1994).
139. BARRON ET AL., supra note 136, at 96.
140. 301 U.S. 1 (1937).
141. BARRON ET AL., supra note 136, at 96.
142. See, e.g., *Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp.*, 340 U.S. 147 (1950) (Black, J., concurring); *Cuno Eng'g Corp. v. Automatic Devices Corp.*, 314 U.S. 84 (1941) (Douglas, J.). It may be true, as Judge Frank of the Second Circuit asserted, that the Supreme Court's negative attitude toward patents in the 1930-51 era did not start with the appointment of Justices Black and Douglas:

That trend [striking down patents] is not (as some commentators imply)
In addition, President Roosevelt himself appeared to have a negative view toward patents. For example, in a 1938 message to Congress, he suggested that the patent system was one cause of the "economic malaise gripping the country." \(^{143}\)

By the end of the Second World War, the Antitrust Division of the Justice Department "had launched a major campaign against alleged patent abuses." \(^{144}\) The anti-patent attitude in the Supreme Court also seemed to increase in the 1940s.

The Supreme Court's conspicuous anti-patent bent in this period first became evident in its second opinion, on rehearing, *Carbice Corp. of America v. American Patents Development Corp.*, \(^{145}\) which involved a patent for a "refrigerating apparatus." \(^{146}\) It took Justice Brandeis all of three paragraphs to invalidate the patent. In writing for the Court, he observed that "the combination in suit lacks patentable invention and novelty [and] [e]ach of the elements [of the invention] ... performs its function in a known way." \(^{147}\)

2. Secondary Considerations Rejected in Favor of the Court's Subjective Comparison of the Invention to the Prior Art

The Court later found occasion to discount "secondary" considerations when it reversed the Second Circuit in *Paramount* due to the presence on the Supreme Court of Justices appointed by President Franklin D. Roosevelt. No such appointee sat in that court before May 24, 1937. Yet, in the ten-year period ending with that date, the Supreme Court, as I compute it, held 17 patents invalid and 2 valid.

Nevertheless, the Court's philosophy propounded by Justices Black and Douglas at least hastened the rush to invalidate patents, as discussed later in this work. The role of Justices Frankfurter and Jackson, also appointed by President Roosevelt in 1939 and 1941, respectively, seemed to be less consistent. Compare, e.g., *Cuno Eng'g Corp. v. Automatic Devices Corp.*, 314 U.S. 84 (1941) (Frankfurter, J., concurring) \(^{148}\) *and* *Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp.*, 340 U.S. 147 (1950) (Jackson, J.) with *Jungersen v. Ostby & Barton Co.*, 335 U.S. 560 (1949) (Frankfurter and Jackson, J. J. dissenting). \(^{149}\) *See also* *Goodyear Tire & Rubber Co. v. Ray-O-Vac Co.*, 321 U.S. 275 (1944) (Jackson, J., dissenting).

144. Id.
145. 283 U.S. 420 (1931). (Initial opinion at 283 U.S. 27 (1930), denying relief because of what became known later as "patent misuse.")
146. American Patents Dev. Corp. v. Carbice Corp., 38 F.2d 62 (2d Cir. 1930), rev'd, 283 U.S. 27 (1931). The device was a "transportation package," consisting of the combination of three elements: (1) an outside container (shipping case); (2) solid carbon dioxide (dry ice); and (3) the articles to be refrigerated. Id. at 62.
Publix Corp. v. American Tri-Ergon Corp. The patent in dispute was "for producing combined sound and picture films." Essentially, the patentee had claimed "a method of producing a single photographic film by printing upon it a picture record and a sound record from separately exposed and developed negatives."

The Second Circuit had held the patent valid and infringed. The Supreme Court, through Justice Stone, reversed and held the patent invalid:

An examination of the prior art can leave no doubt that the method, as thus described and clearly restricted by the patent, lacks novelty and invention. The only step in respondent's [patentee's] method for which any advance could be claimed over earlier methods, is the process of uniting two records on a single positive film by printing them from separate negatives. . . . [A]ll that was novel in the claimed method was its application in the production of a combined sound and picture record, instead of a combination of two picture records. . . . Against this conclusion respondents throw the weight of voluminous evidence, showing the practical utility and widespread use of the patented process, which prevailed with the court below as sufficient to establish invention. It is said that, however simple and obvious the method may appear to be now that it is in successful use, no one before the patentees had used it for producing the union of a sound and a picture record. Respondents also allege that . . . it has found all but universal acceptance. . . . [I]t is only when the invention is in doubt that advances in the art may be thrown in the scale . . . .

The Court discounted the commercial success of the invention:

On the contrary, the inference seems plain that the advance awaited the public acceptance of the sound motion picture; that, when the public demand became manifest, it was still necessary to develop suitable mechanisms, not embraced in the patent, for the reproduction of sound from film. There had long been, ready at hand, knowledge in the photographic art which would enable one skilled in the art to produce the film suitable for use in the new apparatus.

The argument that others had failed in their attempts to accomplish what the patent taught similarly fell on deaf ears:

The bare fact that several inventors, in the early stages of sound reproduction, working independently, of whose knowledge and skill in the photographic art we know little or nothing, failed to resort to a method, well known to that art, for printing a combination film for

148. 294 U.S. 464 (1935), rev'g, 71 F.2d 153 (2d Cir. 1934).
149. Paramount Publix, 294 U.S. at 465.
150. Id.
151. Id. at 470, 473-74 (emphasis added).
152. Id. at 476.
which there was then no generally recognized need, does not give rise to the inference of invention.\textsuperscript{153}

The \textit{Paramount Publix} case is a good example of how the Court simply made its own subjective comparison of the patented invention to the prior art and then concluded that such comparison, alone, "can leave no doubt that the [patented] method . . . lacks . . . invention."\textsuperscript{154} Having made that subjective determination, the Court dismissed the otherwise persuasive objective evidence of unobviousness, such as (i) the "voluminous evidence, showing the practical utility and widespread use of the patented process, which prevailed with the court below [the Second Circuit] as sufficient to establish invention," and (ii) the failure of others.\textsuperscript{155} The reason it gave for dismissing such impressive evidence was that "it is only when the invention is in doubt" that such evidence is "thrown in the scale."\textsuperscript{156}

The Supreme Court revisited the patentability of a combination or "aggregation" of old elements in \textit{Lincoln Engineering Co. v. Stewart-Warner Corp.}.\textsuperscript{157} Justice Roberts characterized the patent in question as one that "has to do with apparatus for lubricating bearings."\textsuperscript{158} In striking it down, the Court displayed a critical attitude toward patents on combinations of old elements that would persist for many years:

The mere aggregation of a number of old parts or elements which, in the aggregation, perform or produce no new or different function or operation than that theretofore performed or produced by them, is not patentable invention. And the improvement of one part of an old combination gives no right to claim that improvement in combination with other old parts which perform no new function in the combination.\textsuperscript{159}

3. \textit{Leading to the Subjective Flash of Creative Genius Test of Cuno Engineering and Reversal of Learned Hand}

The next case in a series of Supreme Court decisions invalidating patents, and one of the most famous Supreme Court patent cases because of its strict "flash of creative genius" test for patentable invention, \textit{Cuno Engineering Corp. v. Automatic

\begin{itemize}
\item \textsuperscript{153} \textit{Id.} at 476.
\item \textsuperscript{154} \textit{Paramount}, 294 U.S. at 470.
\item \textsuperscript{155} \textit{Id.} at 473-74.
\item \textsuperscript{156} \textit{Id.} at 474. This same approach to considering objective evidence of unobviousness only when invention was in doubt was later adopted by the Patent Office after \textit{Graham v. John Deere Co.}. It was later overruled in an opinion by Judge Rich. See \textit{In re Khelghatian}, 364 F.2d 870 (C.C.P.A. 1966), as contrary to \textit{Graham v. John Deere Co.}, 383 U.S. 1 (1966).
\item \textsuperscript{157} 303 U.S. 545 (1938).
\item \textsuperscript{158} \textit{Id.} at 546.
\item \textsuperscript{159} \textit{Id.} at 549-50 (footnotes omitted).
\end{itemize}
The patentee in *Cuno Engineering* had invented the pop-out, cordless cigarette lighter for automobiles. In the court below, Judge Learned Hand had held the patent valid and infringed.\(^{161}\)

In his opinion, Judge Hand reviewed the history of automobile cigarette lighters from their inception, where two wires connected the lighter mechanism to the dashboard.\(^ {162}\) Later, "wireless" lighters had appeared.\(^ {163}\) These devices were inconvenient and "required the continued attention of the user" because they had to be kept depressed in the dashboard until the lighter coils heated.\(^ {164}\)

In contrast, the new lighter used a thermostat, rendering constant user attention unnecessary.\(^ {165}\) Judge Hand noted the previous general use of "thermostats to break a circuit when it got overcharged," but concluded that:

> [T]hese uses rather fortify than impair the invention; for, the more general and familiar was the use of a thermostat to cut out an over-heated member in an electric current, the more curious it is that no one should have thought of its use to remedy the known defect of "wireless" lighters.\(^ {166}\)

As to whether the new lighter was an "invention," Judge Hand rejected the argument that the patented lighter involved merely simple structural changes, holding:

> That is never the test; it is the conception that counts, the act of imagination which assembles the elements into the new and fruitful combination; not the working out of details. Complicated machines, which are in the day's work for skilled mechanics, will appear magic to a tyro who may find nothing but the obvious in a combination that has failed of discovery for a decade after the need arose.\(^ {167}\)

In evaluating the validity of the patent, Judge Hand did not simply subjectively compare the patented invention to the prior art, as the Supreme Court did in *Paramount*. Rather, he also paid particular attention to the objective evidence of the circumstances

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160. 314 U.S. 84 (1941). In order to understand the background of *Cuno Engineering*, it is important to recognize that the case came to the Court after President Roosevelt had expressed his belief to Congress that the patent system was one of the evils responsible for the country's ills. Furthermore, by that time, Roosevelt had appointed new Justices to the Court, including Justices Black and Douglas. See *supra* notes 120-133 and accompanying text for a discussion of the patent system during the Roosevelt era.

161. Automatic Devices Corp. v. Cuno Eng'g Corp., 117 F.2d 361 (2d Cir. 1941), rev'd, 314 U.S. 84 (1941).

162. *Id.* at 362.

163. *Id.*

164. *Id.*

165. *Id.* at 362-63.

166. *Automatic Devices*, 117 F.2d at 363 (emphasis added).

167. *Id.* (citations omitted).
surrounding the invention, namely, the "secondary" considerations. First, he noted that previous inventors had made "rather futile attempts" at producing a device that did not require constant user attention. In addition, he noted that the invention had enjoyed remarkable commercial success and

Had become a standard fixture in motor cars; and upon every detail of these as much human ingenuity has been expended as perhaps on any machine. Just such trifles often help sales; in the severe competition of motor car industry the perfecting of even a trifling furnishing like this may be the object of study and experiment.

On balance, he had this to say about the validity of the patent: "If patents are to go to those who contribute new appliances that are beyond the limited imagination of the ordinary skilled person, this invention seems to us to merit a patent."

It is clear from even the few excerpts above that, in reaching his decision, Judge Hand not only evaluated the claims in the patent and the prior art, but he also considered the objective evidence of the history or circumstances surrounding the invention and the art, both before and after the invention. In other words, he considered the invention in context of its own temporal, circumstantial environment. His approach, however, was in stark contrast to the Supreme Court's subjective and speculative analysis that characterized this period.

The Supreme Court "granted the petition for certiorari [in Cuno Engineering Corp.] ... because of a conflict between the decision in the court below [Judge Hand's decision] and Automatic Devices Corp. v. Sinko Tool & Manufacturing Co. ... decided by the Circuit Court of Appeals for the Seventh Circuit."

Writing for the Court, Justice Douglas made no effort to hide his dislike of patents. He held that the only advance of the art by the new lighter "was the use of the removable plug bearing the

168. Id. at 362.
169. Id. at 363.
170. Id. at 364.
171. Automatic Devices Corp. v. Sinko Tool & Mfg. Co., 112 F.2d 335 (7th Cir. 1940). The Sinko Tool court gave the following, largely subjective, evaluation of the new cigarette lighter:

We do not feel justified in holding that this amounted to invention, in view of the fact that wireless plugs without the thermostat had been used so long, and in view of the further fact that the same principle of thermostatically disconnecting the circuit had been used in the manufacture and use of electric irons, and the like. ... We think his [the patentee's] disclosures amounted to nothing more than mechanical skill, and we think the claims herein relied upon are invalid.

Id. at 341.
heating unit." But the patentee had done more than that; he had also incorporated a thermostat in the lighter to avoid the need for constant user attention, and to reduce the danger of the driver taking his or her eyes off the road. Justice Douglas failed to give any consideration to the long and unsolved need in the art and the prior unsuccessful attempts of others. He simply subjectively concluded: "To incorporate such a thermostatic control in a so-called 'wireless', or 'cordless' lighter was not to make an 'invention' or 'discovery' within the meaning of the patent laws." Although it was hard to deny the contribution to the art made by the new lighter, the Court nevertheless held that "[m]ore must be done than to utilize the skill of the art in bringing old tools into new combinations."

In an attempt to justify its analysis, the Court turned to Hotchkiss:

Since Hotchkiss v. Greenwood, decided in 1851, 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 . . . . The principle of the Hotchkiss case applies to the adaptation or combination of old or well known devices for new uses.

The Court's next statement appeared to raise from the dead a new and stricter variant of the "inventive genius" test, one that was later rejected in the language of § 103:

That is to say that the new device, however useful it may be, must reveal the flash of creative genius not merely the skill of the calling. If it fails, it has not established its right to a private grant on the public domain . . . . We cannot conclude that his skill in making this contribution reached the level of inventive genius which the Constitution, Art. 1, 8, authorizes Congress to reward . . . . Ingenuity was required to effect the adaptation [sic], but no more than that to be expected of a mechanic skilled in the art. Strict application of that test is necessary lest in the constant demand for new appliances the heavy hand of tribute be laid on each slight technological advance in an art.

The significance of the Cuno Engineering holding cannot be underestimated. There was much more at stake than the validity of the patent:

173. Id. at 89.
174. Id.
175. "We may concede that the functions performed by the lighter combination were new and useful." Id. at 90.
176. Id. at 89.
177. Cuno Eng'g, 314 U.S. at 90-91 (citations omitted).
178. Recall the "inventive genius" test of Reckendorfer v. Faber, 92 U.S. 347, 357 (1875); see supra notes 78-79 and accompanying text for a discussion of the "inventive genius" test.
179. Cuno Eng'g, 314 U.S. at 91-92 (emphasis added).
of the patent on the new cigarette lighter, as a careful examination of Justice Douglas's opinion reveals.

First, the issue of whether the patentee's device constituted a patentable "invention" does not seem to have been explicitly before the Court. Rather, the adversary had several technical 35 U.S.C. § 112 objections to the claims in the patent. Nevertheless, laying judicial restraint aside, Justice Douglas seized the occasion to advance his strict, if not negative views toward patents: "We do not, however, stop to consider these objections. For it is our opinion that the [new] device was not the result of invention "but a mere exercise of the skill of the calling, an advance plainly indicated by the prior art." 181

Second, even if the Court were justified in deciding whether the new lighter constituted a patentable "invention," it is unclear what test of patent validity was used. Justice Douglas began by stating the Hotchkiss test was his yardstick of patentability. 182

Next, he applied the Hotchkiss test to "the adaptation or combination of old or well known devices for new uses." 183 However, without citing any precedent, he introduced a new and stricter requirement, the famous or infamous "flash of creative genius" test, into the validity calculus. 184 In doing so, he was raising the standard of patentability to a level that very few worthwhile inventions could ever reach.

The Hotchkiss test of more ingenuity than possessed by the "skillful mechanic" is, of course, not nearly as strict and limiting as the "flash of creative genius" which Justice Douglas was advocating.

Finally, Justice Douglas essentially ignored the "secondary considerations" which had played such a significant role, not only in Judge Hand's opinion, 185 but in previous decisions of the Supreme Court itself. 186 For example, the Court paid no attention to the fact that "[s]o far as appear[ed], nobody in this country before Mead made 'wireless' lighters automatic." 187

180. Justice Douglas outlined the issues as follows:

Petitioner makes several objections to the validity of the claims—that they do not comply with the standards for full, clear and concise description . . . ; that they are indefinite and broader than any disclosed invention; and that they are for a device so imperfect and unsuccessful that a construction of the claims broad enough to include it is not permissible.

Id. at 88.
181. Id.
182. Id. at 90.
183. Id. at 91.
184. Cuno Eng'g, 314 U.S. at 91.
185. See Automatic Devices Corp. v. Cuno Eng'g Corp., 117 F.2d 361 (2d Cir. 1941) (L. Hand, J.), rev'd, 314 U.S. 84 (1941).
In the following term, the Supreme Court invalidated the broad claims in a patent to Marconi (that was an improvement to his basic patent that covered the first successful radio transmission). Justice Frankfurter dissented, criticizing the Court for using hindsight and for ignoring the fact that Marconi's solution escaped everyone for forty years, until he invented it and disclosed it to the public:

Reconstruction by hindsight, making obvious something that was not at all obvious to superior minds until someone pointed it out,—this is too often a tempting exercise for astute minds . . . . To find in 1943 that what Marconi did really did not promote the progress of science because it had been anticipated is more than a mirage of hindsight. 189

The following year, in Sinclair & Carroll Co. v. Interchemical Corp., the Court struck down another patent, one on printing ink.190 The patent had been held valid by the Second Circuit.191

In that same year, in Goodyear Tire & Rubber Co., v. Ray-O-Vac Co., the Court upheld the patent in suit.192 The patent in that case covered a metal sheath for a dry cell battery.193 The metal sheath prevented the battery from leaking, a common phenomenon with the dry cells of the period.194

The district court and the court of appeals both upheld the patent.195 The district court based its decision on the novelty of the invention and its immediate success in the marketplace.196 In a decision somewhat out of character with other decisions in this timeframe, the Supreme Court upheld the patent's validity. Justice Black, however, dissented, taking the occasion to downplay the invention through his own subjective comparison of the invention to the prior art:

189. Id. at 62-63. Frankfurter's dissenting opinion reflects the influence of Learned Hand whom he greatly admired. Id. at 61 n.1. Indeed, Frankfurter had spearheaded a relentless but unsuccessful campaign with Roosevelt in 1942 to have Hand appointed to fill the Supreme Court vacancy created when James F. Byrnes resigned from the Court to become director of the wartime Office of Economic Stabilization. In one of his letters to FDR about Hand's qualifications, Frankfurter observed: "Knowledge of what greatness has done for Court and Country—and surely Holmes, Brandeis and Cardozo were the only truly great judges here since the Civil War—makes me covet for you that you give to the history of your presidency the only man worthy to rank with Holmes, Brandeis and Cardozo." Gunther, supra note 138, at 553-58.
190. 325 U.S. 327 (1945).
191. Interchemical Corp. v. Sinclair & Carroll Co., 144 F.2d 842 (2d Cir. 1944). Learned Hand was not on the panel.
193. Id. at 276-77.
194. Id. at 276.
195. Id. at 275.
196. Id. at 278.
If the patentee here has "discovered" anything, it is that the creamy substance in a dry cell will not leak through a steel jacket which covers and is securely fastened to the ends of the cell . . . . Antiquarians tell us that the use of solid containers to hold liquids predated the dawn of written history . . . . It is impossible for me to believe that Congress intended to grant monopoly privileges to persons who do no more than apply knowledge which has for centuries been the universal possession of all the earth's people—even those of the most primitive civilizations. 197

He thus seemed to argue that the invention was akin to a bottle containing water or a pot containing a liquid. He seemed to disregard the objective evidence in the record of the complex technical issues facing the artisans in the field before the invention was conceived.

In Jungersen v. Ostby & Barton Co. the Court had another opportunity to review a Second Circuit patent case involving a dissent by Learned Hand. 198 The patent in that case related to a process for casting items of detailed design, including jewelry. 199 Before Jungersen's method, practitioners used the so-called "lost wax" method to cast such items. 200 That method involved using a model to prepare a primary mold, filling the mold with molten wax, stripping the mold after the wax hardened, making a new mold around the now hardened wax model, melting the wax out of the new mold, thus leaving the new mold ready for injection with, for example, precious metals. 201

Jungersen's improvement lay in using centrifugal force to inject wax into the primary mold or to inject metal into the final or secondary mold. 202 Using centrifugal force allowed the wax or metal to penetrate the finest recesses of the design, thus achieving a final product of superior quality and more precise definition. 203

Judge Clark, writing for the Second Circuit, invalidated the patent on the ground that it did not constitute "invention." 204 The combination of known elements in Jungersen's method was not "invention," nor was the application of an old process to a new and analogous use. 205

Moreover, the Second Circuit rejected claims of commercial

197. Ray-O-Vac, 321 U.S. at 280.
198. 335 U.S. 560 (1949).
199. Id. at 562-63.
200. Id. at 563.
201. Jungersen v. Baden, 166 F.2d 807, 808-09 (2d Cir. 1948), aff'd, 335 U.S. 560 (1949). Judges Learned Hand and Augustus Hand also sat on the appellate panel. Id. at 808.
202. Id. at 809.
203. Id.
204. Id. at 809-11.
205. Id.
success as being indicative of "invention." Judge Clark relied on "recent Supreme Court pronouncements" to hold that "commercial success cannot raise a combination of known elements to the exalted level of invention."

Judge Learned Hand dissented. He observed that no one had ever thought of combining all of Jungersen's claimed steps in a single sequence. He argued—unsuccessfully to the panel—that Jungersen's new process, utilizing centrifugal force to help the wax to penetrate the deepest reaches of the mold cavity, constituted "invention." In reaching this conclusion, he took into account "secondary considerations," specifically, a long-felt need in the industry and the failure of other artisans to bring to conception the claimed method.

In an opinion by Justice Reed, the Supreme Court affirmed the Second Circuit's holding of invalidity. In so doing, the Court noted that those skilled in other arts, such as dental casting, had used centrifugal force in making casts. The Court then contended that Jungersen's use of centrifugal force "was not an exemplification of inventive genius such as is necessary to render the patent valid."

Justice Frankfurter dissented. While he characterized the invention as one having moderate value—one that does not "carry serious consequences for an important industry and thereby for the general public"—he said the present case did "raise basic issues regarding the judiciary's role in [the] existing patent system."

As for the identification and resolution of those issues, Justice Frankfurter felt that Judge Learned Hand's dissent in the Second Circuit accomplished those ends. Thus, Justice Frankfurter said he would "adopt [Judge Hand's] opinion as [his own]." Moreover, in Justice Frankfurter's view, long-felt need and the failure of others by themselves were enough in this case to tip the patentability scales in favor of the invention:

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206. Baden, 166 F.2d at 811.
207. Id. at 811. The plaintiff argued, and the district court agreed, that the use of centrifugal force constituted a new step in Jungersen's claimed invention. Id. at 810. The Second Circuit rejected that contention. Id.
208. Id.
209. Id. at 812.
210. Id.
212. Id. at 555-56.
213. Id. at 566. Jungersen's argument—that "jewelry casting is a separate and distinct art"—did not prevail. Id. at 567. Thus, "advancements in other types of casting" undermined the novelty and patentability of Jungersen's invention. Id.
214. Id. at 568 (Frankfurter and Burton, J., dissenting).
215. Id.
216. Ostby & Barton Co., 335 U.S. at 568.
What better test of invention can one ask than the detection of that which others had all along had a strong incentive to discover, but had failed to see, though all the while it lay beneath their eyes? . . . . In the case at bar, I can only say that, so far as I have been able to comprehend those factors which have been held to determine invention, and to which at least lip service continues to be paid, the combination in suit has every hall-mark of a valid patent. 

Justice Jackson also dissented. He opined that the claimed invention met "the patent statute's every requirement. And confronted by this record an industry heretofore galled by futility and frustration may well be amazed at the Court's dismissal of Jungersen's ingenious and successful efforts." 

Justice Jackson further took the occasion to voice his frustration with the course that the Supreme Court had taken with respect to patents. He granted the majority the notion that "[t]he would not be difficult to cite many instances of patents that have been granted[] improperly . . . and without adequate tests of invention by the Patent Office," but "doub[ed] that the remedy for [the Patent Office's] passion for granting patents is an equally strong passion in this Court for striking them down." 

Justice Jackson then penned his famous prophecy that rocked the patent bar at that time and for many years to come. He said that as a result of the Court's "strong passion . . . for striking [patents] down . . . the only patent that is valid is one which this Court has not been able to get its hands on." Needless to say, he, too, agreed with Judge Learned Hand's dissenting opinion below.

4. The Emergence of Synergism as a Test for Patentability

The Supreme Court added a still further gloss to the confused "invention" test, before the enactment of § 103 in 1952. In *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, the Court invalidated an invention involving a mechanical combination for a new rack-type device for collecting and moving

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217. *Id.* at 570-71 (emphasis added). Justice Frankfurter's reference to paying only lip service to "secondary considerations" may seem to be a generous overstatement, to some critics of the Supreme Court of this period.

218. *Id.* at 571.

219. *Id.* at 572. Justice Jackson acknowledged that "in this high pressure age sales volume may reflect only powerful promotion or marketing magic, and its significance as an index of novelty or utility may rightly be suspected." *Id.* at 571.

Nonetheless, he pointed out that "Jungersen's success was grounded not in the gullibility of the public but in the hard-headed judgment of a highly competitive and critical if not hostile industry." *Id.* Thus, in Justice Jackson's view, commercial success did not make patentable an otherwise unpatentable invention, but it did, nevertheless, "fill the void in our understanding of what the invention has meant" to artisans. *Id.*

220. *Id.* at 572.

221. *Ostby & Barton Co.*, 335 U.S. at 572.
Writing for the Court, and in a sense fulfilling his own earlier prophecy in his Jungerson case dissent, Justice Jackson struck down the patent that had been found valid by both the district court and the court of appeals, even though he found that the invention had been "widely adopted and successfully used... beyond dispute." Nevertheless, in addition to using the "invention" test to strike down the patent, Justice Jackson noted that, despite the "voluminous literature which the subject has excited," it had never "ventured to give a precise and comprehensive definition of the test [of invention] to be applied" in cases involving mechanical-combination patents.

Justice Jackson then ventured to give such a definition:

It is agreed that the key to patentability of a mechanical device that brings old factors into cooperation is presence or lack of invention. In course of time the profession came to employ the term "combination" to imply its presence and the term "aggregation" to signify its absence, thus making antonyms in legal art of words which in ordinary speech are more nearly synonyms. However useful as words of art to denote in short form that an assembly of units has failed or has met the examination for invention, their employment as tests to determine invention results in nothing but confusion. The concept of invention is inherently elusive when applied to combination of old elements.

Despite his perceptive judgments as to the state of the law on the standard of patentability for mechanical combination patents, Justice Jackson did not confine the Court's ruling to a "precise and comprehensive" test for the patentability of inventions employing mechanical combinations. Instead, he went on to advance a new synergy requirement:

The conjunction or concert of known elements must contribute something: only when the whole in some way exceeds the sum of its parts is the accumulation of old devices patentable. Elements may, of course, especially in chemistry or electronics, take on some new quality or function from being brought into concert, but this is not a

222. 340 U.S. 147 (1950). The invention in Great Atlantic & Pacific Tea Co. was for a "cashier's counter equipped with a three-sided frame, or rack, with no top or bottom, which, when pushed or pulled, [would] move groceries deposited within it by a customer to the checking clerk and leave them there when it [was] pushed back to repeat the operation." Id. at 149. Guides kept the frame on the counter. Id. The new device offered the advantages of "speed[ing] the customer on his way [and] reduc[ing] checking costs for the merchant." Id. Both the district court and the court of appeals held the patent valid. Id.
223. Id. at 149.
224. Id. at 150.
225. Id. at 151 (emphasis added).
usual result of uniting elements old in mechanics.\textsuperscript{226}

Justices Douglas and Black concurred with the majority in striking down the patent. They also took the opportunity to comment on the constitutional role of patents, concluding that "[t]he Framers plainly did not want [patent] monopolies freely granted."\textsuperscript{227} Indeed, Douglas and Black would add a further gloss on the "flash of creative genius" test; in particular, "to justify a patent," they claimed that an invention must "serve the ends of science—to push back the frontiers of chemistry, physics, and the like; to make a distinctive contribution to scientific knowledge."\textsuperscript{228}

Thus, Justices Douglas and Black seemed to erect yet another barrier to the patentability of an invention by adding a "pushing back the frontiers of science" gloss to the "flash of creative genius" test or the tired "invention" test. The problem remained the same, however: pushing back the frontiers of science presents the same vagueness and indefiniteness that plagued the "invention" test.

5. Summary

The period from 1930-1952 will be seen to contain the Supreme Court's most critical attitude towards patents and patent monopolies. The only glimmer of hope for the patent system in that period was the \textit{Goodyear v. Ray-O-Vac} battery case, but that hope was later dashed in the \textit{Ostby & Barton} case when Justice Jackson prophesied that "the only patent that is valid is one which this Court has not been able to get its hands on."\textsuperscript{229} And even he, later, wrote the majority opinion in the \textit{Great Atlantic & Pacific Tea Co.} case, invalidating the patent in that case.

After the \textit{Great Atlantic & Pacific Tea Co.} decision, the Supreme Court seemed to withdraw itself from any further efforts to develop an "invention" test. Surely, it had expressed its views on patents in no unmistakable terms.

IV. PATENTABILITY STANDARDS APPLIED AND DEVELOPED BY JUDGE LEARNED HAND BEFORE § 103

Judge Learned Hand's judicial career started in 1909 with his appointment by President Taft as a federal district judge for the
Southern District of New York. In 1924, he was elevated to the Second Circuit Court of Appeals where he continued to serve until his death in 1961. During his tenure on the federal bench, Hand wrote many opinions in cases involving a diverse array of legal topics. So far-reaching was his influence on the development of American jurisprudence that, upon his death in 1961, the Times of London wrote "there are many who . . . feel that with the death of Learned Hand the golden age of the American Judiciary has come to an end."

A. Early Cases as a District Court Judge

Learned Hand left his mark on patent law in his many opinions on the subject. From the beginning of his career as a district court judge, he displayed an awareness of the complexities inherent in patent cases and the difficulties that they pose for the judiciary. He called for a recognition of these special problems and steps toward a solution.

For instance, just four years after his appointment to the federal bench, Judge Hand, in Parke-Davis & Co. v. H.K. Mulford Co., questioned having a layperson judge subjectively evaluate technological inventions:

I cannot stop without calling attention to the extraordinary condition of the law which makes it possible for a man without any knowledge of even the rudiments of chemistry to pass upon such questions as these. The inordinate expense of time is the least of the resulting evils, for only a trained chemist is really capable of passing upon such facts . . . . How long we shall continue to blunder along without the aid of unpartisan and authoritative scientific assistance in the administration of justice, no one knows; but all fair persons not conventionalized by provincial legal habits of mind ought, I should think, unite to effect some such advance.


231. See generally id.

232. Id. at 679. The New York Times reminded its readers of Judge Hand's reputation as "the greatest jurist of his time." Id.

233. For a collection of Learned Hand's cases on patent law, see LEARNED HAND ON PATENT LAW (Paul H. Blaustein ed., 1983) (providing citations for, and excerpts from, Learned Hand's cases). Professor Gunther also provides a brief account of some of Judge Hand's patent cases. See Gunther, supra note 138, at 138, 292-93, 306-15.

For examples of commentaries on Learned Hand's contributions to patent law, see Edmund A. Godula, Judge Learned Hand and the Concept of Invention, 9 IDEA 159 (1965) (discussing Learned Hand's cases involving the concept of "invention"). See also Note, Judge Learned Hand and the Law of Patents and Copyrights, 60 HARV. L. REV. 394 (1947).

234. 189 F. 95, 115 (S.D.N.Y. 1911). In Parke-Davis, Judge Hand noted with approval "secondary considerations": "[B]ut commercial or practical stability is
Hand echoed similar views in a later case, *Wire Wheel Corp. of America v. C. T. Silver, Inc.* In *Wire Wheel*, Learned Hand—in contrast to the Supreme Court’s less inhibited approach—expressed doubt about the ability of judges to properly gauge the existing state of the art and the true worth of the inventor’s contribution:

Doubtless it is always a difficult question to say, when any step is taken in art, what degree of imagination it required. Possibly judges are not well qualified to restate to themselves the stage in the technique of the art reached when the step was taken, or try to put themselves in the position of those who took it, yet the settled law requires them to do so, and, if not, novelty and invention would be synonymous.

The adjudication of patent cases in his court unavoidably confronted Judge Hand with the “invention” test. And it would hardly surprise anyone to learn that the different problems presented by that test greatly troubled him. In what would become a trend lasting beyond the enactment of § 103, Judge Hand took the opportunity in his patent cases to comment on the “invention” test.

In the early *Wire Wheel* case, he held the patent in suit void for “noninvention” and commented on the subjectivity of the “invention” test: “I know of no objective test which will serve to answer that question, which arises in nearly every case; it must be solved by an attempt to reconstruct the scope and limits of imagination of the ordinary skilled man.”

In another case, *Van Heusen Products v. Earl & Wilson*, Judge Hand ruled on the patentability of a combination invention for a multi-layered, interwoven shirt collar. Noting that he was “faced with the usual collection of cases to prove that it is never invention to substitute one material for another,” he conceded that “[c]ases like *Hotchkiss v. Greenwood* might be piled up

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a somewhat elastic term, and this is a case where he should be entitled to a lenient construction, for he has been author of a valuable invention and has succeeded where the most expert have failed.” *Id.*

235. 266 F. 221 (S.D.N.Y. 1919), affd, 266 F. 229 (2d Cir. 1920) (per curiam).

236. 266 F. at 227. *See also* Safety Car Heating & Lighting Co. v. General Elec. Co., 155 F.2d 937, 939 (2d Cir. 1946) (“Courts, made up of laymen as they must be, are likely either to underrate, or to overrate, the difficulties in making new and profitable discoveries in fields with which they cannot be familiar . . . .”).

237. 266 F. at 227. Judge Hand also noted that the “invention” standard requires *ad hoc* determination, based on the facts of particular cases. *Id.* “The required standard of conduct in such cases, as in some other branches of the law, *e.g.*, negligence, notice, and the like, is not susceptible of deductive application; it must be constructed in each case for that case.” *Id.* (emphasis added).

238. 300 F. 922 (S.D.N.Y. 1924).
"indefinitely" to support the proposition that substituting one material for another does not amount to patentable invention. 239

But the "usual collection of [those] cases" did not impress Learned Hand. He repeated his earlier theme that the "invention" test defies an a priori determination and requires case-by-case adjudication:

I do not conceive that the law has ever laid down any such absolute rule on this subject, or any other absolutes for that matter. The prospect of getting objective tests for invention is tempting, but it is a mirage. How is it possible to say a priori what combination of elements needs an original twist of the mind, and what is within the compass of the ordinary clod? Is it not clear that the quality of a man's inventiveness must be tested by reconstituting the situation as it was in the light of the preceding history of the art? There is no vade mecum for such inquiries.

Judge Hand seemed to believe that at the bottom of the "invention" test lies, or should lie, a reconstruction of the events in the industry preceding and following the invention. Only then should a subjective judgment be made. He demonstrated this hypothesis using a simple example:

Our unknown ancestor, who first substituted iron for bronze in the head of an ax, was the bright exemplar of all inventors to come. Yet it was not an invention, if one is bound by this objective test [substituting one known material for another is not invention]. In this subject the standard escapes any abstract definition, because the end in view needs nicer adaptations . . . . 241

Realizing that using his proposed "test" of patentability defeats predictability, Judge Hand pointed out that the law must serve broader goals than mere certainty: "The defect of such a standard is indeed its uncertainty, but certainty is only one of the ends of law." 242

B. Later Cases as a Circuit Court of Appeals Judge

Learned Hand returned to the "invention" test a year later in Kirsch Manufacturing Co. v. Gould Mersereau Co. 243 By then, serving as a circuit judge on the Second Circuit, Judge Hand elaborated on the notion that an inquiry into the patentability of an invention made a subjective step in the analysis inevitable:

[W]e take no recourse to any supposed absolute objective test, as, for

239. Id. at 929 (citations omitted).
240. Id (emphasis added). In this early case, Judge Hand already exposed his view that inventions must be evaluated against the backdrop of what went on in the industry, i.e., the "secondary considerations."
241. Id.
242. Id.
243. 6 F.2d 793 (2d Cir. 1925).
example, that one may not patent as an invention the making into one part of what formerly was in two. In spite of our language in [an earlier case,] language which has been repeated again and again, we think that such tests are delusive, if used as more than rough rules for guidance. The question is one of evidence in each case, and the issue necessarily depends upon a shifting standard, just as in cases of due care.  

Judge Hand then commented on what he perceived as the futility of attempting to use an "absolute objective test" to gauge the patentability of an invention:

Objective tests may be of value vaguely to give us a sense of direction, but the final destination can be only loosely indicated. An invention is a new display of ingenuity beyond the compass of the routineer, and in the end that is all that can be said about it. Courts cannot avoid the duty of divining as best they can what the day to day capacity of the ordinary artisan will produce. This they attempt by looking at the history of the art, the occasion for the invention, its success, its independent repetition at about the same time, and the state of the underlying art, which was a condition upon its appearance at all. . . . We cannot help exposing the inventor to the hazard inherent in hypostatizing such modifications in the existing arts as are within the limited imagination of the journeyman. There comes a point when the question must be resolved by a subjective opinion as to what seems an easy step and what does not. We must try to correct our standard by such objective references as we can, but in the end the judgment will appear, and no doubt be, to a large extent personal, and in that sense arbitrary.  

244. Id. at 794 (emphasis added).  
245. Id. (emphasis added). In another case, Learned Hand seemed to embrace something resembling the Hotchkiss "skillful mechanic" test. See Sachs v. Hartford Elec. Supply Co., 47 F.2d 743, 748 (2d Cir. 1931). The test is more practical than that, because inventions are to answer human needs, and the elements may be mechanically inert. The cooperation of the means necessary to create an invention is to be measured by the purpose to be fulfilled, not by the interaction of the parts. . . . Therefore, we can find little advantage in a discussion of what is or what is not an "aggregation." In patents, as in other branches of the law, the question is of the interests involved; inventions depend upon whether more was required to fill the need than the routine ingenuity of the ordinary craftsman. Such a standard is no more of a will-o'-the-wisp than others which the law adopts, reasonable care, reasonable notice and the like; the effort is to fix that standard by recourse to average propensities, dispositions and capacities. Any attempt to define it in general terms has always proved illusory; it is best to abandon it. Id.

This position seems consistent with Hand's views presented in some of the cases that he decided after § 103 went into effect. See, e.g., Lyon v. Bausch & Lomb Optical Co., 224 F.2d 530, 536 (2d Cir. 1955) (stating that "§ 103 only restores the original gloss, substantially in ipsissimis verbis; which has never been overruled; but on the contrary for seventy or eighty years had continued
Judge Hand repeated similar sentiments on other occasions.246

His belief that the determination of the patentability of an invention ultimately involves a subjective step does not necessarily imply that he approved of the subjective and vague "invention" test. Indeed, in Western States Machine Co. v. S.S. Hepworth Co.,247 he termed the "invention" test "elusive."248 And in other cases he again commented on the "invention" test, calling it "as fugitive, impalpable, wayward, and vague a phantom as exists in the whole paraphernalia of legal concepts."249

C. The Strain of Following Decisions of the Supreme Court

Despite his dislike of the "invention" test, Learned Hand nevertheless felt bound by the Supreme Court's decisions that relied on it. But, faced with confusing and seemingly contradictory Supreme Court cases on the subject of "invention," Hand attempted to make an educated guess as to how the Court would rule in a given case. He elaborated on his approach in 1946 in Foxboro Co. v. Taylor Instrument Cos.:250

Finally, when all else is said, we cannot ignore the change in recent years in the standard of invention adopted by the Supreme Court. It is as idle to pretend that there has been no change as it would be to be regarded as authoritative") (referring to Hotchkiss). The Bausch & Lomb case is discussed in more detail in a later section of this work.

246. See, e.g., B.G. Corp. v. Walter Kidde & Co., 79 F.2d 20, 22 (2d Cir. 1935) ("[T]hose putatively objective principles by which it is so often supposed that invention can be detected are illusion, and the product of unconscious equivocation; the inexorable syllogism which appears to compel the conclusion is a sham."); E.I. Du Pont de Nemours & Co. v. Glidden Co., 67 F.2d 392, 394-95 (2d Cir. 1933).

An invention must be judged by what was in the public demesne, as well in the inventor's favor, as against him... If genius is demanded, surely he was no inventor.... There are indeed expressions in the books which, taken literally, would exclude such work from the protection of the patent laws; there are others which would not. But we deprecate such a priori rules for determining invention. Nothing has tended more to confuse and obscure the issue than the attempts of courts to lay down generalities. The issue does not admit of such treatment, for invention is always a function of the particular situation, of the conditions which preceded and followed the appearance of the composition or the machine. That this is a treacherous standard is true enough, but at least it is less treacherous than easy absolutes which fit the immediate occasion, but lie athwart any realistic treatment in the next case.

Id. (emphasis added).

247. 147 F.2d 345 (2d Cir. 1945).

248. Id. at 347.


250. See supra for a discussion of selected Supreme Court cases on the "invention" test.

251. 157 F.2d 226 (2d Cir. 1946).
to protest against it; and it is as much the duty of a lower court to
give effect to it, as it is its duty to give effect to any other of the
decisions of that court. We are to dispose of the question of
invention, so far as we can divine, as we think the Supreme Court
would dispose of it; and, once the cloud of complicated scientific
theory, with which it has been surrounded, is blown away, and the
issues are bared as they really are, we have no doubt that that court
would hold the claims invalid.252

In another example not directly related to the "invention"
standard, but rather involving the novelty of an invention, in
Ruben Condenser Co. v. Copeland Refrigeration Corp.,253 Judge
Hand accepted the Supreme Court’s ruling on strict liability for
knowledge of the prior art:254 “Inventors are charged with
knowledge of what the art has done, and all the elements had been
used before in this, or closely allied, fields.”255

In another case, Merit Manufacturing Co. v. Hero
Manufacturing Co.,256 he reiterated similar sentiments:

Perhaps it would be desirable that an inventor should not be
charged with acquaintance with all that the patent offices of this
and every other country contain, and with all that has ever been
publicly sold or used in the United States; although in that event it
would be an inevitable corollary that infringements should be
limited to plagiarisms. With such considerations we have nothing to

252. Id. at 234 (footnote & citation omitted). Even after the enactment of §
103, Hand continued his cautious approach. Cf. Lyon v. Bausch & Lomb

On the other hand it must be owned that, had the case come up for
decision within twenty, or perhaps, twenty-five, years before the Act of
1952 went into effect on January 1, 1953, it is almost certain that the
claims would have been invalid. The Courts of Appeal have very
generally found in the recent opinions of the Supreme Court a
disposition to insist upon a stricter test of invention than it used to
apply—indefinite it is true, but indubitably stricter than that defined in
§ 103. Indeed, some of the justices themselves have taken the same
view. The Act describes itself as a codification of existing law, as it
certainly is in the sense that the structure of the system remains
unchanged. Moreover those decisions that have passed upon it have
uniformly referred to it as codification, although so far as we have found
none of them has held that § 103 did not change the standard of
invention. And so the question arises whether we should construe § 103
as restoring the law to what it was when the Court announced the
definition of invention, now expressly embodied in § 103, or whether we
should assume that no change whatever was intended. To decide that
question it seems desirable to look briefly backward.

Id. at 535 (footnotes omitted) (emphasis added).

253. 85 F.2d 537 (2d Cir. 1936).

also supra notes 115-116 and accompanying text for a discussion of the Stover
Manufacturing decision.

255. Ruben, 85 F.2d at 541.

256. 185 F.2d 350 (2d Cir. 1950).
do; as the law stands, the inventor must accept the position of a
mythically omniscient worker in his chosen field. As the arts
proliferate with prodigious fecundity, his lot is an increasingly hard
one.257

Perhaps no case better illustrated the dilemma that Hand
faced in discharging his duty as a neutral judge on the one hand,
and his feeling bound by the confused and contradictory Supreme
Court cases on the other, than Jungersen v. Baden.258 In his
dissent in that case, Hand reviewed the history of the "invention"
test and the various other standards erected by the high Court,
concluding that "the whole approach to the subject has suffered a
shift within the last decade or so, which I recognize that we should
accept as authoritative."259

He went on to confess, however, that the Supreme Court's
cases left him with little, if any, useful road signs on how to
adjudicate cases like Jungersen. Judge Hand seemed pained by
the seeming impossibility of remaining fair, detached, and neutral,
as he felt he should be as a federal judge. He wrote: "However, I
confess myself baffled to know how to proceed, if we are at once to
profess to apply the system as it is, and yet in every concrete
instance we are to decide as though it did not exist as it is."260

D. Reliance on "Secondary Considerations"

To achieve fair and even-handed administration of justice,
Learned Hand, almost always resorted to what the Court later
called "secondary considerations"261 in cases involving the
patentability of inventions.262 The reason perhaps lies in Hand's

257. Id. at 352.
258. 166 F.2d 807 (2d Cir. 1948).
259. Id. at 812.
260. Id.
Court apparently adopted that terminology from a law review note.
262. Under the guidance of Judge Giles Rich, the Court of Customs and
Patent Appeals later adopted Hand's position, and required courts to consider
evidence of "secondary considerations" in all cases involving the patentability
of inventions. See In re Khelghatian, 364 F.2d 870, 873 n.2 (C.C.P.A. 1966)
(Rich, J.).

In our view the [Supreme] Court [in Graham v. John Deere Co.] said
nothing at all about 'doubtful cases,' nor in any way suggested that any
record evidence should not be accorded its full probative weight in
particular situations, such as where the examiner 'is satisfied' the prior
art makes the invention 'clearly obvious.' Such an approach is
reminiscent of the proverbial 'don't bother me with the facts, my mind is
made up' method of decision and has, we think, no place in the
application of 35 U.S.C. § 103. We therefore remain of the view that the
law requires consideration of all evidence, properly submitted, bearing
on the question of obviousness.

Id. (emphasis added).
belief that courts must adjudicate these cases on an *ad hoc* basis, guided by the facts of each case.

On several occasions during his long tenure on the bench, Judge Hand philosophized on the importance of "secondary considerations." For example, in *Safety Car Heating & Lighting Co. v. General Electric Co.*, he observed:

In appraising an inventor's contribution to the art, as we have often said, the most reliable test is to look at the situation before and after it appears. . . . [S]o far as it is available, [courts] had best appraise the originality involved by the circumstances which preceded, attended and succeeded the appearance of the invention. Among these will figure the length of time the art, though needing the invention, went without it: the number of those who sought to meet the need, and the period over which their efforts were spread: how many, if any, came upon it at about the same time, whether before or after: and—perhaps most important of all—the extent to which it superseded what had gone before. We have repeatedly declared that in our judgment this approach is more reliable than a priori conclusions drawn from vaporous, and almost inevitably self-dependent, general propositions. 265

And in *Clark v. Wright Aeronautical Corp.*, he articulated a similar view:

In dealing with the issue of invention, we have tried, so far as possible, to rely upon objective factors in preference to our a priori judgment, drawn from what seems to our untutored experience to be within the range of a person skilled in the art. Instead of trying ourselves to mirror his capacities, we look to the length of time during which the incentive existed to contrive the invention, to the number of unsuccessful efforts that were made in that period, to the density—so to speak—of those efforts at about the time when the invention was made, to whether success came independently to several inventors at about the same time, and to the extent to which after the invention appeared, it supplanted what had gone before. These usually are hard questions to answer; but when they can be answered, they form a substantial basis for inference. 264

Judge Hand remained faithful to this philosophy after the

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263. 155 F.2d 937, 939 (2d Cir. 1946) (emphasis added).
264. 162 F.2d 960, 966 (2d Cir. 1947) (emphasis added) (footnote omitted).
enactment of § 103 in 1952. He consistently relied on these objective factors or indicia of unobviousness to determine the patentability of inventions before the Supreme Court officially endorsed them in 1966.

The cases Learned Hand decided sometimes involved commercial success of the claimed invention as a "secondary consideration." One such case, Traitel Marble Co. v. U.T. Hungerford Brass & Copper Co., presented him with the question of the patentability of an invention for "guide strips in laying 'terrazzo mosaic.'" In holding the invention patentable, Judge Hand noted the commercial success of the invention:

The patent met with wide success and is now used in nine-tenths of all the "terrazzo mosaic" laid in this country. ... Assuming, for argument, that the law is absolute that there can be no patent for the new use of an old thing, that is because the statute allows no monopolies merely for ideas or discoveries. If the thing itself be new, very slight structural changes may be enough to support a patent, when they presuppose a use not discoverable without inventive imagination. ... Thus the case is in substance familiar enough, one in which the inventor has culled this and that out of nearby arts, and so formed a combination nowhere before existing. It has been a success; it has substantially driven out earlier cumbersome methods; it has enabled the art to do with ease what before it could only do slowly and imperfectly. The result seems to us a genuine invention, and we so hold.

In another case, B.G. Corp. v. Walter Kidde & Co., Learned Hand expanded on the theme of using evidence of "secondary

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265. See, e.g., Norman v. Lawrence, 285 F.2d 505, 506 (2d Cir. 1960) ("We can only reply that, while the standard remains what it is, we can see no escape from measuring invention in cases where all the elements of the new combination had been long available, (1) by whether the need had long existed and been desired, and (2) whether, when it was eventually contrived, it was widely exploited as a substitute for what had gone before."); Reiner v. I. Leon Co., 285 F.2d 501, 504 (2d Cir. 1960) ("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?").

266. See Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966) (recognizing "secondary considerations" or indicia of obviousness or unobviousness, as an aid in determining unobviousness under § 103).

267. 18 F.2d 66, 67 (2d Cir. 1927). The patent specification disclosed "a means of laying upon a concrete flooring a top layer of variously colored concrete surface made in some pattern, and designed roughly to imitate a mosaic." Id. To accomplish this, "it was necessary to secure a bond between the two layers, by adding the second while the first was still wet." Id.

268. Id. at 67-69. See also E.I. Du Pont de Nemours & Co. v. Glidden Co., 67 F.2d 392, 395 (2d Cir. 1933) (stating that "courts have always treated such recognition [i.e., commercial success] as a relevant consideration and certainly it may not be altogether disregarded").

269. 79 F.2d 20 (2d Cir. 1935).
considerations." He saw such evidence as probative of patentability, without which courts would have only the nebulous "invention" standard to rely on:

Often we can truly treat the inquiry as one of fact by observing what went before and what followed. . . . [I]f no impediment, technical, or commercial, stood in the way, if during that time others had been at work upon the same subject, and if the invention was at once accepted as an answer to the old need, there is usually just basis for the inference. When such evidence is not at hand, we are forced to fabricate a standard as best we can from our naive ignorance . . . .

In an early case, National Sweeper Co. v. Bissell Carpet Sweeper Co., Hand looked to the evidence of commercial success of the invention.271 Yet, simultaneously, he recognized the dangers inherent in a cursory examination of commercial success as a signpost of the patentability of the invention:

The plaintiff . . . does largely rely upon the success which its sweeper has attained, and we are forced, therefore, to a consideration of the propriety of that test here. It is true that the books are full of cases in which courts have regarded the success of the plaintiff's patent as an important test of invention, and we are in no sense disposed to question its value in proper cases. Yet it is a hazardous rule, and one which is quite likely to result in confusing genuine invention with imagination in advertising and energy and business skill in promotion. Where the art presents a case of earlier efforts, unsuccessful because of the absence of what the patentee contributed, and followed by a wide success after that contribution was added, it is reasonable to infer that the art needed that feature, and that it was not so easy to invent as might seem to us, who necessarily have no proficiency in the art.272

Judge Hand, therefore, required a "nexus" between the

270. Id. at 22.
271. 249 F. 196, 198 (2d Cir. 1918); see also M.S. Wright Co. v. Bissell Carpet Sweeper Co., 249 F. 199, 201 (2d Cir. 1918) ("No discussion of the success of the machine is necessary, beyond what we have said in the case of National Sweeper Co. v. Bissell Carpet Sweeper Co.").
272. National Sweeper, 249 F. at 198; see also E.I. Du Pont de Nemours & Co. v. Glidden Co., 67 F.2d 392, 394-95 (2d Cir. 1933) ("True, this [reliance on commercial success] must not be pressed too far; it is easier to pay tribute than to fight, and a substantial part of the trade has combined in this contest. But courts have always treated such recognition as a relevant consideration and certainly it may not be altogether disregarded."); Wire Wheel Corp. v. C. T. Silver, Inc., 266 F. 221, 227 (S.D.N.Y. 1919) ("As in all successful patents, the patentee, properly enough, relies upon the supposed proof of invention arising from commercial exploitation. It is a most hazardous test. Commercial success, as the courts have repeatedly observed, may arise from many other reasons than a new inventive idea. . . . [I]ts main value is in cases where the existing means have for some time been unsatisfactory, and where the new step has at once answered the need and displaced what went before.") (emphasis added).
commercial success of the invention and the patented invention:

It by no means follows that every successful exploitation of a patent complies with these conditions; ... but we must be able to attribute the success to the invention, and the dominant idea rested, as it seems to us, rather in the general conception of such an appliance, [and not in the claimed invention].273

In addition to commercial success, Learned Hand was cognizant of the significance of other "secondary considerations," such as failure of others and long-felt need in the art to which the invention pertains. While still a district judge, in Wire Wheel Corp. of America v. C. T. Silver, Inc., he commented on the role of evidence of failure of other artisans to achieve what the invention had accomplished and added that such evidence, when coupled with evidence of the commercial success of the invention, was "telling" of patentability.274 He observed that he would not substitute his "own judgment for the objective evidence that the new thing was not so easy to make as it looked."275

Ruben Condenser Co. v. Copeland Refrigeration Corp.276 presented Judge Hand with the issue of the significance of the failure of artisans to supply the needed invention. He refined that sub-test as follows:

The setting here is a familiar one; at about the same time several inventors began to supply the same need; they naturally varied in their answers and one may be better than the others. But there is little antecedent reason for saying that any of such spontaneous outcroppings required unusual abilities, or that a successful device was not sure to be soon found. That is quite a different picture from that of a need long existing, with inconclusive answers spread throughout its duration, finally capped by success.277

Six years later, in Dewey & Almy Chemical Co. v. Mimex Co.,278 Learned Hand eloquently set forth reasons for continuing adherence to his earlier rule of attaching significance in cases that presented evidence of the failure of others in the field. First, noting the "exceptional" commercial success of the invention,

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273. National Sweeper, 249 F. at 198-99. Finding no such nexus, Judge Hand found a lack of patentable "invention." Id. at 199. The Federal Circuit has embraced a similar nexus requirement in the post § 103 era. See, e.g., Stratoflex, Inc., v. Aeroquip Corp., 713 F.2d 1530, 1539 (Fed. Cir. 1983) ("A nexus is required between the merits of the claimed invention and the evidence offered, if that evidence is to be given substantial weight enroute to conclusion on the obviousness issue.").
274. 266 F. 221, 227 (S.D.N.Y. 1919).
275. Id. Nevertheless, based on the totality of the evidence present in the case, Judge Hand held the patent invalid. Wire Wheel Corp. v. C. T. Silver, Inc., 266 F. 221 (S.D.N.Y. 1919).
276. 85 F.2d 537 (2d Cir. 1936).
277. Id. at 541.
278. 124 F.2d 986 (2d Cir. 1942).
Judge Hand felt that denying patentability to the invention for the "improved preservation of foods and other perishable goods[ ] would deny recognition where recognition most is [sic] helpful." He then addressed the failure of others in the field:

These inventors did not move along a well-marked way; they struck out on a new path which led to a goal that men had unsuccessfully tried to reach for many years. To say that for this they needed to look no further afield than the ordinary routineer, one must shut one's eyes to all the significant facts.

Similarly, in Western States Machine Co. v. S.S. Hepworth Co., Hand commented first on the nebulous invention test and the difficulties it causes. He then went on to note that "[a]s [he had] often repeated, in judging what requires uncommon ingenuity, the best standard is what common ingenuity has failed for long to contrive under the same incentive."

Finally, in the famous case of Jungersen v. Baden, Judge Hand faced the situation where, partly because of the Supreme Court's rulings, he could not rely on the commercial success of the invention as a sign-post of patentability.

Faced with such a difficult situation, Learned Hand resorted to the invention's success in filling the void left by the failure of others. In his dissent from the majority's decision to strike down the patent, he wrote: "What better test of invention can one ask than the detection of that which others had all along had a strong incentive to discover, but had failed to see, though all the while it lay beneath their eyes?"

279. Id. at 990-91.
280. Id. at 991. Judge Hand held the invention patentable.
281. 147 F.2d 345, 347 (2d Cir. 1945).
282. Id.
283. 166 F.2d 807, 811 (2d Cir. 1948), aff'd, 335 U.S. 560 (1949) ("In the past the commercial success enjoyed by plaintiff might well have sufficed to tip the balance in favor of validity. Recent Supreme Court pronouncements indicate clearly that commercial success cannot raise a combination of known elements to the exalted level of invention."). In addition, Hand felt bound by the high Court's strict "flash of creative genius" standard. See id. at 810. ("Hence the 'flash of genius' must be found, if anywhere, in the plaintiff's recollection of the use of this force in dental casting and decision to apply it to this old process.").
284. Id. at 812. See also Lyon v. Bausch & Lomb Optical Co., 224 F.2d 530, 535 (2d Cir. 1955).

The most competent workers in the field had at least ten years been seeking a hardy, tenacious coating to prevent reflection; there had been a number of attempts, none satisfactory; meanwhile nothing in the implementary arts had been lacking to put the advance into operation;
Other cases presented the opportunity for Judge Hand to consider and comment on additional "secondary considerations," such as licensing by others and contributions to a crowded field. Although recognizing the significance of the evidence of such "secondary considerations," Hand took care not to confuse the presence of patentable invention with other factors that may have contributed to the apparent presence of "secondary considerations."

In Lyon v. Bausch & Lomb Optical Co., Hand wrote a landmark decision interpreting the impact of § 103 shortly after it was enacted. In that case and other later patent cases he decided, he adhered to the same philosophy about patents and the same approach to deciding patentability questions, namely, by placing them in the context of the surrounding circumstances. That was the same philosophy that was so evident in his pre-1952 Patent Act decisions.

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285. See, e.g., Ruben Condenser, 85 F.2d at 540-41 ("The plaintiffs have indeed received a large income from licenses . . .").
286. See, e.g., Automatic Devices Corp. v. Cuno Eng’g Corp., 117 F.2d 361, 363-64 (2d Cir. 1941), rev’d, 314 U.S. 84 (1941).

It would indeed be absurd to rate this [an automatic cigarette lighter for an automobile] as a major invention, yet it did bring to what appears to be its final form a contrivance which had become a standard fixture in motor cars; and upon every detail of these as much human ingenuity has been expended as perhaps on any machine. Just such trifles often help sales; in the severe competition of motor car industry the perfecting of even a trifling furnishing like this may be the object of study and experiment.... If patents are to go to those who contribute new appliances that are beyond the limited imagination of the ordinary skilled person, this invention seems to us to merit a patent.

287. See, e.g., Ruben Condenser Co. v. Copeland Refrigeration Corp., 85 F.2d 537, 541 (2d Cir. 1936). Judge Hand noted that the plaintiffs had obtained licenses from other players in the field:

but that only means that the licensees have preferred to make their peace rather than fight, and little can be judged from it. Such acquiescence has often been taken as evidence of invention upon preliminary injunction, but the force of the inference is very variable. The reasoning is that if licensees consent to pay tribute, they must believe the disclosure to be patentable, and that this is evidence that it was beyond commonplace contrivance. But when a manufacturer takes a license, it is the resultant of two opposed motives, its cost and the dangers of infringement; and the magnitude of neither factor can be ascertained without knowing that of the other.

288. 224 F.2d 530 (2d Cir. 1955).
V. EVENTS LEADING UP TO THE ENACTMENT OF § 103

A. A Crying Need for a Workable Standard of Patentability

Court decisions prior to the enactment of § 103 failed to produce, let alone apply, a uniform standard of patentability. Rather, the dragon of the “invention standard” ran roughshod through the patent kingdom. Patent attorneys took advantage of the situation, quoting from whichever case best suited their position. As Judge Rich so eloquently put it, “‘Invention’ was that ‘beautiful uncertainty in the law’ from which the Patent Bar made its living—practicing what was essentially a mystery.”

Judges also took advantage of this weakness in the patent law. Judge Rich commented on the way judges were using the random and inconsistent caselaw to select a test of patentability stating:

I would say that, in general, judges did whatever they felt like doing according to whatever it was that gave the judge his feelings—out of the evidence coupled with his past mental conditioning—and then selected those precedents which supported his conclusions. Patent Office examiners and Board of Appeals members did the same.

But there were movements in the Patent Bar to correct the problem. For instance, in 1948, the National Patent Planning Commission, headed by Charles Kettering, came out with a report on the status of the patent law. Their observations reflected the times:

One of the greatest technical weaknesses of the patent system is the lack of a definitive yardstick as to what is invention. The most serious weakness of the present patent system is the lack of a uniform test or standard for determining whether the particular contribution of an inventor merits the award of the patent grant.

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290. Id. at 1:208. In another article, Rich commented that “[t]he requirement for ‘invention’ was the plaything of the judges who, as they became initiated into its mysteries, delighted to devise and expound their own ideas of what it meant, some very lovely prose resulting.” Rich, Principles, supra note 16.

291. Charles Franklin Kettering was a famous inventor credited with inventing the first electrical ignition system, the self-starter for automobile engines, and the first practical engine-driven generator. The National Inventors Hall of Fame 41-42 (U.S. Pat. and Trademark Off. 1984). Kettering had set up and directed a research laboratory at General Motors which was responsible for developing “the lightweight diesel engine that made the diesel locomotive possible, the refrigerant Freon, four-wheel brakes, safety glass, and many other items.” Id. at 42. Kettering held some 140 patents. Id.

The National Patent Planning Commission lamented the use of the intangible, undefinable "invention" standard: "The difficulty in applying this status [R.S. 4886] arises out of the presence of the words 'invented' and 'discovered.' Novelty alone is not sufficient, nor is utility, nor is the final accomplishment. There must also be present some mysterious ingredient connoted in the term 'invented.'" 293

The National Patent Planning Commission suggested a solution to this problem. While it did not directly lead to any legislative action, several members of the Patent Bar, including Giles Rich, took notice. The Commission called for "the enactment of a declaration of policy that patentability shall be determined objectively by the nature of the contribution to the advancement of the art, and not subjectively by the nature of the process by which the invention may have been accomplished." 294

Further evidence of the turmoil caused by the indiscriminate use of the invention standard can readily be seen in the caselaw. While numerous courts used expressions such as "obviousness" or "obvious to one skilled in the art," no clear or consistent patentability standard was discernable. To the contrary, the courts seemed determined to decide first whether the patented device demonstrated "invention" or the "exercise of the inventive faculty." Then, they would conclude that the invention was or was not obvious. Any patent attorney, therefore, who tried to advance a non-obviousness standard of patentability was left open to ambush by judicial references to lack of "invention," failure to exercise the "inventive faculty," or lack of "inventive genius."

Many courts were persuaded of a patent's validity by secondary consideration, such as long-felt need, prior unsuccessful attempts of others, and commercial success. Although ultimately rejected as having too narrow a focus, a long-felt need test to determine obviousness would make its way into a proposal before the House Committee on revision of the patent laws. 295

But in the end, none of the secondary considerations made its way into legislation. The reason may have been that there was no uniformity in the caselaw in the way such considerations were to be applied. Some courts applied them; others ignored them. Some courts recognized the danger of hindsight analysis; others did not. The dilemma facing the Patent Bar at this time is best exemplified by caselaw discussed above and immediately following.

In *Edison Electric Light Co. v. United States Electric Lighting Co.*, the Second Circuit favorably considered Thomas Edison's

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293. *Id.*
294. *Id.* (emphasis added by Giles Rich).
famous patent on electric light bulbs. The accused infringer argued that Edison's substitution of carbon for platinum in a vacuum tube was an obvious improvement. In siding with Edison, the Court pointed out that the patented improvement led to production of the first practical electric light bulb:

Experts called for the defendant have testified that such change of material involved no invention, because the use, as a substitute for platinum, of carbon of any size, operated in a vacuum, would be obvious to one skilled in the art. To this proposition we cannot assent. Sawyer and Man were skilled in the art, but even after they had learned how to force out the occluded gases, and withdraw them from the lamp chamber, they turned away from the vacuum thus ready to their hands, feeling no doubt that they were following the teachings of the art in seeking stability by the use, not of a vacuum, but of a nitrogen atmosphere. Edison was skilled in the art, but after he had the nearly perfect vacuum of the French patent, secured against leaking by the all-gas globe of Geissler and Crookes, it was only after months of patient and persistent experiment that he found, in the substitution for his platinum of a filament of carbon, the success he had long sought for, but not till then attained.

Similar evidence of prior failed attempts convinced the court in Richardson v. Shepard to uphold a patent for an improvement on clothes pins. Here, the court particularly noted the large number of clothes fastening patents granted prior to the one at issue. Despite all of the experimentation, no one had thought to make the present combination:

This circumstance strongly tends to prove that such a modification of the [prior art] pin would not be obvious to one skilled in the art, and that, therefore, it called for the exercise of the inventive faculty. If we add to this the further circumstance that most of these prior efforts were failures, and that none of them met with more than moderate success, and contrast this with the great utility, extensive public use, marked commercial success of the De Long hook, I think these considerations are sufficient to resolve any doubt on the question of patentability in favor of the patentee.

This philosophy was also followed in Westinghouse Electric & Manufacturing Co. v. Dayton Fan & Motor Co., where the court rejected an argument that the patent at issue was invalid in view of prior patents:

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296. 52 F. 300 (2d Cir. 1892). This case was decided well before Learned Hand's appointment to the bench in 1909.
297. Id. at 308.
298. Id. at 308-09.
300. Id. at 275.
301. Id. (emphasis added).
Now, it is said that in view of the prior art, including the Tesla patents of May 1, 1888, there was no invention in this last step, but merely the exercise of the skill of the electrician or electrical engineer, because the taking of the first step by Tesla rendered the second step perfectly obvious to any one skilled in the art. But, notwithstanding the state of the prior art, and the "laboratory knowledge" of those skilled in it, no one but Tesla took either of these steps which have added so much to the practical and useful knowledge of the electrical world.\textsuperscript{302}

Some courts were persuaded of patentability by the commercial success of the patented device. In \textit{New Process Fermentation Co. v. Maus}, the Supreme Court heard an appeal of the validity of a patent for an improved method of brewing beer.\textsuperscript{303} The lower court had decided that the patent was invalid because the claimed device "would seem not to involve anything more than a mere mechanical change, which could be employed by any one skilled in the art."\textsuperscript{304} The Supreme Court reversed.\textsuperscript{305} The most important fact in the Supreme Court opinion seemed to be the widespread adaptation and use, i.e., commercial success, of the patented process:

The testimony is very full and clear that, as a process, it was not known or used before in the art of making beer; that it worked a valuable and important change in that art, in the particulars set forth in the specification; that it went at once extensively into use, both in Europe and the United States; and that it was recognized as a new and valuable invention, in published works on the subject, immediately after it was made known.\textsuperscript{306}

\textit{Rodman Chemical Co. v. Deeds Commercial Laboratories}\textsuperscript{307} provides an example of a patentability opinion which focused on evidence of a long-felt need in the industry related to the patent at issue. In \textit{Rodman}, the Court rejected the defendant's argument that the patent for an improved method of manufacturing carbonizing material for dry packing was invalid because it was obvious to one skilled in the art. The Court pointed to the circumstances in the industry prior to the invention:

That the possible hints given by the patents cited were never grasped, that tons of coal and coke dust were allowed to go to waste, strengthen the presumption, inherent in the grant of the patent, that the conception involved an exercise of the inventive faculties

\begin{itemize}
\item \textsuperscript{302} 106 F. 724, 728 (C.C.S.D. Ohio 1901), aff'd, 118 F. 562 (6th Cir. 1902) (emphasis added).
\item \textsuperscript{303} 122 U.S. 413 (1887).
\item \textsuperscript{304} New Process Fermentation Co. v. Maus, 20 F. 725, 733 (1884), rev'd, 122 U.S. 413 (1887).
\item \textsuperscript{305} \textit{New Process}, 122 U.S. at 413.
\item \textsuperscript{306} \textit{Id.} at 424 (emphasis added).
\item \textsuperscript{307} 261 F. 189 (7th Cir. 1919).
\end{itemize}
and was not an obvious deduction.\textsuperscript{308}

Some courts adopted the rule that patentability should not be negated by improper hindsight analysis. For example, in \textit{In re Pupin}, the D.C. Circuit Court reversed a decision by the Commissioner of Patents in which the Commissioner had rejected as obvious certain claims directed to a direct-current generator.\textsuperscript{309} The Court accused the Commissioner of allowing his judgment to be tainted by hindsight stating:

We cannot hold that, after Steinmetz’s disclosure, appellant’s apparatus became obvious to any one skilled in the art. To say that would simply mean that, faced by a crying need for a device which would remove the objectionable hum from sound-reproducing systems, inventors of electrical appliances and those skilled in the art were blind to the aggressively apparent for more than six years after the announcement of the Steinmetz formula. \textit{Problems which vex the brain for many a weary hour and many a weary year become obvious to all the world, once they are solved; but their obviousness after the fact does not necessarily prove their obviousness before the fact.}\textsuperscript{310}

Again in \textit{Kelley v. Coe}, the D.C. Circuit held the Commissioner of Patents in error for using hindsight in refusing to grant a patent on a suction device for dry rock-drilling.\textsuperscript{311} The invention differed from the prior art by substituting a blower, or suction pump, for an ejector, as the means for sucking air out of the hole being drilled.\textsuperscript{312} The Commissioner had rejected the substitution as obvious. The court reversed, noting: “This is a splendid example of that type of reasoning which assumes, because it is easy to follow a blazed trail, that it is also easy to make one.”\textsuperscript{313}

\textsuperscript{308} Id. at 191. Similar logic was applied in \textit{Pieper v. S.S. White Dental Mfg. Co.}, where the court rejected a defendant’s argument that the plaintiff’s combination patent for an electrical dental motor was invalid as being obvious to one skilled in the art:

Quite naturally the first thing they did was to try their direct current dental engine on alternating current. It rotated, but they could not make it satisfy the known requirements for a dental engine. Were they stupid? Were they purposely avoiding the obvious? Is the looking backward opinion of appellee’s expert a better guide than their forward efforts?

\textsuperscript{228} F. 30, 37 (7th Cir. 1915).

\textsuperscript{309} 299 F. 697 (D.C. Cir. 1924).

\textsuperscript{310} Id. at 701 (emphasis added).

\textsuperscript{311} 99 F.2d 435 (D.C. Cir. 1938).

\textsuperscript{312} Id. at 437.

\textsuperscript{313} Id. at 440. A similar criticism was leveled by the court in a case involving an application for a patent for a repeater compass. The D.C. Circuit Court observed:

It is often easy, after a mechanical device has been discovered and successfully reduced to practice, to speculate as to the simplicity of the
Further, in response to the Commissioner's contention that "anyone skilled in the art could have taken this and that from the various patents and, putting them together, could have devised the Kelley method", the Court relied on evidence of a long-felt need in the industry for a solution to the problem:

But the fact remains that, in the face of a crying need for a new process or method in the industry, not one of the best engineers in the world, with their attention especially directed to the subject for approximately thirty years, was able to see what Kelley saw, or to produce the result which he produced.\textsuperscript{314}

And, in \textit{Wach v. Coe}, the D.C. Circuit Court again reversed the Patent Office.\textsuperscript{315} It concluded that the invention was patentable, observing that if "the best marine engineers in the world, with unlimited means at their command, failed to solve the problem," the solution finally arrived at by the inventor could not have been obvious to one skilled in the art.\textsuperscript{316}

Other cases appear to have taken an entirely different approach. Instead of looking at secondary considerations, hindsight analysis was applied to the process of conception of the invention and the determination of whether that process was worthy of the title "invention." For instance, in \textit{Brunswick-Balke-Collender Co. v. Rosatto}, the Third Circuit affirmed the lower court's finding of patent invalidity for an improved bowling alley, which comprised semicircular gutters instead of the prior art rectangular gutters.\textsuperscript{317} The Court assessed the patentee's thought process as follows:

[W]hen Wiggins recognized the evil, he did not have to invent anything to overcome it. There were no experiments or tentative efforts. He did not invent circular pathways for balls, nor invest them with any new function when they were used as ball-troughs along an alley-bed. As an experienced builder, he was able to remedy the evil as soon as he recognized it, for it was the recognition of the evil, and not the means of overcoming it, that characterized what he did. It was one of those mechanical problems which, as soon as an evil was recognized, one skilled in the art was able to meet.\textsuperscript{318}

\textsuperscript{314} Otto v. Robertson, 66 F.2d 213, 214 (D.C. Cir. 1933).
\textsuperscript{315} Kelley, 99 F.2d at 442.
\textsuperscript{316} Id. at 114.
\textsuperscript{317} 165 F. 56 (3d Cir. 1908).
\textsuperscript{318} Id. at 58 (emphasis added). The Sixth Circuit similarly opined in \textit{Westinghouse Electric & Manufacturing Co. v. Toledo, P.C. & L.Ry. Co.}, on a patent claim for a method of electric motor control that "the advance [was] so slight as to be of no real value, and, such as it is, is obvious to one skilled in the
Similarly, in *Cambridge Trust Co. v. Coe*, the D.C. Circuit Court held that the substitution of a black and white sound track for a blue sound track on color film did not involve any "inventive concept" but was "an obvious step to one skilled in the art" and thus, not patentable.\(^{319}\) Quoting the Board of Appeals of the Patent Office, the court stated:

In view of the very brief and broad reference to the simple solution of the problem we think that after it was found that color tints interfere with the sound record, if present therein, that *inventive concept is not involved* in broadly separately producing these two zones on the film, leaving the sound record in plain black and white.\(^{320}\)

Variations of the Hotchkiss "skillful mechanic" test also appeared in the caselaw. In *Brunswick-Balke-Collender Co. v. Rosatto*, the bowling ball gutter case mentioned above, the court looked for an "ordinary workman possessed of the usual mechanical skill."\(^{321}\) In *Phillips v. Detroit*, the Supreme Court held that an improvement in street and highway pavements "was within the mental reach of *any one skilled in the art to which the patent relates.*"\(^{322}\) And in *Adams v. Galion Iron Works & Manufacturing Co.*, the Sixth Circuit specified that "the question of invention must be approached from the standpoint of *one skilled in the art*, not merely one of reasonable mechanical ability in other arts."\(^{323}\)

The facility of the courts to "invent" new standards of patentability or unpatentability might also be noted. For example, the Seventh Circuit in *Standard Oil Co. v. Globe Oil Refining Co.* combined a "new resulting use" test with requirements that the patent achieve a "new or unobvious result," and be more than "a
mere aggregation of old elements." In finding the claims for an improved method of cracking petroleum invalid, the court applied the following test:

Regardless of the multiplicity of references in such cases, the validity must depend upon a new resulting use, or an operative change in degree which was not theretofore obvious to one skilled in the art. A perusal of the record convinces us that the District Court was right in holding that this patent produced no new or unobvious result, and that it was a mere aggregation of old elements.

The "flash of genius" test also periodically surfaced. For instance, in Hamilton Standard Propeller Co. v. Fay-Egan Manufacturing Co., the Sixth Circuit made a passing reference to the Hotchkiss "skillful mechanic" test, but then concluded that "[t]he patentee did not display any flash of genius, inspiration or imagination." One commentator noted:

Various criteria have been used by the courts to determine what is a patentable invention... Unfortunately, it is difficult, if not impossible, to determine from the decisions whether the courts have been applying a more severe and exacting legal standard of patentability or whether they have merely been more exacting in their determination of what would have been obvious to one having ordinary skill in the art.

Given the lack of any meaningful and uniformly applied standard of patentability in the decisions of the Supreme Court and lower courts throughout this period, it is curious that the Court of Customs and Patent Appeals suggested otherwise in 1944:

Until very recently the decisions of all courts having jurisdiction over patent matters have uniformly held that if the thing patented involved patentable subject matter, was useful and was not anticipated by the prior art nor obvious to one skilled in the art, it evidenced invention and was patentable...

In any event, it was this unhappy state of the law that led Giles Rich to conclude that the "invention" standard should be completely dropped from the determination of patentability. He

324. 82 F.2d 488, 498 (7th Cir. 1936).
325. Id. (emphasis added).
326. 101 F.2d 614, 617 (6th Cir. 1939).
328. In re Shortell, 142 F.2d 292, 295 (C.C.P.A. 1944) (emphasis added). Judge Learned Hand took issue with this statement, observing that it would be "idle to pretend that there has been no change" in the standard of invention adopted by the Supreme Court. Foxboro Co. v. Taylor Instrument Co., 157 F.2d 226, 234 (2d Cir. 1946).
remarked that "the requirement for invention was a lead razor which could not take an edge and could be nothing other than a blunt instrument."\textsuperscript{329}

\textbf{B. Judge Rich's Involvement}

In the mid-1940's, Giles Rich, then in private practice in New York, became active in efforts to revive the doctrine of contributory infringement.\textsuperscript{330} Recent Supreme Court decisions had expanded the scope of the patent misuse doctrine and nearly destroyed the doctrine of contributory infringement.\textsuperscript{331} As the legislative representative for the New York Patent Law Association, Rich attended Congressional committee hearings in Washington, D.C. on the Association's proposed contributory infringement bill.\textsuperscript{332} By coincidence, that same committee also decided to take up codification of the patent laws in Title 35.\textsuperscript{333}

Fearing possible attacks on the patent system if the Justice Department's Anti-Trust Division became involved, the Patent Office quickly offered the services of one of its Examiners-in-Chief, P.J. Federico, to draft a bill for the committee.\textsuperscript{334} The National Council of Patent Law Associations joined the effort, to ensure that the Patent Office's interpretation of the law would be compatible with the view of the Patent Bar.\textsuperscript{335} To that end, the Council set up a special two-man Drafting Committee and appointed Rich as one of its members. Throughout the next two years, Rich worked with and made pivotal modifications to Federico's draft which included what would become § 103. Although Rich did not abandon his work on contributory infringement,\textsuperscript{336} he now took up the far more awesome task of

\textsuperscript{331} See Rich, \textit{Address to American Inn}, supra note 330, at 317 (citing Justice Douglas' opinion in \textit{Mercoid Corp. v. Mid-Continent Inv. Co.}, 320 U.S. 661 (1944), as having "wiped out contributory infringement, in the opinion of the Patent bar").
\textsuperscript{332} Rich, \textit{Address to American Inn}, supra note 330, at 317.
\textsuperscript{333} See id. at 317-18.
\textsuperscript{334} Id.
\textsuperscript{335} Id. at 318.
\textsuperscript{336} Giles Rich continued to pursue the issue of contributory infringement
attempting to erase the amorphous "invention" standard from the minds of judges, patent attorneys and future patent caselaw.

While P.J. Federico was responsible for combining the actual ingredients, Giles Rich was intimately involved in the drafting process for § 103 from the beginning. For instance, the second paragraph of Federico's very first draft came from a legislative proposal Rich had made for the New York Patent Law Association in 1948. After hearing of legislative proposals to either codify the long-felt need test\textsuperscript{337} or to mandate a general objective approach,\textsuperscript{338} Rich convinced the New York Patent Law Association to offer its own proposal. The New York Patent Law Association's suggestion was aimed at eliminating tests such as the "flash of creative genius" test of \textit{Cuno Engineering}, that required exploration of the mental processes of inventors. The Association's proposal simply stated: "[P]atentability shall be determined by the nature of the contribution to the advancement of the art not by the nature of the process by which such contribution may have been accomplished."\textsuperscript{339}

While that specific language was not adopted in the legislative session, Federico used a slightly modified form in his first draft (then titled § 23):

\begin{quote}
throughout his involvement with § 103. After the Seventh Circuit struck down a patent for patent misuse in \textit{Cardox Corp. v. Armstrong Coalbreaking Co.}, 194 F.2d 376 (7th Cir. 1952), Rich wrote an article criticizing the decision. In this article he stated:

The misuse doctrine, in the course of its evolution, is approaching the ultimate, at which point all a patentee will have to do to be held guilty of misuse is to confess to the crime of patent ownership . . . . [If] this is to be the law then the patented article has indeed become a strange and delicate creature, doomed to walk alone and afraid to associate with common un patented merchandise, like motors, compressors, pipe, unions and connectors, for fear of becoming infected with their un patented status.

Giles S. Rich, \textit{Misuse, A New Frontier?}, 34 J. PAT. OFF. SOC'Y 391, 391, 394 (1952). Rich's efforts finally resulted in §§ 271(b) and (c) and the predecessor to current § 271(d) of Title 35.

\begin{itemize}
\item \textsuperscript{338} H.R. 5248, 80th Cong. (1949), \textit{cited in} Rich, \textit{Why and How}, supra note 289, at 1:209. This bill would have added the following sentence to the current statute:

\begin{quote}
Patentability of inventions and discoveries, including discoveries due to research, and improvements thereof, shall be determined objectively by the nature of the contribution to the advancement of the art, and not subjectively by the nature of the mental process by which the invention or discovery, or the improvement thereof, may have been accomplished.
\end{quote}

\textit{Id.}
\item \textsuperscript{339} Rich, \textit{Why and How}, supra note 289, at 1:209.
\end{itemize}
\end{quote}
§ 23 Conditions for patentability, lack of invention

A patent may not be obtained though the invention is not identically disclosed or described in the material specified in § 22 of this title, if the differences between the subject matter sought to be patented and said material are such that the subject matter as a whole would be obvious to an ordinary person skilled in the art.

Patentability as to this condition shall be determined by the nature of the contribution to the advancement of the art, and not by the nature of the mental processes by which such contribution may have been accomplished.340

The first changes Rich and the Drafting Committee suggested to Federico's draft were to the title of the section. Rich had already been working to convince his fellow committee members and the congressional committee that the troublesome "invention" terminology should be omitted from the statute. He asked them: "Why don't we get away from this troublesome term altogether? ... Let's not use it at all and say what we really mean, and speak in terms of a requirement for patentability, saying how it shall be determined." Hence, "Conditions for patentability, lack of invention" became "Conditions for patentability, non-obvious subject matter."341

Rich, through his role on the Drafting Committee, made further contributions to focus the obviousness test and to limit the scope of the patentability inquiry. On the question of obvious to whom, Rich answered, "obvious to a person having ordinary skill in the art." As to when the determination of obviousness was to be made, Rich answered, "at the time the invention was made." Rich also explained that the invention to be considered in a determination of obviousness should include "the [claimed] subject matter as a whole." (emphasis added).

Finally, Rich and the Drafting Committee wanted to make sure that the flash of genius test would be banished forever. For that purpose, they modified the second sentence of Federico's draft to unequivocally state that patentability "shall not be negatived by the manner in which [the] contribution may have been accomplished." (emphasis added).

After the suggestions and comments of Rich and the Drafting Committee were incorporated, the draft proposal read:

§ 103. Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention is not identically disclosed or described in the material specified in § 102 of this title,

340. Federico, supra note 297, at 91 (emphasis added).
342. Id. at 1:211.
if the differences between the subject matter sought to be patented and said material 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.

Patentability as to this condition shall be determined by the nature of the contribution to the art, and shall not be negatived by the manner in which such contribution may have been accomplished.\(^3\)

A comparison of this draft to the current form of §103 shows that these modifications have withstood the test of time.\(^4\)

There is no doubt that §103 was an improvement over the undesirable "invention" standard. As Giles Rich explained:

The question will, of course, be asked, "What difference does it make, it must still be a subjective decision?" True, but now the statute provides a standard according to which the subjective decision must be made. There is a vast difference between basing a decision on exercise of the inventive or creative faculty, or genius, ingenuity, patentable novelty, flashes, surprises and excitement, on the one hand, and basing it on unobviousness to one of ordinary skill in the art on the other. It is possible to determine what art is involved, what type of skill is possessed by ordinary workers in it, and come to some conclusion as to what "ordinary skill" would be at a given time. This may present knotty problems but it is a definite pattern of thinking and does not leave the Patent Office or the courts free to conclude that a thing is not patentable for any old reason and then stand on the proposition that something indefinable and impalpable called "invention" was not involved. At least they have to talk in terms of obviousness to a man of ordinary skill in the art. While the ultimate decision as to what his skill would be and what would be obvious to him is subjective, it is one definite proposition on which evidence can be adduced. The best the courts could do in the past was to assume, under certain sets of circumstances such as the existence of a long-felt want and an immediate market acceptance of an invention, that there must have been "invention."\(^5\)

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343. Federico, supra note 295, at 94 (emphasis added).
344. The current statute reads:
§103 Conditions for patentability; nonobvious subject matter:
a) 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. Patentability shall not be negatived by the manner in which the invention was made.
C. Congressional Intent for § 103, or Lack Thereof

The passage of § 103 was a milestone in patent law history, even though Congress did not recognize its significance. The report of Mr. Crumpacker, a member of the House Subcommittee on Patents recalled the event as follows:

A good 95% of the members of both bodies never knew that the legislation was under consideration, or that it had passed, let alone what it contained.

In the House the bill went through on the Consent Calendar—along with, on the same day, dozens of other pieces of legislation. When it was reached on the calendar no questions were asked and no explanations were offered. There was not even an insertion in the record to explain the bill. The entire time consumed by the passage of the bill probably did not total 30 seconds. Only a handful of members—the members of the "Objectors' Committee" on the two sides of the aisle—were paying any attention to what was going on. How can the House, as a legislative body, be said to have had any "intent" with respect to the bill? 346

The issue of what Congressional intent should be attributed to this minimal action would come up time and time again as the meaning of § 103 was later examined and interpreted by the courts. While the plain language of the statute unmistakably rejects the "flash of genius" test, some patent attorneys and judges would take a different view, relying on the following conversation from the Senate floor as justification:

Mr. SALTONSTALL: Mr. President, will the Senator from Nevada tell us the purpose of the bill?

Mr. McCARRAN: The bill would codify the patent laws of the United States. It is under the able guidance of the Senator from Wisconsin. (Mr. Wiley).

Mr. SALTONSTALL: I am not a patent lawyer, but I know patents are a very technical subject. Does the bill change the law in any way or only codify the present patent laws?

Mr. McCARRAN: It codifies the present patent laws. It passed the House, and it was approved by the Judiciary Committee of the Senate.

Mr. HENDRICKSON: Mr. President, as I recall, it was approved by the Judiciary Committee unanimously.

Mr. McCARRAN: I think the Senator from New Jersey is correct.

Mr. President, I ask unanimous consent that a statement prepared by me may be inserted in the RECORD at this point. There being no objection, the statement was ordered to be printed in the RECORD. . . .

This conversation would also be used to justify countless attempts to revive the old tests for "invention." Long after the enactment of § 103, Giles Rich would continue defending it from this slander. In more than one speech he would counter the "Legislative Intent" argument with:

Realistically, the "intent" with respect to the Patent Act of 1952, was the intent of a subcommittee to pass the bill prepared by the patent lawyers, as agreed to by codification counsel, committee counsel, and the members of the subcommittee. . . . [If legislative intent is to be found anywhere in the legislative body, it is in the views expressed by committees as found in their hearings and reports. That one legislator, who knows nothing of the details and who has only one vote, stands to ask one question of another legislator, who also knows nothing of the details and who gives a noncommittal answer, is no expression of "legislative intent." At most, it shows the intent of not more than one or two men.]

VI. POST-SECTION 103 DEVELOPMENTS

A. Early Failure of Courts to Apply the § 103 Standard

On July 4, 1952, with the passage of § 103, non-obviousness formally joined novelty and utility as a requirement for patentability. Although pure coincidence, it seems appropriate that such a revolutionary event in patent law history occurred on Independence Day. This date is also fitting because Judge Giles Rich, who contributed so much to § 103, was recently called the "Founding Father of Patent Law." 349

When speaking about the origin of § 103, Judge Rich modestly acknowledges his role as a midwife to its birth. 350 He continued to play the necessary role of champion and defender of that statutory provision long after its enactment. He offered the following description of the checkered history of § 103:

It was an infant left on a doorstep crying feebly for recognition and nourishment; who were its parents and what were they doing on a night in April 1949? There is a question of paternity; who was the father? Did the mother know? I can tell you one thing: it was not a member of Congress. Congress had no more to do with the

347. Id. at 1:12 n.21 (quoting S. REP. NO. 120, at 9534 (1952)).
348. Id. at 1:13.
conception of this brain-child than does a hospital where a baby is born.

This child of unknown parentage but many ancestors, was rejected, in its early days, by court after court with a passion akin to old-fashioned abhorrence of illegitimacy, especially of infants not of their own creation, and, with rather poor prospects of survival, was taken in and nourished by a kindly CCPA. At the tender age of 14 it was adopted by a kindly Supreme Court. A few years later, upon discovering that it was a bastard, the Court decided it would at least have to change the name of the child, if it was to stay in the family, from unobviousness to synergism, thus covering up its natural origins with a pretense of legitimacy. (I wonder if there is a Freudian connection between sin and synergism.) But this nonsense has afflicted the child with schizophrenia.351

Like Congress, however, most courts, including the Court of Customs and Patent Appeals, and the Patent Office failed to recognize or to apply the carefully drafted changes embodied in §103 in the first few years after its enactment. For example, declaring the statute a "mere codification" of previous caselaw,352 some judges continued to demand evidence that a patent owner show "invention," or "unusual or surprising consequences,"353 or that it was the result of "inventive genius."354 Hence, these early 1953-54 cases merely perpetuated the addiction of the courts to the unworkable invention standard that §103 was designed to replace.

One such instance was Wasserman v. Burgess & Blacher Co.,355 a First Circuit patent opinion decided in 1954. This case involved a patent for a unique skylight opening covering that prevented water from seeping into the interior of the building.356 In holding the patent invalid, the court summarily dismissed the 1952 Act as a mere codification of pre-existing law, as though the pre-existing law provided a clear and precise standard of

351. Id. at 1:202-03.
353. Channel Master, 117 F. Supp. at 814-15. Chief Judge Inch states, "[I]n the case at bar, after a careful consideration of all the evidence, I fail to find an 'invention'. . . Consequently, the patentee has not produced any 'unusual or surprising consequences' . . . and the patent does not meet the test of invention . . ." Id. at 814-15.
354. Joseph Bancroft, 113 F. Supp. at 722. See also De Burgh, 125 F. Supp. at 475 (requiring evidence of the "exercise of the inventive faculty").
355. 217 F.2d 402 (1st Cir. 1954).
356. Id. at 403. This element had not been disclosed in any references cited by the infringing defendant. Id. at 403-04.
Another example is United Mattress Machinery Co. v. Handy Button Machine Co. involving a patent on buttons used in mattress tufting machines.\textsuperscript{357} Prior to the invention mattress buttons had a tendency to “pop off” when pressure was applied to the mattress.\textsuperscript{358} The patented button had a heart-shaped shank attached to its head which “made the insertion of the button into the mattress easy and its withdrawal difficult, thus solving the popping out problem which had perplexed the industry.”\textsuperscript{359} In its analysis, the court noted that there was considerable demand in the industry for the patented buttons.\textsuperscript{360}

Though the shank feature of the patented button distinguished it from all of the prior art, the court invalidated the patent stating that “[e]ven if it be conceded that the fixed-in-head shank... is a ‘new and useful’ improvement [over the prior art]... it is not an ‘invention’ as that term is used [in] patent law.

Disregarding the express statutory provisions in § 103, the Court declared “Congress has made no attempt to define the term ‘invention’, either under the older law or in the new Patent Act. Instead, the courts, aided only by caselaw, have had to determine for themselves what constitutes invention and what does not.”\textsuperscript{362}

Unfortunately, the Judiciary Committee Report on the Patent Act of 1952 was, itself, not completely faithful to the purpose of § 103 in its suggestion that § 103 set forth an “invention” requirement, rather than a patentability requirement.\textsuperscript{363}

It is quite impossible to define patentability except in the most general terms. It cannot be denied merely on the ground of the simplicity of a discovery ... but it does not come into being merely because the device is novel and represents an interesting and useful improvement. The touchstone is whether the new thing is beyond the ability of the worker of ordinary skill in the field, and neither the courts nor Congress have been able to offer a more definite test, so that in the end it must be left to the judgment of the courts in controverted cases to apply the formula to the specific facts; and the judges may not endow with the quality of invention every new and useful advance amidst the myriad activities of a resourceful people.

\textit{Interstate Rubber}, 214 F.2d at 548 (emphasis added).

\textsuperscript{363} Report No. 1923 of the [House] Committee on Judiciary, \textit{reprinted in} 34 J. PAT. OFF. SOC'Y. 549, 554 (1952).
Furthermore, some courts justified their position that § 103 merely codified the most recent "invention" standard caselaw by relying on the following paragraph:

Section 103, for the first time in our statute, provides a condition which exists in the law and has existed for more than 100 years, but only by reason of decisions of the court ... [Section 103] paraphrases language which has often been used in decisions of the courts, and the section is added to the statute for uniformity and definiteness. This section should have a stabilizing effect and minimize great departures which have appeared in some cases.\(^{364}\)

The fault in this line of reasoning lay in the fact that there is no statement in the Judiciary Committee Report specifically approving the most recent "invention" caselaw, or any older caselaw for that matter. As discussed previously, prior to the enactment of § 103, there was such a myriad of judicial opinions on what constituted "invention," that a court could find caselaw to support a finding of either validity or invalidity of a patent. The "stabilizing effect" called for in the Judiciary Committee Report, therefore, could only be achieved if § 103 was interpreted as choosing one standard of patentability to be applied uniformly in all patent cases. Giles Rich strove to explain this on more than one occasion. For example, at a speech before the Los Angeles Patent Law Association, he stated:

When, as was the case with the "requirement for invention," the century's accumulation of judicial precedents range from A to Z in strictness and Congress, looking at the situation under the guiding light of Kettering's statement that this is no yardstick and the greatest technical weakness of the patent system, determines to make a yardstick and says the measure shall be "M", right in the middle of the range, it behooves everyone concerned with administering that law to follow the measure "M" and to stop flitting about arbitrarily from A to Z, ignoring what Congress has done.\(^{365}\)

B. Lending a Hand to Giles Rich

But it was not until the first post-1952 Act patentability case

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*Although the principal purpose of the bill is the codification of title 35 ... there are a number of changes in substantive statutory law. ... The major changes or innovations in the title consist of incorporating a requirement for invention in § 103 and the judicial doctrine of contributory infringement in § 271.*

\(^{364}\) *Id.* at 557. For cases quoting this paragraph of the Senate Report, see *Vincent v. Suni-Citrus Prods. Co.*, 215 F.2d 305, 315 n.21 (5th Cir. 1954); *Stanley Works*, 203 F.2d at 849; General Motors Corp. v. Estate Stove Co., 203 F.2d 912, 915 (6th Cir. 1953); Joseph Bancroft & Sons v. Brewster Finishing Co., 113 F. Supp. 714, 721 (D.N.J. 1953).

reached the Second Circuit in 1955 that Judge Rich's reasoning had a receptive listener. Long a critic of the amorphous invention standard, Judge Learned Hand must have welcomed the opportunity to replace it with the newly enacted non-obviousness test. The fledgling statute could not have happened upon a more respected federal judge to take up its cause.\textsuperscript{366}

The case was \textit{Lyon v. Bausch & Lomb Optical Co.}\textsuperscript{367} Dean Lyon's patent involved a method for obtaining non-reflecting films of inorganic salts on the surface of lenses.\textsuperscript{368} The process involved two steps—heating the lens in a vacuum to evaporate water and grease from the optical surface followed by vaporizing an inorganic salt in the vacuum for coating the optical surface \textit{while keeping the optical surface heated}.\textsuperscript{369} The result was a superior, hardy, tenacious and scratch-resistant coating on the lens.\textsuperscript{370} The only novelty, however, resided in keeping the optical surface heated while the coating was applied.\textsuperscript{371} A step that, in hindsight, might not seem very significant.

The lower court had held the patent valid and infringed.\textsuperscript{372} John W. Malley, then a senior partner at Cushman, Darby and Cushman, tried and won the case for the patentee, Dean Lyon,

\textsuperscript{366} Hand rose to the Chief Judgeship of the Second Circuit in 1939, after the scandalous indictment and resignation of Judge Martin Manton for accepting bribes for votes on several patent cases. Gunther, \textit{supra} note 138, at 503, 506. Although Hand had obviously been unaware of Manton's activities, he later blamed himself for not suspecting Manton's ulterior motives. \textit{Id.} at 509. Manton's conviction is reported in \textit{United States v. Manton}, 107 F.2d 834 (2d Cir. 1938). Manton subsequently spent 17 months in a federal penitentiary. Gunther, \textit{supra} note 138, at 506.

Manton had accepted bribes in two patent cases that were also heard by Learned Hand. \textit{Id}. In a recent Hand biography, Gerald Gunther, his former law clerk, reports that Hand constantly lamented the disgrace that Manton had brought to the formerly esteemed Second Circuit. \textit{Id.} at 509-13. Hand spent the rest of his career working to restore the court's credibility and integrity. \textit{Id.} at 513. Clearly, Hand's contribution to patent law through his opinions on nonobviousness more than made up for the failings of Manton. Gunther comments:

Ultimately, Manton's behavior did not leave as deep and permanent a scar on the reputation of the Second Circuit as Hand feared. By restoring the court's high standards of ability and integrity, Hand and his colleagues reestablished the Second Circuit's renown as the nation's leading intermediate appellate court. A few months before he died, Hand could comment that "the standards of judicial conduct are [now] a good deal better" than they had been.

\textit{Id.}

\textsuperscript{367} 224 F.2d 530 (2d Cir. 1955).
\textsuperscript{369} \textit{Id.}
\textsuperscript{370} \textit{Id.}
\textsuperscript{371} \textit{Id.} at 43-44.
\textsuperscript{372} \textit{Id.} at 51.
before Judge Harold P. Burke in Rochester, New York, and successfully argued the appeal. When he began his argument before the Second Circuit, Judge Hand asked him questions about the caselaw leading up to the enactment of § 103. John Malley responded that he would need at least an hour or more to do justice to those questions. Judge Hand, the presiding judge on the panel, secured the concurrence of the other judges on the panel, Judges Swan and Hincks, and told John Malley he could have the extra time. Malley seized the opportunity.

Judge Hand started his opinion upholding the patent's validity by noting the trend of recent Supreme Court decisions to impose a "stricter test of invention":

The Courts of Appeal have very generally found in the recent opinions of the Supreme Court a disposition to insist upon a stricter test of invention than it used to apply—indefinite it is true, but indubitably stricter than that defined in § 103. Indeed, some of the justices themselves have taken the same view.373

He then accepted the premise that § 103 was a codification of existing caselaw by stating:

The Act describes itself as a codification of existing law, as it certainly is in the sense that the structure of the system remains unchanged. Moreover those decisions that have passed upon it have uniformly referred to it as a codification, although so far as we have found none of them has held that § 103 did not change the standard of invention. And so the question arises whether we should construe § 103 as restoring the law to what it was when the Court announced the definition of invention, now expressly embodied in § 103, or whether we should assume that no change whatever was intended. To decide that question it seems desirable to look briefly backward.374

Hand then proceeded to identify which one of the various legal theories had been codified by the statute. He focused on Hotchkiss v. Greenwood:

[IN Hotchkiss v. Greenwood, the Court imposed an authoritative gloss upon the word, ['invention'] which it put in the following words: "unless more ingenuity and skill in applying the old method" were necessary "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 skillful mechanic, not that of the inventor." The instruction to the jury, the exception to which the court overruled, had been in substantially the same words: if "no other ingenuity or skill" be "necessary to construct the knob than that of an ordinary mechanic acquainted with the business, the patent is void." Thereafter this became the

373. Lyon, 224 F.2d at 535 (footnotes omitted).
374. Id. (emphasis added) (footnotes omitted).
The variants were numberless; and "invention" became perhaps the most baffling concept in the whole catalogue of judicial efforts to provide postulates for indefinitely varying occasions. However, the Court never formally abjured it; nor has it ever substituted any other definite test. Even Cuno Engineering Corp. v. Automatic Devices Corp.—which in expression probably was the furthest departure—recognized the continued authority of 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." [And] again: "The principle of the Hotchkiss case applies to the adaptation or combination of old or well known devices for new uses."375

While noting that subsequent decisions had created many "variants" to the Hotchkiss rubric, he concluded that the divergence was so great that the Lyon patent would fail the patentability test as it was applied just prior to the 1952 Act.376 Nevertheless, Judge Hand noted that the original Hotchkiss test had never been overruled, and was continually recognized even by the decisions which strayed the farthest from the original case.377 Under these circumstances, he reasoned that § 103 was a codification of the original Hotchkiss standard.

In the first place § 103 only restores the original gloss, substantially in ipsissimis verbis; which had never been overruled; but on the contrary for seventy or eighty years had continued to be regarded as authoritative. Moreover—and this is the important consideration—although it may have ceased in practice to be followed, and had come to enjoy no more than lip service, there never has been the slightest intimation of any definite substitute; nothing more than an unexpressed and unacknowledged misgiving about the increased facility with which patents were being granted. Such judicial attitudes are indeed the stuff of which much of the law is made; but we cannot agree that, however controlling upon the lower courts, they are a warrant for that solid assurance, the disappointment of which will make a statute invalid. Courts again and again shift their position; and, although they are apt to do so under cover of nice distinctions, they impose the risk of anticipating the changes upon those who may have acted upon the faith of the original. Certainly a legislature, whose will the courts have undertaken to proliferate, must be free to reinstate the courts' initial interpretation, even though it may have been obscured by a series of later comments whose upshot is at best hazy.378

375. Id. at 535-36 (emphasis added) (citations omitted).
376. Id. at 535. Hand observed that "[I]t must be owned that, had the case come up for decision within twenty, or perhaps, twenty five, years before the Act of 1952... it is almost certain that the claims would have been invalid." Id.
377. Id. at 536.
378. Lyon, 224 F.2d at 536-37. Soon after this decision was published, it attracted the attention of commentators. See, e.g., Donald J. Libert, Note, Section
In upholding the Lyon patent, Judge Hand placed considerable emphasis on the circumstances in the industry that preceded and followed the invention, i.e., secondary considerations or the objective indicia of unobviousness:

The most competent workers in the field had for at least ten years been seeking a hardy, tenacious coating to prevent reflection; there had been a number of attempts, none satisfactory; meanwhile nothing in the implementary arts had been lacking to put the advance into operation; when it appeared, it supplanted the existing practice and occupied substantially the whole field. We do not see how any combination of evidence could more completely demonstrate that, simple as it was, the change had not been "obvious . . . to a person having ordinary skill in the art"—§ 103.379

Judge Hand bolstered the § 103 non-obviousness standard he interpreted and developed in the Lyon case with his later opinion in Reiner v. I. Leon Co., a case involving a patent for hair curlers, specifically, clamps used to maintain formed curls in a woman's hair.380 Hand now unequivocally and confidently declared, "[t]here can be no doubt that the Act of 1952 meant to change the slow but steady drift of judicial decision that had been hostile to patents."381 Reiterating his conclusion in the Lyon case, he stated that the passage of the Patent Act of 1952 signaled Congress' deliberate intent to restore the old Hotchkiss definition and "raise it from a judicial gloss to a statutory command."382 He stated:

We discussed the question at length in Lyon v. Bausch & Lomb Optical Co., and have little to add to what we then said. There can be no doubt that the Act of 1952 meant to change the slow but steady drift of judicial decision that had been hostile to patents which made it possible for Mr. Justice Jackson in his dissent to speak of the "strong passion in this Court for striking them" (patents) "down so that the only patent that is valid is one which this Court has not been able to get its hands on." That was in 1945, while the test laid down in Hotchkiss v. Greenwood still had a nominal authority, of which little remained in actual application. We still cannot escape the conclusion—as we could not when Lyon v. Bausch & Lomb Optical Co. was decided in 1955—that Congress deliberately meant to restore the old definition, and to raise it from a judicial gloss to a statutory command. It is not for us to decide what "discoveries" shall "promote the progress of science and the useful arts" sufficiently to grant any "exclusive right" of inventors (U.S. Constitution, Article 1, § 8). Nor may we approach the

379. Lyon, 224 F.2d at 535 (emphasis added).
381. Id. at 503.
382. Id.
interpretation of § 103 of the Title 35 with a predetermined bias.

Judge Hand's Reiner opinion is also important for his reliance on certain "sign posts" in his determination of non-obviousness. These were, of course, essentially the same objective indicia of unobviousness he characteristically looked for and mentioned in his opinions:

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; and we do not see how such a standard can be applied at all except by recourse to the earlier work in the art, and to the general history of the means available at the time. To judge on our own that this or that new 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? In the case at bar the answers to these questions all favor the conclusion that it demanded more intuition than was possessed by the "ordinary" workers in the field. The needs were known, but the purpose to fulfill them with that minimum of material and labor disclosed in the patent had not appeared; and economy of production is as valid a basis for invention as foresight in the disclosure of new means. In the case at bar the saving of material as compared to anything that had preceded, was very great indeed; the existing devices at once yielded to Reiner's disclosure; his was an answer to the "long-felt want."

In applying this non-obviousness test to the Reiner patent, Hand referred to how long hair curler clamps were a subject of experiment. He also noted there had been seven prior patents in the thirteen years before the Reiner patent, all attempting to perform the function Reiner achieved. Considering the differences between the Reiner patent and the closest prior art, Hand commented that "[i]n such small and fragile devices slight divergences may be determinative." For Hand, the scales were convincingly tipped in favor of patentability by the instantaneous and unexpected commercial success the Reiner clamps received. He stated, "[W]e are of course acutely aware of the constant reminders in the books that the sale of a patented device is not alone a measure of its invention, and we accept that conclusion. Nevertheless, great commercial success, when properly

383. *Id.* (emphasis added) (citations omitted).
384. *Id.* at 503-04 (emphasis added).
386. *Id.* at 503.
387. *Id.* at 504.
388. *Id.* at 503-04.
scrutinized, may be a telling circumstance." Judge Hand found that the invention at once achieved an unexpected success:

In the first year—1946—its sales approximated $40,000, which at ten cents for every three clamps meant a sale of over a million clamps, and in twelve years the sales had reached 90 million. In 1957 they were about 750,000 a day, and by 1958 the plaintiff had established an almost complete monopoly of the "two-piece clips in the market."

By developing clamps that were "not too troublesome to adjust, yet tenacious when in place," the inventors had devised an invention that revolutionized hair styling. Not surprisingly, Hand found the patent valid.

Judge Rich, no doubt, was very pleased with Judge Hand's decisions in the Bausch & Lomb and Reiner cases, for he observed:

[F]or the first few years courts were not heeding the statute, largely, I think, because the bar was not doing so. Judges tend to get the law from the winning party's brief. The very first judicial recognition of what was intended by § 103 was Judge Learned Hand's opinion for the Second Circuit Court of Appeals in Lyon v. Bausch & Lomb in 1955. He also understood the underlying reason for § 103. He correctly stated in Reiner v. I. Leon that it was "to change the slow but steady drift of judicial decision that had been hostile to patents . . . ."

Several other circuits adopted Hand's interpretation of § 103. Citing Bausch & Lomb, these courts began to base their patent validity opinions on the "differences between the subject

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389. Id. at 503.
391. Id. at 504.
392. Rich, Laying the Ghost, supra note 13, at 36-37 (citations omitted).
393. The Third Circuit made this observation following Hand's Lyon v. Bausch & Lomb decision.

The choice of language in the [1952 Patent] Act indicates, as the legislative history discloses, an attempt to state what the law has been. As such, it is a codification. The difficulty always existed in the application of the law, because to a large extent the standards have been indefinite and subjective. And judicial attempts to improvise expressions covering that which had been said many times before account for numerous descriptive phrasings of an elusive concept. The Act was intended to achieve the objective of stabilizing the law through legislative expression which becomes the touchstone of the decisions . . . .

To what extent a change is wrought would seem to depend upon the pre-existing views of a tribunal as to the standard upon which it has determined patentability. As pointed out by Judge Learned Hand in Lyon v. Bausch & Lomb Optical Co., despite adherence to the keystone cases, like Hotchkiss v. Greenwood, intangible elements have directed judicial attitudes to "misgiving about the increased facility with which patents were being granted."

R.M. Palmer Co. v. Luden's, Inc., 236 F.2d 496, 499-500 (3d Cir. 1956) (citations omitted) (footnote omitted).
matter patented and the prior art" and whether these differences "would have been obvious, at the time the invention was made, to a person having ordinary skill in the art to which the subject matter pertains. 394

C. Diverse Views of Other Courts on § 103

Following Hand’s lead, many courts used objective factors like long-felt need and commercial success to help determine obviousness. For example, the Fourth Circuit in Brown v. Brock upheld the validity of a patent for a “weeping doll.” 395 The Court began its analysis of the patent by noting that “[l]ong before the patent in suit, toy manufacturers had attempted repeatedly and without success to produce a satisfactorily realistic weeping doll. A number of patents had been issued for dolls designed to meet this demand, but not one of them attained commercial success . . . .” 396 Dolls made according to the Brown patent, however, were “met with quick commercial success” and continued to be popular toys for the following five years. 397 Citing the test set out in Bausch & Lomb, the Court concluded that the patent must be held valid:

The record . . . shows a longf elt and unsatisfied want for an acceptable weeping doll. As we have seen, a number of devices were attempted, but none served the purpose. If any solution to the problem had been obvious, it would not have been overlooked in the industry for want of desire or effort. 398

Other courts, however, stubbornly resisted recognizing any intention in § 103 to reverse the drift in the courts toward applying a stricter patentability standard. They continued to dismiss any such intention by simply stating that “[t]he Patent Act of 1952 did not change the basic tests for determining patentability.” 399 Moreover, such courts continued to discuss patent validity in indefinite terms like “inventive genius” 400 or “flash of genius.” 401

The patent in Caldwell v. Kirk Manufacturing Co. 402 suffered

395. Brown, 240 F.2d at 723.
396. Id. at 725.
397. Id.
398. Id. at 727.
401. See, e.g., Oriental Foods, Inc., v. Chun King Sales, Inc., 244 F.2d 909, 914 (9th Cir. 1957).
402. 269 F.2d 506 (8th Cir. 1959).
this treatment. It involved an apparatus which allowed animals to oil themselves with e.g., insecticide by rubbing against cables.\textsuperscript{403} The cables were connected to both a reservoir holding insecticide and a horizontal support base.\textsuperscript{404} The invention was a means to cause insecticide to flow down the cables when needed.\textsuperscript{405}

The Eighth Circuit based its entire analysis of the patented invention on whether or not it revealed “inventive genius.”\textsuperscript{406} In its opinion, Kirk merely applied the well-known knowledge that cattle rub themselves against posts and cables to relieve their itching.\textsuperscript{407} Hence, the court concluded that the Kirk combination could not “be held to rise to the dignity of patentable invention.”\textsuperscript{408}

\section*{D. Giles Rich Becomes the First Patent Lawyer to Sit as a Judge on the CCPA}

Giles Rich's contributions to patent law and particularly § 103 were recognized with his appointment in 1956 as the first patent lawyer to serve as a judge on the Court of Customs and Patent Appeals (CCPA).\textsuperscript{409} He used his position of increased stature to continue fighting for the acceptance of the § 103 non-obviousness patentability test. One of his first efforts was to disabuse his fellow judges on the CCPA of their belief that the test of patentability was still “invention.”

When I came to the CCPA in 1956, three and a half years after § 103 came into effect, I found it being totally ignored. That is not too surprising. The court was dealing with [Patent] office actions several years old rejecting claims for lack of "invention" and the

\begin{thebibliography}{10}
  \bibitem{403} Id. at 507.
  \bibitem{404} Id. at 509.
  \bibitem{405} Id. at 509.
  \bibitem{406} Id. at 507-10.
  \bibitem{407} \textit{Caldwell}, 269 F.2d. at 509-10.
  \bibitem{408} Id. at 510. See also \textit{Thurber Corp. v. Fairchild Motor Corp.}, 269 F.2d 841, 849-50 (5th Cir. 1959). The Fifth Circuit made the following commentary on proper jury instructions on the validity of a patent:
  At least three times in the [District] Court's charge he included the requirement of "exciting" as part of the standard of invention. ... [The patent holder] contends that there is nothing very exciting about automobile transmissions, particularly to a jury who has heard someone talk about them for three and one-half weeks, and that this standard imposed an "insurmountable burden" upon [the patent holder]. In the total context we do not regard this as harmful but we do feel that this was an unfortunate choice of words for the Trial Court to use in describing the standard of invention.
  Id.
  \bibitem{409} Coincidentally, John W. Malley of Cushman, Darby and Cushman, who had successfully argued the landmark \textit{Lyon v. Bausch & Lomb} appeal before Learned Hand, was also instrumental in Judge Rich's appointment to the CCPA. He arranged for a key meeting he and Giles Rich had with then Deputy Attorney General (later Attorney General) William Rogers. After that meeting, Judge Rich was nominated and later appointed to be a judge on the CCPA.
appellants' briefs, like those of the Patent Office Solicitor's, were still couched in those terms. It was probably in my first conference that I suggested that for some time we had had a statute that had put patentability on another basis which we should follow. One of the judges was incredulous. He said, "I thought if it is an invention it is patentable. Do you mean to say you can have an unpatentable invention?"

As Judge Rich correctly noted, before he came to the CCPA, this court was still speaking in terms of a requirement for "invention." For example, in In re Schechter decided in 1953, the CCPA mentioned 35 U.S.C. § 112 of the Patent Act, but not § 103 in its determination of patentability. The CCPA simply applied the old "invention" test as though § 103 had not been enacted, stating "[W]e conclude that all the compounds... are inventive and patentable over the prior art of record..." In one of his early opinions, In re Ruscetta, Judge Rich noted that the Patent Office had rejected certain claims for "lack of invention" over a prior British specification. In affirming the Patent Office rejection, he specifically cited 35 U.S.C. § 103 and held that the claimed feature "would be most obvious to one skilled in the art" in view of prior art teachings.

Concerned that the Patent Office was still making rejections based on "lack of invention" rather than applying the unobviousness standard as defined in § 103, Rich, in his 1964 Kettering Address, humorously suggested that the Patent Office print up a wallpaper border to run around the patent examiners' rooms, endlessly repeating the words "NEW - USEFUL - UNOBVIOUS - PATENTABLE IF NO BAR." In a more serious tone, Rich suggested that federal judges receive books explaining that 'the requirement for invention' became obsolete in 1953 by an act of Congress, along with many prior court opinions discussing it, being replaced by unobviousness as defined in 103 as the THIRD REQUIREMENT for Patentability.

410. Rich, Laying the Ghost, supra note 13, at 37.
411. 205 F.2d 185 (C.C.P.A. 1953).
412. Id. at 191 (emphasis added).
414. Id. at 692. Rich later noted the success of his efforts to eliminate the use at the CCPA of an "invention" patentability standard:

Through the ensuing years that kind of thinking has totally disappeared in our court—but not everywhere. The persistence of the C.C.P.A. in following the statutory test gradually brought the Patent Office into line and after a few years I was told that the Patent Office Academy, which trains examiners, had swept the requirement for "invention" under the rug. We now rarely see a rejection in those terms in a record. But it was a slow transition.

Rich, Laying the Ghost, supra note 13, at 37.
416. Id.
VII. SECTION 103 REACHES THE SUPREME COURT IN GRAHAM V. JOHN DEERE & CO.

In 1966, thirteen years after its enactment, § 103 finally arrived at the Supreme Court in four cases: *Graham v. John Deere Co.*[^417^] *Calmar v. Cook Chemical Co.*[^418^] *Colgate v. Cook Chemical Co.*[^419^] and *United States v. Adams.*[^420^] Rich anxiously awaited the outcome, fearing the decision may be coming down too soon.

Rich was waiting in his chambers for the opinion. When he got his copy, he quietly went into his office, shut the door and spent two hours poring over it. Finally, he emerged and looked at Witherspoon [his law clerk] and his longtime secretary, Josephine Pizza . . . , and said simply, 'Well, John [Witherspoon], I think we've turned the corner.'[^421^]

Of the three cases on § 103 decided in that term, the *Graham* opinion contains the Supreme Court's most pertinent discussion of §103 and its non-obviousness patentability standard. The sentiments of both Rich and Hand echoed throughout the opinion.

Rich could hardly have asked for a stronger endorsement of his efforts. Speaking for the Court in *Graham v. John Deere Co.*, Justice Clark expressly recognized that § 103 added a third statutory test of non-obviousness to the previously recognized novelty and utility requirements.[^422^] In a manner strikingly similar to Rich's 1964 Kettering speech, the Court listed the factual inquiries a court should make to determine obviousness and non-obviousness:

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined.[^423^]

[^421^]: Cohodas, *supra* note 349, at 18.
[^422^]: *Graham*, 383 U.S. at 12.
[^423^]: *Id.* at 17. John Witherspoon, one of Rich's many law clerks, commented, "[A] comparison of the *Graham* opinion with the 'Kettering Address' [by Rich] leaves little doubt that Judge Rich's thinking had a profound influence on the Court." John F. Witherspoon, *Turning the Corner: A Tribute to Judge Giles Sutherland Rich*, 76 J. PAT. & TRADEMARK OFF. SOC'Y 332, 336-37 (1994) (noting that another Rich law clerk, James F. Davis first recognized the similarities). The factual inquiries were identified in Rich's earlier Kettering speech as:

1. What are the differences between "the invention" and "the prior art"?
2. What is disclosed by the prior art presumed to have been available to the inventor?
3. What was the level of ordinary skill in the art at the time the invention was made?
4. Other fact issues relating to
Justice Clark's opinion also followed the path laid out by Learned Hand in Lyon v. Bausch & Lomb. Like Hand, Justice Clark began his analysis of § 103 by conducting an historical overview of patent law. Starting with the original constitutional authorization and the efforts of "the first administrator of our patent system," Thomas Jefferson, Justice Clark slowly worked his way up to the seminal Supreme Court case of Hotchkiss v. Greenwood.

Justice Clark lifted the same quote from Hotchkiss as had been previously cited by Hand:

[U]nless more ingenuity and skill ... were required ... 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 [patentable] invention. In other words, the improvement is the work of the skillful mechanic, not that of the inventor. 424

He then explained the problems with the "invention standard" following the Hotchkiss decision:

[As this Court has observed, "[t]he truth is, the word ['invention'] 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." Its use as a label brought about a large variety of opinions as to its meaning both in the Patent Office, in the courts, and at the bar.] 425

He listed the same problems that Hand identified in Lyon v. Bausch & Lomb Co.:

Thereafter this became the standard rubric and was applied in many cases. The variants were numberless; and "invention" became circumstances indicative of the presence or absence of obviousness, traditionally taken into account in determining "invention," such as long-felt need, immediate copying, sudden displacement of existing practices or devices, difficulty of achievement, failure of others, etc. Once these facts have been assembled, there remains the ultimate statutory requirement of unobviousness, the third requirement for patentability, which becomes a matter of statutory application and as such must be a question of law.

Rich, The Vague Concept of Invention, supra note 29, at 872 n.36. It should also be noted that copies of Rich's "Kettering Address" were provided to the Supreme Court with some of the amicus briefs that were submitted in the Graham case. Furthermore, Justice Clark's law clerk, Charles Reed, who wrote the first draft of the Graham decision, was well acquainted with Rich's "Kettering Address" at that time and its influence on him and the Graham decision inquiries or tests for determining obviousness or not is unmistakable. An interesting anecdote describing how Reed learned about that address from a patent law course taught by Tom Arnold appears in DONALD S. CHISUM ET AL., PRINCIPLES OF PATENT LAW (1998), at 566-68.


425. Graham, 383 U.S. at 11-12 (citations omitted).
perhaps the most baffling concept in the whole catalogue of judicial efforts to provide postulates for indefinitely varying occasions.\(^4\)

He then proceeded to analyze § 103. He found several parallels between the *Hotchkiss* decision and the language used in the statute. He found that:

The first sentence of this section is strongly reminiscent of the language in *Hotchkiss*. Both formulations place emphasis on the pertinent art existing at the time the invention was made and both are implicitly tied to advances in that art. The major distinction is that Congress has emphasized "non-obviousness" as the operative test of the section, rather than the less definite "invention" language of *Hotchkiss* that Congress thought had led to "a large variety" of expressions in decisions and writings.\(^4\)

Justice Clark's discussion of secondary considerations also appears strikingly similar to Rich's Kettering speech and Hand's numerous opinions discussing the patentability standard. Justice Clark stated:

Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or non-obviousness, these inquires may have relevancy.\(^4\)

Justice Clark completed his discussion on § 103 with advice to the Patent Office. Realizing that the Patent Office would bear the largest responsibility in ensuring that § 103 was applied consistently with the *Graham* opinion, he noted:

"[The primary responsibility for sifting out unpatentable material lies in the Patent Office. To await litigation is—for all practice purposes—to debilitate the patent system. We have observed a notorious difference between the standards applied by the Patent Office and by the courts. While many reasons can be adduced to explain the discrepancy, one may well be the free rein often exercised by Examiners in their use of the concept of "invention."\(^4\)"

Justice Clark concluded by advising the Patent Commissioner to ensure that Examiners "strictly adhere" to the 1952 Act as interpreted in *Graham*.*\(^4\)

In the *Graham* case, the Supreme Court held the patent invalid. The patent related to the use of a spring clamp on agricultural plows to absorb shocks when the plow hits obstructions in the soil and to allow the plow to elevate so it passes

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426. *Lyon*, 224 F.2d at 536.
428. Id. at 17-18.
429. Id. at 18.
430. Id.
over the obstruction without damage to the plow.\textsuperscript{431} In 1955, the Fifth Circuit Court of Appeals held the patent valid, but in 1964 the Eighth Circuit Court of Appeals held the patent invalid.\textsuperscript{432} In upholding the Eighth Circuit's decision of invalidity, the Supreme Court observed that the petitioner's argument for patentability was based on a so-called "free-flex theory" that was \textit{not} found in the claims of the patent nor described in the patent as a significant feature of the invention.\textsuperscript{433}

In companion cases decided the same day as \textit{Graham, Calmar, Inc., v. Cook Chemical Co.}\textsuperscript{434} and \textit{Colgate-Palmolive Co. v. Cook Chemical Co.},\textsuperscript{435} the Supreme Court likewise reversed a holding of patent validity by the same court of appeals involved in \textit{Graham}.\textsuperscript{436} The patent in the \textit{Cook Chemical Co.} cases related to a finger-actuated, lockable pump dispenser for spraying the liquid contents of a container.\textsuperscript{437}

Also decided by the Supreme Court the same day as the \textit{Graham} and \textit{Cook Chemical Co.} cases, was the case of \textit{United States v. Adams}.\textsuperscript{438} There the former United States Court of Claims had held the Adams patent valid and the Supreme Court affirmed.\textsuperscript{439} The Adams patent described the "first practical, water-activated, constant potential battery which could be fabricated and stored indefinitely without any fluid in its cells."\textsuperscript{440} The Court was impressed with the fact that the Adams invention ignored the conventional wisdom in the art and that "noted experts expressed disbelief in it."\textsuperscript{441}

The ink on the \textit{Graham} decision was hardly dry when Giles Rich, sitting on the bench of the CCPA, authored the opinion \textit{In re Khelghatian}.\textsuperscript{442} \textit{Khelghatian} involved a process claim for removing carbonyl sulfide from gaseous hydrocarbons.\textsuperscript{443} The Patent Office Board of Appeals had affirmed an examiner's rejection of several

\begin{itemize}
\item \textsuperscript{431} \textit{Id.} at 4.
\item \textsuperscript{432} \textit{Graham}, 383 U.S. at 4.
\item \textsuperscript{433} \textit{Id.} at 25. Had the asserted claims recited the "free-flex" feature the outcome might have been different. This illustrates the importance of having the claims recite the feature that distinguishes over the prior art.
\item \textsuperscript{435} Colgate-Palmolive Co. v. Cook Chem. Co., 383 U.S. 1 (1966).
\item \textsuperscript{436} \textit{Id.} at 4.
\item \textsuperscript{437} \textit{Id.} at 4.
\item \textsuperscript{438} 383 U.S. 39 (1966).
\item \textsuperscript{439} \textit{Id.}
\item \textsuperscript{440} \textit{Id.} at 43.
\item \textsuperscript{441} \textit{Id.} at 52.
\item \textsuperscript{442} 364 F.2d 870 (C.C.P.A. 1966). \textit{Graham} was decided on February 21, 1966. \textit{In re Khelghatian} came down on August 4, 1966. Judge Rich included secondary considerations in his list of factual inquiries a court should make in assessing patentability. \textit{Rich, The Vague Concept of Invention, supra} note 29, at 872 n.36.
\item \textsuperscript{443} \textit{Khelghatian}, 364 F.2d at 871.
\end{itemize}
of the patent claims. The Board based its decision on the fact that, although Khelghatian's invention was more efficient than the prior art, its improvement in efficiency would have been expected from the prior art.

Rich began his opinion with a clarification of how to apply § 103. He noted a recent statement by the Commissioner of Patents published in an Official Gazette. In this statement, the Commissioner instructed that evidence of "commercial success, long felt but unsolved needs, failure of others . . . are of secondary importance" and should only be considered "in doubtful cases." Rich forcefully responded that a determination of obviousness must consider "all the record evidence . . . regardless of whether any 'doubt' as to patentability exists upon an examination of the prior art alone.

Although § 103 does not explicitly mandate that "secondary considerations" should be considered in determining obviousness or non-obviousness, there was enough generous language in Graham for Rich to insist they be considered, in every patentability case. In the end, Rich held that the improvement in the Khelghatian invention was not suggested by the prior art and that the claims were patentable. This opinion helped to cement the Graham analysis with immediate precedent, and signified the beginning of a trend in the CCPA to refine and improve the non-obviousness standard.

VIII. THE BLACK CLOUD OF SYNERGISM - BLACK ROCK AND SAKRAIDA

Following the Graham endorsement of § 103, the circuit courts began to abandon the invention standard in favor of the non-obviousness test. District courts were instructed to base their obviousness determinations on the factual findings specified in Graham. Obviousness was to be considered at the time of the invention, unbiased by hindsight. Failure to rigidly follow § 103
as specified in *Graham* would lead to reversible error.451 The slightest hint of "flash of genius" in an opinion was rejected.452

But the tenacity of the invention standard had been underestimated. This time, it disguised itself as a "synergism" requirement.

The first sighting appeared in one sentence of a five-page Supreme Court opinion, *Anderson's-Black Rock, Inc., v. Pavement Salvage Co.*453 This case involved an invention for a device used to apply layers of asphalt pavement.454 Since asphalt is only pliable at hot temperatures, the patentee designed a special chassis that would hold both a radiant burner for heating the exposed edge of a cold strip of pavement and equipment for spreading and shaping the hot asphalt.455 The Court reasoned that although there was doubt in the industry that radiant heat would solve the problems of asphalt cold joints, the combination of the burner with the spreading tools would have been "reasonably obvious to one with ordinary skill in the art."456 This rather innocuous conclusion was followed by this surprising language:

A combination of elements may result in an effect greater than the sum of the several effects taken separately. No such synergistic result is argued here. It is, however, fervently argued that the combination filled a long felt want and has enjoyed commercial success. But those matters "without invention will not make patentability."457

Ignoring the § 103 non-obviousness analysis also present in the *Black Rock* opinion, patent attorneys began to debate whether the Supreme Court had just created a new patentability requirement of synergism.

The Ninth Circuit rejected the temptation to slip into synergism terminology in its 1971 opinion in *Reeves Instrument Corp. v. Beckman Instruments, Inc.*458 This case involved a patent that related to checking general analog computers.459 The *Reeves* court rejected the notion that combination patents should receive

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454. *Id.* at 57-58.
455. *Id.* at 58.
456. *Id.* at 59-60.
457. *Id.* at 61 (emphasis added) (citation omitted).
458. 444 F.2d 263 (9th Cir. 1971).
459. *Id.* at 263.
special scrutiny. In the Court's opinion, that kind of synergism argument "suggests an analytical approach to patentability which is directly contrary to the statutory language of 35 U.S.C. 103 which provides that the inquiry into patentability must be drawn toward the 'subject matter as a whole' and not to the elements of a claimed combination and their individual novelty."

The Reeves court interpreted Black Rock as a mere affirmation of the standard set out in Graham, stating: "From an analytical view, the most definitive statement of the requirement of nonobviousness and the approach to be taken by federal courts in determining this question is found in Graham v. John Deere Co."

Instead of looking for a "synergistic result," the Reeves court analyzed the difference between the patent and the prior art given the level of ordinary skill in the art at the time of the invention. In making this determination, the Reeves court noted the importance of the Graham secondary considerations: "When the evidence shows that several others in the art have attempted to solve the same problem and have not arrived at the solution claimed by the patent in suit, the statutory presumption of validity is substantially strengthened."

Rich praised the Reeves opinion in a speech before the Los Angeles Patent Law Association on September 18, 1972. He made every effort to dampen the negative effects of the Black Rock synergism language, that could re-introduce uncertainty in to the patent law, uncertainty that he had worked so hard to eliminate. He criticized the assertion that combination patents should receive special scrutiny. "[A]lmost all inventions are combinations of elements, generally all old elements."

How can judges and patent examiners distinguish a combination patent from a regular one? Even if a distinction between the types of patents exists, what test would satisfy a nebulous "synergism" requirement? Judge Rich denounced such a synergism requirement: "The laws of physics and chemistry in accordance with which all inventions perform do not permit of the judicially imagined magic accordingly to which 2+2=5. Wherever such a spurious test prevails all patents are invalid."

Despite the ominous synergism cloud now looming on the horizon, Rich concluded his speech on an optimistic note:

460. Id. at 270.
461. Id.
462. Id. at 271 (citation omitted).
463. Reeves, 444 F.2d at 270.
464. Id. at 272 (footnotes omitted).
465. Rich, Laying the Ghost, supra note 13, at 44.
466. Id. at 43.
467. Id. at 44.
I do not believe the Supreme Court sees the inconsistencies between Graham and Black Rock that get patent lawyers so excited and I think that if it ever has to resolve the matter it will stick with Graham and say—for face saving reasons—that Black Rock is really to the same effect. 468

Things would get worse, however, before they got better. Seven years after Black Rock the Supreme Court spoke again on obviousness in Sakraida v. Ag Pro, Inc. 469 This case involved a patent for a water flush system designed to remove cow manure from the floor of a dairy barn. 470 The closest prior art to the claimed invention involved spot delivery of pressurized water to a barn floor. 471 While generally effective at removing the manure, this system required additional manual labor to help move the manure out the door. 472 Sakraida's claimed invention provided for the abrupt release of a large body of dammed-up water directly on the barn floor, forcing a sheet of water to pass over the entire floor and thereby creating a greater force of friction between the water and the manure for flushing purposes. 473 Consequently, the Sakraida invention greatly reduced the amount of supplemental manual labor needed. 474

Perhaps the Court was unduly influenced by the seemingly simplistic nature of the solution to the problem addressed by the patent. Perhaps Justice Brennan was simply unaware of the long struggle within the patent law for a workable standard of patentability. Whatever the reason, the Court was so sure that this combination of elements could not possibly constitute a patentable invention that it failed to correctly apply the statutory test of non-obviousness spelled out in § 103 and explained in Graham.

The Court briefly mentioned the § 103 statutory requirement of non-obviousness, then quickly brushed it aside for an in-depth discussion of judicially inspired synergism requirements and the unique problems of "combination" patents. 475 Citing the pre-1952 Act A & P case, Justice Brennan observed that it would be difficult and improbable to find "invention" in any combination of old elements. 476 Whatever the Court's view on whether a collection of old elements ever warranted a patent, it was clear that the Court would not uphold the patent here because this particular assembly

468. Id.
470. Id. at 273.
471. Id. at 276-77.
472. Id.
473. Id. at 277.
475. Id. at 281-83.
476. Id. at 281.
of old elements did not produce any "synergistic" effect. Indeed, the Court ignored all objective evidence of secondary considerations and finally concluded that:

Though doubtless a matter of great convenience, producing a desired result in a cheaper and faster way, and enjoying commercial success, (the patentee) "did not produce a new or different function"... within the test of validity of combination patents. These desirable benefits "without invention will not make patentability." 478

After *Sakraida*, the Patent Bar was left to wonder what happened to the non-obviousness standard spelled out in § 103.

IX. THE STABILIZING FORCES OF THE FEDERAL CIRCUIT

A. Wiping Out Synergism

After *Black Rock* and *Sakraida*, defendants in patent litigation not surprisingly began to make reference to "combination patents" and requirements of synergism. Speaking before the American Patent Law Association in 1978 in his home town of Rochester, New York, Judge Rich tackled the synergism language of *Sakraida*. 479 He pointed out that the *Sakraida* opinion still based its non-obviousness determination on the framework of § 103 and the *Graham* decision, neither of which mentioned synergism. 480 Rich argued that "Far from being an improbable place to find patentability, the new and unobvious combination is the usual place for finding it. This is a truism to any patent examiner or patent lawyer, but the Supreme Court hears patent cases so seldom as not to know it." 481

Rich's efforts to protect the non-obviousness test of § 103 were supported by the Patent Office. In 1976, Commissioner C. Marshall Dann issued a directive on the effect of *Sakraida* and *Black Rock* on § 103. 482 The Commissioner stated that the Patent Office would continue to rely on the three-pronged test set out in *Graham v. John Deere Co.* 483 Even though "the Court [in *Sakraida* and *Black Rock* went on to discuss whether the claimed combinations produced a 'new or different function' and a 'synergistic result,'" both of the decisions had "clearly decided

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477. Id. at 282.
478. Id. at 282-83 (citations omitted).
480. Id. at 295-96.
481. Id. at 296.
483. Id.
whether the claimed inventions were unobvious on the basis of the three-way test in *Graham.* The Commissioner concluded “Nowhere in its decisions in those cases does the Court state that the ‘new or different function’ and ‘synergistic result’ tests supersede a finding of unobviousness or obviousness under the Graham test.”

Two years later, the Patent Office announced changes in the Manual of Patent Examining Procedure (MPEP) to formally mandate the consideration of “Commercial Success and Other Considerations Bearing on Obviousness.” According to the changes in the MPEP:

Affidavits or declarations submitting evidence of commercial success, long-felt but unsolved needs, failure of others, etc., must be considered by the Examiner in determining the issue of obviousness of claims for patent-ability [sic] under 35 U.S.C. 103. Such evidence might be utilized to give light to circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or unobviousness, such evidence may have relevancy.

Patent examiners were clearly instructed that “[t]he *Graham v. John Deere* pronouncements on the relevance of commercial success, etc. to a determination of obviousness were not negated” by *Sakraida* or *Black Rock.* If the Patent Examiners remained unconvinced by the evidence submitted, the new instructions required them to state specifically the reasons why the evidence was not sufficient.

The CCPA helped the Patent Office maintain strict compliance with these objectives. In *In re Kollman,* the court corrected a patent examiner’s incorrect focus on synergism: “Often during the prosecution of this application in the PTO and, indeed, in the arguments presented to this court, the term ‘synergism’ is applied without qualification. Synergism, in and of itself, is not conclusive of unobviousness in that synergism might be expected.”

But the Circuit Courts were beyond the CCPA’s reach. In *SSP Agricultural Equipment, Inc., v. Orchard-Rite Ltd.*, the Ninth Circuit invalidated a patent for a wind machine used to prevent frost from settling on crops. The patented wind machine used longer, thinner fan blades in order to move “a larger mass of air for a greater distance at fewer revolutions of the engine per

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484. *Id.*
485. *Id.*
487. *Id.* (citations omitted).
488. *Id.*
489. 595 F.2d 48, 55 n.6 (C.C.P.A. 1979) (citation omitted).
490. 592 F.2d 1096 (9th Cir. 1979).
minute than" had been possible with the previously used aircraft propeller blades. Although the Ninth Circuit laid out the three prongs of the Graham test, it based its rejection of the patent on its failure, as a combination of elements, to achieve a "new result," stating:

Mechanical patents covering a combination of old elements must be scrutinized with care, since it is unlikely that such combination will amount to patentable invention. A mechanical combination must utilize a new principle or achieve a new result to cause it to rise to the status of invention. [citing Sakraida]. Since the... device neither applies a new principle nor achieves an unusual new result, it is not patentable...

The court refused to consider the evidence of commercial success offered by the patentee commenting that: "SSP's success in selling its wind machines utilizing the [patented] fan assembly and evidence of the existence of a long-felt need for the product are secondary factors which we do not consider, since the issue of obviousness is not in doubt."

More synergism opinions appeared in decisions where the courts upheld the validity of the patents based on a perceived presence of "synergism." In Hanson v. Alpine Valley Ski Area, Inc., a court found sufficient "synergistic result" to uphold the validity of a process patent for making snow for winter sports. The Hanson process created snow without a complicated system of pipes and compressed air. Once again, the court began with a careful citation to Graham and the factual determinations set out in § 103, and then quickly shifted to synergism. According to the court, "This is a 'synergistic result' and, therefore, we conclude that, although it is a combination method patent, it meets the requirement of non-obviousness as set out in 35 U.S.C. § 103."

The synergism tide seemed unstoppable. In Reinke Manufacturing Co. v. Sidney Manufacturing Corp., the Eight Circuit considered a patent for an electrically-driven circular irrigation system. The Reinke patent used a truss mechanism to support the water pipes and to help the irrigation system withstand "wallowing" and "whipping" stresses. After reviewing the background facts of the case, the court announced the following strategy:

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491. Id. at 1099.
492. Id. at 1101.
493. Id.
494. 611 F.2d 156, 160 (6th Cir. 1979).
495. Id. at 157.
496. Id. at 159-60.
497. Id. at 160.
498. 594 F.2d 644 (8th Cir. 1979).
499. Id. at 648.
In our examination we will not only consider whether it was obvious that by putting together the various elements used the result would be the effect achieved in the [patented device]; we will also consider whether the effect is a new effect, or simply each of the items performing its expected function.\textsuperscript{500}

True to its word, the court proceeded with an analysis of the differences between the prior art and the claims in issue. The court found that:

The connecting devices for the truss support and the tie rods were different in the [patented device] from prior art insofar as irrigation systems are concerned. Because Reinke alleges that the combined effect of all of the elements was new—new in that it created an effect heretofore undiscovered which enabled the span distance between drive units to be increased to 120 feet—Reinke contends that this complies with the concept of synergism. We do not agree that this is synergism.\textsuperscript{501}

Synergism, according to the court, would be evidenced by the evolution of "a totally new functional aspect," not to be confused with the occasional non-synergistic "natural phenomenon."\textsuperscript{502} Instead of bringing about synergism, Reinke merely "used a better and different truss design that had been used before in irrigation systems...."\textsuperscript{503}

One circuit judge, Sixth Circuit Judge George Edwards, rejected Judge Rich's criticism of synergism. Speaking before the District of Columbia Bar Association, Judge Edwards challenged Judge Rich's position on synergism and stated what he perceived to be his mandate from the Supreme Court: "[I]n dealing with combination claims, if no new element is added, the elements combined must produce a result greater than its parts added together and one which would not have been obvious to one skilled in the art involved."\textsuperscript{504}

Rich responded to Judge Edwards' comments in a speech a few months later.\textsuperscript{505} Rich described the "instant shock" he had suffered from the realization that this "high federal judge, who properly felt bound to follow the Supreme Court's pronouncements," still believed that the test for patentability revolved around a requirement of "invention" or "synergism."\textsuperscript{506} Rich lamented:

\begin{figure}[h]
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\caption{Image description}
\end{figure}

\textsuperscript{500} Id. (emphasis added).
\textsuperscript{501} Id. at 651.
\textsuperscript{502} Id.
\textsuperscript{503} Sidney Manufacturing, 594 F.2d at 651.
\textsuperscript{505} Rich, \textit{Escaping the Tyranny of Words}, supra note 479, at 274-76.
\textsuperscript{506} Id. at 274-75.
Oh, the tyranny of words? And the most tyrannical of all are those related words, "inventor," "invention," "invents," and "invented." I can't help wondering what those terms mean to the good judge and why they have such a magical power over him that he deems "non-obviousness" to be a "clumsy" word by comparison. How does one go about illuminating the darkness out of which sprang the [Judge Edwards' comments]? I have tried it before, apparently with something less than total success, so I will try a new approach.

The word "invention," Rich explained, included both patentable and unpatentable conceptions. Expressing his belief that not all inventions are patentable, Rich stated:

Now and then, in my early years on the court, a lawyer would argue that the subject matter of the application on appeal should be patentable because it truly was an invention, or contrariwise, that it was not patentable because it was not an invention, but we rarely hear such arguments any more. If we do, we simply remind counsel that the issue is not whether there is an invention—there is always an invention—and that the issue is its patentability, which turns on compliance with the statute, which says nothing about being an invention.

Rich further commented:

Until you understand the concept of unpatentable inventions implicit in the statutes, you don't understand patent law at all. About 1/3 of the inventions submitted to the Patent and Trademark Office are held unpatentable. From 2/3 to 3/4 of all the inventions brought to the CCPA are held unpatentable. The use of the term "invention" or any of its variants in the Patent Act is of no significance whatever on the main subject with which the act deals - the patentability of inventions. Some are, some are not. Being an invention is really no indication of patentability.

The non-obviousness language of § 103, Rich explained, attempted to nail down and clarify the line in the "gray area" between patentable and unpatentable inventions. Patent attorneys "from all branches of government, industry, and private practice, working through a committee" devised the language of § 103. The committee decided on "non-obviousness" as the key term for this third requirement of patentability. Rich explained how the committee structured the statute to limit an inquiry of non-obviousness to discrete factual determinations of the invention as a whole, at the time the invention was made, to a

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507. Id. at 276.
508. Id. at 278.
509. Id. at 280.
511. Id. at 289.
512. Id. at 290.
person of ordinary skill in the art.\textsuperscript{513}

Having recalled all the effort that went into the creation of § 103, Rich turned to address its detractor:

I would ask the judge who feels that non-obviousness is clumsy, either as a word or an idea, whether it is not less clumsy than "invention." And I ask what right the courts have to substitute their own ideas of what the requirement is for what Congress has said it is. Is it not their duty to apply the law as Congress wrote it?

When the courts filled the void in the patent law by adding the requirement of "invention," there was no statute on the subject. Since 1952 there has been no void, but a carefully worked out statutory substitute for the rough-hewn stopgap the courts produced which the courts themselves said they could not explain.\textsuperscript{514}

Rich's persistence finally began to bear fruit. In Republic Industries, Inc., v. Schlage Lock Co., the Seventh Circuit rejected synergism as a requirement for patentability.\textsuperscript{515} The patent involved "a door closer used to hold open and to close fire doors in hospital institutional health care facilities, and other public buildings."\textsuperscript{516} In its opinion, the court echoed Rich's criticism of the synergism test:

Neither \textit{Sakraida} nor \textit{Black Rock} can be cited as prescribing some other, special test for the evaluation of combination claims. Nowhere in these two decisions did the Court hold a synergistic effect to be a necessary condition of patentability; nor did it hold that to synergism supersedes a finding of non-obviousness under the \textit{Graham} analysis. To the contrary, each case quoted \textit{Graham} with approval. Each turned on whether the claimed invention was non-obvious on the basis of the three-pronged test in \textit{Graham}.\textsuperscript{517}

In the Seventh Circuit's opinion, the difficulty of the synergism test was that it forced the court to assess the patentability of the invention \textit{after} its elements had been combined.\textsuperscript{518} Such a test would seem to contradict the teaching of § 103 that obviousness be determined based on the circumstances that existed \textit{as of the time} the invention was made, prior to the actual combination of the claimed elements.\textsuperscript{519} There was no basis in § 103 for placing an additional burden on combination patents.\textsuperscript{520} The court concluded that "because synergism has prevented the development of a consistent, predictable body of law

\begin{itemize}
\item \textsuperscript{513} \textit{Id.}
\item \textsuperscript{514} \textit{Id.}
\item \textsuperscript{515} 592 F.2d 963 (7th Cir. 1979).
\item \textsuperscript{516} \textit{Id.} at 965.
\item \textsuperscript{517} \textit{Id.} at 969.
\item \textsuperscript{518} \textit{Id.} at 971.
\item \textsuperscript{519} \textit{Id.}
\item \textsuperscript{520} Republic Indus., 592 F.2d at 971.
\end{itemize}
under § 103, and because the concept does not bear any logical *ipso facto* relationship to obviousness, the term has little, if any, utility. 521

Some courts began to follow the Seventh Circuit's lead. 522 Others did not. For instance, in *Herschensohn v. Hoffman*, the Ninth Circuit invalidated a patent for a hair brush with a flexible spine and stiff bristles. 523 The brush was designed so that when it was pulled through the hair, the spine would bend "so that the distal ends of the fingers [holding the bristles] on the trailing side of the brush will approach each other." 524 The court focused on the fact that a combination of old elements was involved, remarking that: "The patent sets forth a combination of old elements . . . *All of these elements are old in the art and no discussion of this art is necessary.* The patent, therefore, is a combination patent and is controlled by the Supreme Court decisions on such patents. 525

Efforts by plaintiff's counsel to persuade the court that there was no synergism requirement for patentability failed, as is apparent from the court's comment: "Counsel for the plaintiffs apparently never understood fully the requirement that a patent based on a combination of elements old in the art must produce a new and unusual result." 526 The court added the comment that "It is obvious . . . that the patent is not valid, having no new, unusual or synergistic result, and having no beneficial use other than uses already old in the art of brushes and combs." 527

By 1980, CCPA Chief Judge Howard Markey had joined Judge Rich in the defense of § 103. In a speech before the Los Angeles Patent Law Association, Judge Markey equated synergism with a "virus" and asked that any "victorious lawyer who finds such intellectual mud in the opinion go back to the court and ask that it be cleansed." 528 Judge Markey instructed courts to make the evidentiary findings dictated by the *Graham* non-obviousness test in his statement: "The very best cure for the synergism virus is evidence. Evidence is, or should be, the key that unlocks the door to decision in every field of the law. It is a jurisprudential disgrace when probative evidence is ignored in any case." 529

521. Id. at 972.
523. 593 F.2d 893 (9th Cir. 1979).
524. Id. at 895.
525. Id. (emphasis added).
526. Id. at 896.
527. Id. at 897 (footnote omitted).
529. Id.
District courts sat on the sidelines watching. They randomly lifted excerpts from various conflicting caselaw, creating their own bizarre and contorted patentability tests. For instance, in *Leinoff v. Valerie Furs Ltd.*, a New York district court examined the patentability of an invention for manufacturing pelts from longhaired animal pets. The court embarked on its discussion of obviousness with the caution that "[t]he resolution of the issue of obviousness, as all courts have painfully recognized, is extremely difficult." Identifying the Leinoff patent as a combination patent, the court reasoned that the following mix of synergism and *Graham* factors should be applied:

[T]o arrive at a resolution of the issue of "obviousness," with respect to combination patents the law in the Second Circuit is that the three-fold test of *Graham* is to be applied and then, if the function of elements of the inventor [sic] is known or obvious, the synergism test is to be considered. If synergism is found, then the invention, from the viewpoint of its result is *not* obvious and thus entitled to patentability.

In *Tri-Collar v. Reamco, Inc.*, another court tried to reconcile synergism with the *Graham* analysis. The patent involved a "bottom hole stabilizer tool used in the drilling of oil wells." The tool prevented drill collars from sticking to the walls of the drilling holes and improved the quality of the drilling assembly. Under the subtitle "A Non-Obvious Synergistic Result or Does Two Plus Two Equal Five?", the court opined that while "[s]ynergism is not the *sine qua non* of patentability", it "may be an indication of non-obviousness." According to this court, the Supreme Court in *Black Rock* and *Sakraida* "did not intend to reduce emphasis on the *Graham* analysis for obviousness under § 103, but merely said that synergism is a symbolic reminder of what constitutes non-obviousness when a combination patent is at issue."

Believing it had such a combination patent on its hands, the court then proceeded to expound at great length what qualities an invention must possess in order to be "synergistic":

Only when the whole in some way exceeds the sum of its parts is the

531. *Id.* at 723.
532. *Id.* at 725. (emphasis added); *see also* Foseco Int'l Ltd. v. Chemincon, Inc., 507 F. Supp. 1253, 1266 (E.D. Mich. 1981) ("When confronted with a combination patent this standard requires an isolation of that unique essence of the combination and a determination of whether that essence makes an authentic contribution to mankind's store of knowledge.") (citation omitted).
534. *Id.* at 672.
535. *Id.*
536. *Id.* at 682-83.
537. *Id.* at 683.
accumulation of old devices patentable. Therefore, it must be shown that the combination took on some new quality or function from being brought into concert. . . . If the total only produced results more striking than any previous utilization, that result is not patentable as scores of progressive ideas in business are not patentable.\textsuperscript{538}

The court then rejected the patent holder's argument that his invention possessed this "new quality or function" by concluding, "In the Court's view, two plus two still equals four."\textsuperscript{539}

Frustration with the synergism aberration is best demonstrated by the Ninth Circuit's en banc opinion of \textit{Sarkisian v. Winn-Proof Corp.}\textsuperscript{540} The object of the \textit{Sarkisian} opinion was to clarify the role of synergism in determining patentability and to outline the legal and factual issues that must be resolved with regard to non-obviousness.\textsuperscript{541} The court began with its assessment of the synergism problem. According to the Ninth Circuit, the concept of synergism was perfectly acceptable.\textsuperscript{542} In its opinion, the problems surrounding synergism arose because "[t]he Supreme Court has not precisely defined the word, and circuit and district courts have variously described it. Those various definitions have produced uncertainty in litigation requiring preciseness."\textsuperscript{543}

The problem could be avoided, according to the Ninth Circuit, if the word "synergism" were used only where "the combination in issue is synergistic in the literal sense."\textsuperscript{544} Given the many divergent definitions now spread throughout the caselaw, the court concluded that it would simply replace the synergism test with what it deemed to be the equivalent "unusual or surprising results test."\textsuperscript{545} Under the Ninth Circuit's solution, all combination patents now must produce an "unusual or surprising result" in addition to passing the \textit{Graham} analysis.

A cure for the synergism virus would finally come with the establishment of the Federal Circuit as the single court to hear appeals from all district courts in patent infringement cases. With the various other circuit courts out of the way, Judges Rich and Markey could slowly retrain and reeducate the district courts on the proper method for applying \textsection 103. For example, in \textit{Chore-Time Equipment, Inc., v. Cumberland Corp.}, the Federal Circuit reviewed a decision from the Eastern District of Tennessee that

\textsuperscript{538} \textit{Tri-Collar}, 538 F. Supp. at 683.
\textsuperscript{539} \textit{Id.} at 684.
\textsuperscript{540} 688 F.2d 647 (9th Cir. 1982).
\textsuperscript{541} \textit{Id.} at 649.
\textsuperscript{542} \textit{Id.}
\textsuperscript{543} \textit{Id.} (footnote omitted).
\textsuperscript{544} \textit{Id.}
\textsuperscript{545} \textit{Sarkisian}, 688 F. Supp at 649.
invalidated a patent for an automated poultry feeder.\textsuperscript{546} Although Judge Markey affirmed the district court's summary judgment of invalidity under § 103, he went out of his way to correct the district court's references to synergism as follows:

In determining patentability, we are guided, as we must be guided, by the statute. A requirement that an invention reflect "synergism" or achieve a "synergistic result" before it may be held patentable appears nowhere in the statute, 35 U.S.C. The test of obviousness under 35 U.S.C. § 103, as the statute makes plain, is whether the invention as a whole would have been obvious at the time it was made to one of ordinary skill in the art. References to synergism as a patentability requirement are, therefore, unnecessary and confusing.\textsuperscript{547}

The Federal Circuit would spend the next couple of years removing synergism from the non-obviousness requirements. This task proved especially arduous with respect to district courts from the Ninth Circuit. The Federal Circuit closely examined every patent validity opinion to ensure that judges were both using the three-pronged factual Graham analysis of § 103 and that the analysis was being applied correctly.

For instance, in \textit{American Hoist \& Derrick Co. v. Sowa \& Sons, Inc.}, Judge Rich, writing for the Federal Circuit, analyzed an Oregon district court judgment invalidating a patent.\textsuperscript{548} The patent related to "[a] heavy duty shackle for use under great loads, such as in anchor lines."\textsuperscript{549} Rich pointed out several errors committed by the trial court, among them the jury instructions for obviousness. Specifically, the district court judge instructed the jury that:

\begin{quote}
You must next determine whether the differences between plaintiff's claimed invention and the prior art, if any, . . . produce a new and unexpected result. That is, you must determine whether the elements making up plaintiff's claimed invention combine so as to perform in some way or manner, a new and unexpected function in combination than they perform separately. The reason for this is that a patented invention which unites only old elements without producing either a new and unexpected result merely withdraws from the public's use that which was known before.\textsuperscript{550}
\end{quote}

Rich rejected this instruction as "wholly erroneous," stating:

While the existence of a new and unexpected result or function or a so-called 'synergistic' effect may support a holding of non-obviousness . . . our predecessor courts have considered and rejected the notion that a new result or function or synergism is a

\textsuperscript{546} 713 F.2d 774 (Fed. Cir. 1983).
\textsuperscript{547} \textit{Id.} at 781.
\textsuperscript{548} 725 F.2d 1350 (Fed. Cir. 1984).
\textsuperscript{549} \textit{Id.} at 1353.
\textsuperscript{550} \textit{Id.} at 1360 (emphasis added).
requirement of patentability.\textsuperscript{551}

Another example is provided by Judge Markey's opinion in \textit{Jones v. Hardy}.\textsuperscript{552} Jones owned both process and product patents related to molding concrete panels.\textsuperscript{553} Markey attacked several aspects of the district court's opinion. First, he observed that the lower court examined the elements of the claims of the Jones patent individually to assess the patentability of each individual element.\textsuperscript{554} Markey explained:

\begin{quote}
[It is irrelevant in determining obviousness that all or all other aspects of the claim may have been well known in the art. . . . [T]he statute, the law established not by judges but by Congress, requires that the invention as claimed be considered "as a whole" when considering whether that invention would have been obvious when it was made. 35 U.S.C. § 103.\textsuperscript{555}
\end{quote}

Markey then criticized the absence of proper \textit{Graham} findings and the erroneous use of synergism language: "The record contains no specific factual findings on the scope and content of the prior art, differences between the prior art and the claims at issue, level of ordinary skill in the pertinent art, or other indicia useful in determining the obviousness/nonobviousness question."\textsuperscript{556}

The district court's conclusion that "the discovery does not involve that degree of inventiveness which the courts have required" provoked a firestorm from Markey.\textsuperscript{557} "Judges are not constitutionally empowered to legislate their individual subjective views respecting degrees of inventiveness. . . ."\textsuperscript{558} Markey continued:

\begin{quote}
An appellate court's function is to review judgments, not opinions. As above indicated, however, the district court's opinion establishes that the judgment was in this case reached via a decisional path diverted by fundamental legal errors and unaccompanied by a path of reasoning and evidence upon which the judgment might be affirmed.\textsuperscript{559}
\end{quote}

The Federal Circuit eventually removed synergism through painstaking repetition and meticulous correction of erroneous district court opinions.

\textsuperscript{551} \textit{Id.} (emphasis added).
\textsuperscript{552} 727 F.2d 1524 (Fed. Cir. 1984).
\textsuperscript{553} \textit{Id.} at 1526.
\textsuperscript{554} \textit{Id.} at 1528.
\textsuperscript{555} \textit{Id.} (citations omitted).
\textsuperscript{556} \textit{Id.} at 1529.
\textsuperscript{557} \textit{Jones}, 727 F.2d at 1529.
\textsuperscript{558} \textit{Id.} at 1530.
\textsuperscript{559} \textit{Id.} at 1531. See also Judge Markey's opinion in \textit{Kansas Jack, Inc., v. Kuhn}, 719 F.2d 1144 (Fed. Cir. 1983).
B. Mandating "Secondary Considerations"

The advent of the Federal Circuit improved another aspect of the patent law surrounding non-obviousness. By the time the Federal Circuit was instituted in 1982, courts had strayed from the mandatory consideration of secondary factors (despite the instruction in Judge Rich's CCPA opinion In re Khelghatian). Instead, courts restricted the use of secondary factors to cases where patentability was close or doubtful.

Even the Second Circuit had turned its back on Learned Hand's teachings of the importance of secondary considerations. In Digitronics Corp. v. New York Racing Association, Inc., the Second Circuit affirmed a holding of patent invalidity. Digitronics was the assignee of a patent which pertained to data processing systems for information received from ticket issuing machines, specifically for wagers made by spectators at sporting events. After concluding that the claimed invention did not produce any "synergistic" results not already present in the prior art, the court moved on to the patent holder's argument that its evidence of secondary considerations should have been included in the lower court's discussion of the validity issue. The court was unmoved by the patent holder's citation to Learned Hand's opinions as is evident in its statement:

Despite the persuasive advocacy of Judge Learned Hand [in Reiner and Bausch & Lomb], this view does not represent current law. ... Only in a close case, in which application of the subjective criteria of nonobviousness in 35 U.S.C. § 103 does not produce a firm conclusion, can these objective or secondary considerations be used to "tip the scales in favor of patentability." Because we hold that the claims made here are clearly obvious, we need not examine secondary considerations.

The CCPA decisions were not controlling on the various circuit courts that downplayed the importance of secondary considerations. For example, the Ninth Circuit in Stevenson v. Grentec, Inc., invalidated a skateboard patent that had been previously upheld as valid by the CCPA in an appeal from a related case before the United States International Trade Commission (ITC). The ITC action had been brought concurrently with the district court case. The ITC's decision invalidating the patent had been overturned on appeal to the

560. 553 F.2d 740 (2d Cir. 1977).
561. Id. at 742.
562. Id. at 748.
563. Id. at 748-49. (citations and footnote omitted); see also Medical Lab. Automation, Inc., v. Labcon, Inc., 670 F.2d 671, 675 (7th Cir. 1981) (stating that secondary considerations "only need be considered in close cases").
564. 652 F.2d 20 (9th Cir. 1981).
565. Id. at 21.
Nevertheless, the district court granted summary judgment invalidating the patent. On appeal, the Ninth Circuit commented on the related CCPA decision that: "To be sure, the decisions of the Court of Customs and Patent Appeals should be given great weight and treated with respect; they are not, however, binding on this Court." Evidence of the commercial success of the patented skateboard was one of the reasons the CCPA found the patent to be valid and non-obvious. The Ninth Circuit, however, held that its caselaw did not mandate consideration of such evidence: "This court has stated, however, that the trial court's failure to consider secondary factors is not reversible error, and their presence or absence is not of itself determinative of obviousness. Where patents [sic] are obvious, they cannot be saved from invalidity by resorting to secondary factors."

In his efforts to educate the bench and the bar, Judge Rich urged that evidence of secondary considerations be considered in all patentability cases, not just in close cases. In one of his articles on obviousness, he "suggest[s] that in thinking about those 'considerations' they be looked upon for what they factually are, circumstantial evidence of unobviousness of the highest probative value, unless there is some other explanation for the action." Judge Markey also emphasized the importance of secondary considerations. In his speech before a Judges' Seminar, he stated that "these considerations are not secondary in importance; they are secondary only in time, because they occurred or became relevant only after the invention was made.... There is no warrant for disregarding any probative evidence in any case, patent cases included."

Once the Federal Circuit was established as the single court of appeals in all patent infringement cases, Judges Rich and Markey were able to ensure the mandatory consideration of secondary factors in every patent case. In Stratoflex, Inc., v. Aeroquip Corp., Judge Markey assessed the validity of a patent for electrically conductive tubing used in the aircraft industry. Markey corrected the lower court's failure to evaluate secondary considerations, declaring that evidence of secondary

566. Id.
567. Id.
568. Id. at 22-23.
569. Stevenson, 652 F.2d at 23.
570. Id. (citations omitted).
considerations "must always when present be considered en route to a determination of obviousness." He pointed out the usefulness of secondary considerations in his opinion, stating:

Indeed, evidence of secondary considerations may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing to have been obvious in light of the prior art was not. It is to be considered as part of all the evidence, not just when the decisionmaker remains in doubt after reviewing the art.

C. The Obviousness Inquiry

1. All of the Evidence Under the Graham Factors Must Be Considered so that There Are No A Priori Tests or Guarantees of Obviousness or Non-Obviousness

A good example of the profound impact of the Federal Circuit on how district courts now conduct the obviousness inquiry under 35 U.S.C. § 103 is the case of Haworth, Inc., v. Steelcase, Inc., discussed supra. There, the district court strictly followed the Federal Circuit's directives on § 103 and considered all of the evidence on the four Graham factors.

Today, district courts recognize that evidence of secondary considerations must be evaluated; and, any argument that requires proof of synergism to sustain validity will be rejected. For example, in Nordberg Inc., v. Telsmith, Inc., the court noted that, "secondary considerations such as commercial success, long-felt need in the industry, and copying by others must be considered in determining the issue of obviousness." And, on synergism, that same court concluded that the Federal Circuit has held that "there is no requirement of a synergistic effect and that there is no basis for treating combinations of old elements differently in determining patentability."

574. Id. at 1538.
575. Id. at 1538-39. See also Simmons Fastener Corp. v. Illinois Tool Works, Inc., 739 F.2d 1573 (Fed. Cir. 1984) (holding that failure to consider secondary factors constitutes reversible error); In re Sernaker, 702 F.2d 989, 996 (Fed. Cir. 1983) (instructing the patent examiner to accept and consider evidence of secondary considerations).
576. See supra notes 22-45 for a discussion of Haworth.
577. See infra Appendices A and B for examples of proposed findings of fact and conclusions of law on the obviousness issue, used in the Haworth case; see also infra Appendices C-D for examples of model jury instructions on the obviousness issue consistent with the mandates of the Federal Court.
579. Id. See also GNB Battery Tech., Inc., v. Exide Corp., 876 F. Supp. 582, 598 (D. Del. 1995), aff'd, 78 F.3d 605 (Fed. Cir. 1996) ("[T]he Federal Circuit requires that the statutory requirements for obviousness be applied regardless of whether
While evidence of secondary considerations coupled with a claimed difference over the prior art are important factors, they do not automatically guarantee a determination of non-obviousness. For example, in Richardson-Vicks, Inc., v. Upjohn Co., the Federal Circuit affirmed a district court decision granting judgment as a matter of law that the patent in suit was invalid as obvious, after the jury had returned a verdict upholding the patent. The patent at issue involved "an over-the-counter (OTC) medicine that combines ... the analgesic ibuprofen and the decongestant pseudoephedrine [into a single tablet] ... for the relief of cough, cold, and flu symptoms." The product was highly successful, achieving "annual sales of ... $48 million dollars, with gross profit margins of between 67% and 79% within three years of the product's introduction." Not only was the product economically successful, there was evidence that the claimed combination of the analgesic and decongestant as a single unit provided a "synergistic" improvement over taking the analgesic and decongestant as separate medicines.

At trial, the patent holder also introduced evidence of skepticism of others about the product, as well as evidence of prior art that taught away from the claimed invention. In addition, the claimed combination recited the use of a different analgesic than that used in the combined single tablet of the prior art.

Despite strong evidence of secondary considerations and a claimed difference over the closest prior art, the Federal Circuit found the claimed combination of the analgesic and decongestant in a "single unit dosage" would have been obvious to one of ordinary skill in the art. The court based its conclusion, inter alia, on widespread knowledge among doctors and patients that the prior use in combination of taking separate tablets for the claimed analgesic and decongestant was effective in relieving cough, cold and flu symptoms. In addition, ibuprofen, the analgesic used and claimed in the patent was known to be interchangeable with other well-known analgesics, such as aspirin or acetaminophen. Further, the Federal Circuit found that "[t]he only difference between the prescribed combination [the prescription in the prior art] and the patented invention is that..."
the [prior art] prescription was not contained in a single tablet.” However, in the court’s opinion, this difference was “clearly suggested” by prior art, such as CO-TYLENOL, which combined a decongestant with the well-known prior art analgesic (acetaminophen) in a single tablet. The Richardson-Vicks case, therefore, shows that evidence of the level of skill in the art, as demonstrated by those actually practicing in the field, if sufficiently compelling, can neutralize the effect of strong secondary considerations and lead to a determination that the claimed invention, though novel and advantageous, was obvious. Stated differently, the obviousness inquiry requires that the determination be made based on a consideration of the “totality of the evidence.” Indeed, in holding as it did, the Court explained:

Evidence of secondary considerations, including evidence of unexpected results and commercial success, are but part of the “totality of the evidence” that is used to reach the ultimate conclusion of obviousness. . . . The existence of such evidence, however, does not control the obviousness determination. . . . Therefore, we must consider all of the evidence under the Graham factors before reaching our decision.

Hence, there are no longer any a priori positive or negative tests of obviousness that can be simply, automatically applied by the courts to circumvent considering all of the evidence under the four Graham factors. In other words, the obviousness issue cannot be determined by a priori formulas, such as, substituting one known element for another in a combination would be obvious, or combining separate elements into a single unit would be obvious. If such a priori formulas could have been applied, there would have been no need for the Federal Circuit to consider all of the evidence under the four Graham factors in the Richardson-Vicks case. Indeed, if the evidence of prior art in that case had not included the practice of doctors to prescribe taking the analgesic ibuprofen and the decongestant pseudoephedrine, as separate tablets, the result might have been different and the Federal Circuit might have upheld the claimed invention as unobvious, even though it involved substituting one known analgesic (ibuprofen) for another (acetaminophen) that had already been combined with the decongestant in a single tablet in the prior art.

589. Id.
590. Richardson-Vicks, 122 F.3d at 1484.
591. Id. at 1483 (emphasis added) (citation omitted).
2. Woe to District Courts That Do Not Follow the Federal Circuit

a. Non-obviousness Is the Standard of Patentability

District courts that do not follow the Federal Circuit's directives on obviousness can expect criticism as well as a reversal. For example, in its reversal of a recent district court decision erroneously granting summary judgment of invalidity, the Federal Circuit in Monarch Knitting Machinery Co. v. Sulzer Morat GMBH not only called the four-step factual determinations of Graham v. John Deere Co. "these critical facts," but it also criticized the district court's use of "archaic terminology" that suggested use of a standard of patentability outside the statutory mandate of § 103.\textsuperscript{592} The Federal Circuit remarked:

Given the occasional use of archaic terminology in the district court's opinion, this court also emphasizes that the standard for patentability is the statutory standard. The inquiry is not whether there was a "real discovery of merit" or whether the claimed invention offered a "new solution," but whether the claimed 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." 35 U.S.C. 103(a) (Supp. I 1995).\textsuperscript{593}

b. Hindsight Must Be Avoided

In the Monarch case, the Federal Circuit also criticized the district court's erroneous use of hindsight to determine the scope and content of the prior art:

Defining the problem in terms of its solution reveals improper hindsight in the selection of the prior art relevant to obviousness. See, e.g., In re Antle, 58 C.C.P.A. 1382, 444 F.2d 1168, 1171-72, 170 USPQ 285, 287-88 (CCPA 1971) (warning against selection of prior art with hindsight). By importing the ultimate solution into the problem facing the inventor, the district court adopted an overly narrow view of the scope of the prior art. It also infected the district court's determinations about the content of the prior art... By defining the inventor's problem in terms of its solution, the district court missed this necessary antecedent question, namely, whether the prior art contains a suggestion or motivation to combine references to form a trend.\textsuperscript{594}

\textsuperscript{592} 139 F.3d 877, 881 (Fed. Cir. 1998).
\textsuperscript{593} Id.
\textsuperscript{594} Id. at 881-82 (emphasis added) (citations omitted). See also In re Rouffet, 149 F.3d 1350 (Fed. Cir. 1998). In that case, the Federal Circuit reversed a decision of the Board of Patent Appeals and Interferences of the U.S. Patent and Trademark Office that had upheld an examiner's final rejection under 35 U.S.C § 103 based on a combination of references. Id. at 1350. In finding that the rejection improperly relied on hindsight to combine the references the Court offered the following observations to help
c. The Courts Must Consider all Evidence on the Four-Step Analysis of the *Graham* Case

The Federal Circuit further noted that the record included evidence of secondary considerations, such as commercial success, long-felt need, skepticism in the art about the claimed invention and the prior art teaching away from it, that raised genuine issues of fact precluding summary judgment. The court specifically remarked that:

The evidence in the record raised genuine issues of fact concerning the content of the prior art as well as several secondary considerations.

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To prevent the use of hindsight based on the invention to defeat patentability of the invention, *this court requires the examiner to show a motivation to combine the references that create the case of obviousness*. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. This court has identified three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. In this case, the Board relied upon none of these. Rather, just as it relied on the high level of skill in the art to overcome the differences between the claimed invention and the selected elements in the references, it relied upon the high level of skill in the art to provide the necessary motivation. The Board did not, however, explain what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination. Instead, the Board merely invoked the high level of skill in the field of art. If such a rote invocation could suffice to supply a motivation to combine, the more sophisticated scientific field would rarely, if ever, experience a patentable technical advance. Instead, in complex scientific fields, the Board could routinely identify the prior art elements in an application, invoke the lofty level of skill, and rest its case for rejection. To counter this potential weakness in the obviousness construct, the suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness. Because the Board did not explain the specific understanding or principle within the knowledge of a skilled artisan that would motivate one with no knowledge of Rouffet’s invention to make the combination, this court infers that the examiner selected these references with the assistance of hindsight. This court forbids the use of hindsight in the selection of references that comprise the case of obviousness. See *In re Gorman*, 933 F.2d 982, 986, 18 U.S.P.Q.2d 1885, 1888 (Fed. Cir. 1991). Lacking a motivation to combine references, the Board did not show a proper *prima facie* case of obviousness. This court reverses the rejection over the combination of King, Rosen, and Ruddy. *Id.* at 1357-58 (emphasis added). “When a rejection [of a patent on the basis of obviousness] depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the reference.” *Id.* at 1355.

595. *Monarch Knitting*, 139 F.3d at 886.
This court concludes that these issues are material to an obviousness determination in this case. Accordingly, this court vacates the district court's grant of summary judgment and remands for further proceedings.\textsuperscript{596}

Thus, there can be no question that the Federal Circuit will insist that the "critical" four-step analysis of \textit{Graham v. John Deere Co.} be strictly followed and all evidence on those factors evaluated by district courts in determining the question of obviousness under 35 U.S.C. 103.

\textbf{D. Uniting the Voices of Support: The Patent and Trademark Office's 1994 Public Hearing on § 103}

The question of how § 103 was being implemented or applied by the PTO was considered in 1994 when the Patent Office issued a Notice of Public Hearing and Request for Comments on the Standard of Non-Obviousness.\textsuperscript{597} The Patent Office claimed receipt of complaints that § 103 was being applied too leniently. The Patent Office specifically cited criticism that the Federal Circuit "has given too much weight to the strong commercial success of an invention as a secondary consideration of non-obviousness."\textsuperscript{598}

The overwhelming response from patent attorneys, judges and examiners evidenced their strong support for § 103. BNA commented that "[i]f there are critics of the current standard for determining non-obviousness, few showed up at the ... hearing."\textsuperscript{599} Many supporters, however, spoke on behalf of the current non-obviousness standard.

The sole opponent at the Patent Office hearing argued for a "stricter, pre-Federal Circuit standard of non-obviousness."\textsuperscript{600} This speaker reiterated the complaint mentioned in the Patent Office notice that courts were paying too much attention to secondary considerations such as commercial success.\textsuperscript{601} Ironically, he wanted the Patent Office to ignore § 103 and return to a strict "ingenious invention" standard, contending that "[t]oday's lowered standard of non-obviousness erases the difference between an ingenious invention and a routine one."\textsuperscript{602} Not surprisingly, his suggestion fell on deaf ears.

\textsuperscript{596} \textit{Id.}
\textsuperscript{598} \textit{Non-Obviousness Standard is Okay, But Needs Better Application, PTO is Told}, 48 PAT. TRADEMARK \& COPYRIGHT J. (BNA) 294, 295 (1994).
\textsuperscript{599} \textit{Id.}
\textsuperscript{600} \textit{Id.} at 296.
\textsuperscript{601} \textit{Id.}
\textsuperscript{602} \textit{Id.}
X. A Recap of the Last Two Hundred Years

To paraphrase a popular commercial, our patentability standard has come a long way since Thomas Jefferson's 1791 proposal to deny patents on inventions that were "unimportant and obvious." Today, we see that, while we have a good and workable standard to invalidate "obvious" inventions, a patent claim may nevertheless be considered valid as defining non-obvious subject matter even though the only claimed differences over the closest prior art may appear "unimportant and obvious." Such a result occurs because the current standard considers whether the claimed invention, as a whole, would have been obvious to a person of ordinary skill. Further, it does not consider the claimed invention in isolation or in hindsight. In other words, the claimed invention is to be considered as a whole in light of the contemporaneous evidence of secondary considerations and the level of ordinary skill in the art which, as in the Haworth case discussed above, demonstrate that what may now seem obvious in hindsight had escaped the best workers in the field at the time of the invention, who were motivated, but failed to come up with a solution.

It was noted that the seeds for an obvious-to-one-of-ordinary-skill-in-the-art standard were planted as early as 1825 by the unsuccessful defendant in the case of Earle v. Sawyer, where the court held there were only two conditions for patentability, novelty and utility.603

Twenty-five years later, however, in Hotchkiss v. Greenwood, the Supreme Court accepted the skill-of-an-ordinary-mechanic-standard, but did not provide any criteria or methodology for determining whether the patented invention in issue was within the skill of such a mechanic.604 Rather, it seemed that the Court simply determined that question in isolation from any surrounding circumstances. For example, the patent owner had argued:

Knobs had been in use many hundred years; potter's ware and porcelain, many thousand; 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 . . . . The potter's ware and porcelain knobs are almost everywhere taking the place of the metal knob.605

Yet, in its Hotchkiss opinion, the Court made no reference to these difficulties or secondary considerations. Nor is there any indication that the Court did any analysis of any evidence to determine whether more ingenuity and skill than that possessed

605. Id. at 254-55 (emphasis added).
by an ordinary mechanic acquainted with the business, were required to apply the old method (of connecting the metal shank and spindle to metal and wood door knobs) to a frangible material, that is, to a porcelain or potter's clay door knob. The Court seems to have simply focused in isolation on the difference, namely substituting a door knob of a different but known material, potter's clay or porcelain, for wood or metal. The Court concluded that such a substitution was not worthy of a patent, without considering whether there were any difficulties in seeking to make the frangible porcelain-to-metal connection secure, durable and practical. Under today's standard, a different result might have been reached.

In any event, while the skill-of-the-ordinary-mechanic-standard was well stated and accepted in *Hotchkiss v. Greenwood*, a problem arose since the Court provided no methodology for applying that standard. Without a methodology, the lower courts in subsequent decisions were free to decide the skill-of-the-ordinary-mechanic issue using hindsight and based on personal, subjective views of what should or should not be patentable, without considering the circumstances surrounding the creation of the patented invention and the acts of infringement. Courts often paid no more than lip service to the *Hotchkiss* standard, instead applying a subjective test of whether the patented invention involved the "exercise of the inventive faculty" or a "flash of genius," to decide whether it was an "invention" and therefore patentable. Very little consideration, if any, was given to evidence of secondary considerations.

The trend in the 1930's and 1940's was to apply a stricter standard leading to Justice Jackson's observation that "the only patent that is valid is one which this Court has not been able to get its hands on." 606

A notable exception to that approach was Learned Hand, and later, Giles Rich. Their contributions to the enactment of the Patent Act of 1952 and the later development of 35 U.S.C. § 103 to the standard we know today are beyond measure.

In his famous 1955 opinion, *Lyon v. Bausch & Lomb Optical Co.*, Learned Hand pointed out the correct way to interpret § 103, stating that it was intended to reverse the stricter trend being followed by the Supreme Court. 607 Eleven years later, the Supreme

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607. 224 F.2d 530, 535 (2d Cir. 1955) Earlier in his 1952 *Commentary on the New Patent Act*, P.J. Federico, then an Examiner-in-Chief at the U.S. Patent Office and one of the drafters of § 103, commented as follows on § 103:

While it is not believed that Congress intended any radical change in the level of invention or patentable novelty, nevertheless, it is believed that some modification was intended in the direction of moderating the extreme degrees of strictness exhibited by a number of judicial opinions.
Court followed his lead in *Graham v. John Deere Co.*

In his famous 1964 Kettering Award speech, Giles Rich enunciated, for the first time, a systematic, four step methodology or criteria for determining obviousness or not under 35 U.S.C. § 103. One could argue that same methodology was intuitively applied by Learned Hand in his patent decisions before and after enactment of § 103. However, Learned Hand did not spell out these criteria as a systematic aid in deciding later cases. Thus, Giles Rich’s contribution was critical to the development of the obviousness standard. Although the Supreme Court did not specifically refer to Rich’s 1964 speech when it later, in 1966, adopted that same four step process in *Graham v. John Deere Co.* the paternity of this four step methodology cannot be seriously challenged.

Adoption of the four step methodology and mandatory consideration of secondary considerations by the Federal Circuit also prevents a patented invention from being considered in isolation or compared to the prior art using hindsight. The determination of obviousness requires the claimed invention as a whole be considered in light of the evidence of ordinary skill in the art and secondary considerations. Hence, there should be no room for any a priori tests or rote formulas for determining obviousness, such as it would be obvious to substitute one known material for another; or it would be obvious to make automatic what was done manually. Now, the courts must follow the four steps as mandated by the Supreme Court and the Federal Circuit, and not simply focus on the difference over the prior art in isolation from the rest of the claims, the level of ordinary skill in the art and the secondary considerations.

The significance of having the claim(s) of the patent recite the difference(s) over the prior art is well illustrated in *Graham v. John Deere Co.* As noted above, the patent in this case described a plow shank provided with a spring clamp which permitted the shank to automatically lift up over an obstruction and then spring back to its normal position, thereby avoiding damage to the plow share. The patent owner’s argument to the Supreme Court based validity on having the flexing feature run the entire length of the plow shank. But the lower court specifically found that

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over the past dozen or more years; that is, that some change of attitude more favorable to patents was hoped for.


611. *Id.* at 4.

612. *Id.* at 23.
"flexing is not a claim of the patent in suit."\textsuperscript{613} The Supreme Court likewise rejected the patent owner's flex theory argument because that feature was \textit{not} recited in any claims. The Court held that the structure \textit{actually claimed} presented no non-obvious differences over the prior art.\textsuperscript{614} Had a patent claim recited that feature, the result may very well have been different.

\textbf{XI. CONCLUSION}

As we near the end of the 20th Century, we see that our country's patent system is not only alive and well, but flourishing. That condition is due in no small part to the 1952 enactment of the § 103 standard, and the vision and unremitting efforts of Learned Hand and Giles Rich in developing and propagating that standard. As a result, companies and individuals today have greater incentive to spend time and money on research to create new inventions and patent them, thereby enriching the useful arts. They know that their limited periods of exclusivity can be upheld in court.

Surely, we are currently experiencing in a very meaningful way, the wisdom and truth of Abraham Lincoln's timeless observation about our patent system: "The Patent System Added the Fuel of Interest to the Fire of Genius."\textsuperscript{615}

\begin{itemize}
\item \textsuperscript{613} \textit{Id.} at 25.
\item \textsuperscript{614} \textit{Id.} at 25-26.
\item \textsuperscript{615} The quote from Abraham Lincoln may be found engraved over the northwest entrance to the U.S. Department of Commerce at 15th and "E" Streets, N.W., Washington, D.C., which housed the Patent Office for many years. Consistent with Lincoln's observation, Newsweek dedicated an entire, special issue to inventions and discoveries in the 20th Century and their impact on industry, science and our daily lives. The issue is entitled: \textit{2000, A New Millennium, The Power of Invention}. NEWSWEEK, Winter 1997-98. The issue concludes with the profound observations that this country nourishes "a climate that consistently encourages the new, the practical and the useful"; and that "[t]he spirit of innovation exists on trial and error. It would be odd—indeed a contradiction—if anyone found a once-and-for-all way to do it." \textit{Id.} at 79.
\end{itemize}
APPENDIX A

EXCERPTS ON NON-OBVIOUSNESS FROM THE PRE-TRIAL PROPOSED
FINDINGS OF FACT OF HAWORTH, INC., IN HAWORTH, INC., v.
STEELCASE, INC., 685 F. SUPP. 1422 (W.D. MI. 1988); REVERSED IN
PART, 10 U.S.P.Q. 1251 (FED. CIR. 1989)

XIIX. VALIDITY OF THE ASSERTED CLAIMS OF THE HAWORTH
PATENTS IN SUIT

A. The Haworth Patent Claims in Suit

109. Claims 5 and 29 of the Haworth '008 patent and claims
18 and 26 of the Haworth '733 reissue patent are asserted by
Haworth to be infringed by Steelcase's manufacture and sale of
the accused panels.

110. Claims 5 and 29 of the '008 patent are supported by the
disclosure in the original Haworth '294 patent so as to be entitled
to the filing date thereof, namely, September 22, 1975, for
purposes of determining prior art under 35 U.S.C. § 102(b)
[Finding of Fact No. 42, above].

111. Prior art of the type specified in 35 U.S.C. § 102(b) for
the inventions defined by the four patent claims asserted herein
would therefore have to have an effective date prior to September
22, 1974 [i.e., one year before the application filing date]. Prior art
of the type specified in 35 U.S.C. § 102(a) would have to have an
effective date prior to May 29, 1975 [the date of conception of the
claimed inventions] [Finding of Fact No. 40, above].

B. The Scope and Content of the Prior Art

112. The prior art identified by Steelcase as the most
pertinent for the Haworth inventions is the Modulo 3 panel as
disclosed in the United States Siegal Patent No. 3,841,042 and in
certain publications and physical exhibits. Other prior art relied
upon by Steelcase is as follows: United States Patents Nos.
625,828 (Case) [DX 1204]; 2,038,075 (Edwards) [DX 1205];
2,162,864 (Rugg) [PX 370]; 3,362,005 (Corns) [JX 303]; 3,590,135
(Herbenar) [DX 1207]; 3,715,627 (D'Ausilio) [DX 1208]; 3,802,146
(Tacke) [DX 1209]; and the publication Steelcase Movable Wall
System, 1972 [JX 1008].

113. (a) The Siegal patent No. 3,841,042 discloses the
prewired Modulo 3 panels. A single splined post is provided for
mechanically interconnecting each two adjacent panels. While
some very limited angular movement of the panels may be
possible after they are connected to the spline, for example, due to
manufacturing tolerances or the like, the splined connection was deliberately designed to securely lock the panels from being pivoted in any meaningful sense [JX 299, abstract, column 1, lines 42-43, 48; column 3, lines 51-53, 56-58]. Hence, the panels could not be angularly adjusted after being locked together by the splined post.

(b) When rearranging panels into different work station configurations, it is necessary to detach the Modulo 3 panels from the splined post by elevating them manually and then, while supporting their weight, moving them to one of only a limited number of specific possible angles to establish a new angular orientation. They are then reconnected to the splined post and dropped down into a locked position.

(c) A prewired raceway or channel is provided at the bottom of the Modulo 3 panels with a pair of receptacle outlets disposed externally on each side of the channel. A standard three-pronged plug is arranged interiorly near one end of the channel and a standard three-holed socket is arranged interiorly at the other end of the channel. The Siegal patent explicitly states that an "extension cord" is utilized for electrically connecting one panel to another [JX 299, column 4, lines 46-47, 48-49, 51]. When adjacent panels are connected in a straight line, the extension cord will be connected to the female socket and to the male plug at the opposed, facing ends of the channels on the interconnected panels. If, however, the panels are connected in T or Y configuration, it is necessary that the extension cord plug into an external female socket (i.e., a standard receptacle) on the outside of the channel of one panel, as well as be connected to the interior male plug at the end of the channel in the adjacent panel.

(d) Power is brought into the Modulo 3 panels from the building by means of conventional plug and wiring connected to the first panel. The plug is plugged into a conventional outlet in the wall, or to the outlet in a floor monument or ceiling junction box, in the manner of plugging in an appliance, so as to avoid the necessity of using a licensed electrician [Siegal Tr. 72, 73]. Since the prewired channels include exposed male prongs at one end, it is possible, when reconfiguring the Modulo 3 panels, for someone to jerry-build an extension cord so that it has a male plug at both ends and use that extension cord to bring power into the system through the interior female socket at one end of the channel. By so doing, there would then be the danger of having live or hot exposed prongs at the end of one of the Modulo 3 panels or at the end of a panel-to-panel interconnecting extension cord.

(e) The Modulo 3 panel did not and would not have received code approval in important major cities throughout the country. It does not disclose a wall panel positionable in an office building and having non-handed power blocks and flexible connectors. Hence,
the prewired Modulo 3 panel is not a versatile potential feeder panel that can be connected to building power at either end and have power flow through the prewired base in either direction.

(f) The Modulo 3 panels could be characterized as "cord connected appliances" and they were so regarded by U.L. as well as by Siegal, himself. The Siegal '042 patent does not contain any claim to the electrical wiring or other electrical components of his design, only to the mechanical components. Siegal had tried to secure some claims on the electrical components but they were rejected by the Examiner [UMF n. a, Siegal Tr. 55, 147, 159].

(g) While the Modulo 3 panels received U.L. listing in June 1975, Tiffany did only some limited marketing of those panels. That was around the mid 1970s. By early 1978, production of the Modulo 3 panels had ceased. They were taken off the market and, in the words of Siegal, "by 1978 - 1979 Modulo 3 was a marketing basket case" [UMF p; Siegal Tr. 178-179, 183].

114. The Case patent No. 625,828 relates to cable couplings for railroad cars. It discloses a cable E having four horizontally aligned male prongs K at each end for fitting into four horizontally aligned mating holes in terminal boxes C and D at the opposed ends of railroad cars to be coupled together. It does not disclose a wall panel positionable in an office building and having power blocks and flexible connectors. This patent is from non-analogous art and entitled to no weight.

115. The Edwards patent No. 2,038,075 relates to transformer and power distribution arrangements. It discloses a transformer having recesses 26, 27 and 36, 37 of different configuration. It does not disclose a wall panel positionable in an office building and having power blocks and flexible connectors. This patent is from non-analogous art and entitled to no weight.

116. The Rugg patent No. 2,162,864 relates to a prefabricated wiring system for the permanent floor-to-ceiling walls in a building. It discloses the concept of having a receptacle (containing a conventional outlet therein) removably electrically connected to the wiring within the wall. It does not disclose a wall panel positionable in an office building and having power blocks and flexible connectors.

117. The Corns patent No. 3,362,005 relates to connectors for electrically connecting together printed circuit boards. It discloses a hinge-type electrical connector. It does not disclose a wall panel positionable in an office building and having power blocks and flexible connectors.

118. The Herbenar patent No. 3,590,135 relates to power distribution means within a ceiling structure. It discloses a suspended ceiling having grid members 1, connectors 3 and lighting units 9. It does not disclose a wall panel positionable in an office building and having power blocks and flexible connectors.
119. The D'Ausilio patent No. 3,715,627 discloses a pre-formed electrical wiring system to be installed within a molded structure. It does not disclose a wall panel positionable in an office building and having power blocks and flexible connectors.

120. The Tacke patent No. 3,802,146 discloses a specific mechanical hinge mechanism for mechanically connecting office divider panels. It does not disclose any prewiring or electrification of the panels. It does not disclose a wall panel positionable in an office building and having power blocks and flexible connectors.

121. The 1972 Steelcase Movable Wall System brochure discloses an example of the hard wiring of panels that was conventional before the Haworth inventions [Findings of Fact Nos. 22-23, above]. It does not disclose a wall panel positionable in an office building and having power blocks and flexible connectors.

122. Each of the prior art references relied on by Steelcase was either considered by the Examiner or is of no greater relevance than prior art references considered by the Examiner. Hence, they are no better than the references that were considered by the Examiner. All of the important and material prior art, therefore, was before the Examiner, was considered by the Examiner, and was rejected by the Examiner in his allowance of the claims of the patents in suit.

C. Differences Between the Prior Art and Haworth Claims at Issue

123. Claim 5 of the Haworth '008 patent in suit includes the following limitations which constitute differences over the prior art:

(d) each said power block having identical first and second connection means integrally associated therewith; . . . 
(g) said two connection means as associated with each said power block being spaced inwardly from the sides of its respective panel; . . . 
(i) said electrical connector means including a pair of substantially identical third connection means; . . . 
(k) said third connection means defining one half of said separable electrical connection and being alternatively releasably engageable with either one of said first and second connection means;
(l) said connector means, when joined to said opposed pair of power blocks, being disposed substantially between, or flush with parallel vertical planes as defined by the opposed sides of said first and second panels, 616

124. Limitation (i) is directed to the feature that the flexible

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616. The letters used for these subparagraphs do not appear in the patent itself. They are utilized, for convenience of reference, in the claim comparison chart, PX 350.
electrical connector has substantially identical connection means at each end so as to be electrically connectable to the power block regardless of panel or electrical base orientations. Thus, this limitation relates to a "non-handed" system that distinguishes over a "handed" power system using extension cords. Additionally, these limitations recite the provision of each power block having identical first and second connection means [limitation (d)], each of which is releasably engageable with the connection means on the flexible electrical connector [limitation (k)]. Further, these limitations recite that the two connection means on each power block are "spaced inwardly from the sides of its respective panel" [limitation (g)], and that when the flexible electrical connector is joined to the power blocks, it is disposed substantially between, or flush with the parallel vertical planes defined by the front and back sides of the panel [limitation (l)]. (The manner in which these limitations are readable on the Haworth patent disclosure is clear from the claim comparison chart of PX 350.)

125. These differences of claim 5 over the prior art are neither shown nor suggested in the Siegal '042 patent or in any of the applicable prior art references for the Modulo 3 panels. In the Modulo 3 panels, an extension cord is utilized as the electrical connection means for electrically connecting one panel to the other so that it is a "handed" system wherein the raceway is designed to be connected to building power only at one end, and power only flows through the raceway in one direction. Limitation (i) is not met by the Modulo 3 panels because extension cords do not have substantially identical connection means at each end. Furthermore, each end of the Modulo 3 raceway does not have "identical first and second connection means integrally associated therewith", and "spaced inwardly from the sides of the panel" [limitations (d) and (g)]. Finally, when the extension cord of the Modulo 3 panels is utilized for electrically connecting adjacent panels disposed at an angle to each other (such as a Y or T connection), the extension cord is not substantially between or flush with the opposed sides of the panel. Rather, a significant portion thereof extends outside of the confines of the panel as shown, for example, by extension cords 79, 82 in Figure 8 of the Siegal patent [JX 299]. Limitation (k) cannot be met because limitations (d), (g) and (i) are not met by the Modulo 3 panels.

126. These differences in claim 5 over the prior art, taken together, are likewise neither shown nor suggested in any of the other references relied on by Steelcase. They are significant limitations because they relate to the versatile "non-handedness" of the Haworth inventions; they neither require nor permit the use of extension cords; and they advantageously do not allow for any part of the flexible connector or power blocks to extend beyond the parallel planes defined by the front and back sides of the panels,
even when three panels are electrically joined in a Y or T configuration.

127. Claim 29 of the '008 patent includes limitations similar to those just discussed for claim 5 and which are neither shown nor suggested by the prior art references. See limitations (e), (i), (j) and (k) of that claim as it appears in the claim comparison chart of PX 351.

128. Claim 18 of the '733 patent includes the following limitations which are differences over the prior art:

(h) said electrical connector means including first electrical plug means adapted for reception within the socket means associated with said one power block means and second electrical plug means adapted for reception within the socket means associated with said further power block means; . . .

(j) and wherein said flexible electrical connector means includes hinge means for permitting relative angular displacement of said partitions after said connector means has been joined to said partitions, said hinge means being disposed between said first and second plug means; . . .

(l) having cooperating hinge parts formed thereon and defining said hinge means, said hinge parts defining a substantially vertically [sic] hinge axis which is approximately aligned with the hinge axis defined by the securing means, and said first and second plug means being associated with said first and second housing elements respectively. [PX 348]

129. These limitations in claim 18 are directed to: the flexible electrical connector including plug means at each end [limitation (h)]; the provision of hinge means in the flexible electrical connector that permits angular displacement of the partitions or panels that are mechanically secured together [limitation (j)]; and the provision of cooperating hinge parts on the flexible electrical connector for defining a substantially vertical hinge axis that is approximately aligned with the hinge axis defined by the securing means that mechanically connects the panels together [limitation (l)]. (The manner in which these features are disclosed in the Haworth patent is illustrated in the claim chart of PX 349.)

130. These differences in claim 18 over the prior art are neither shown nor suggested in any of the prior art relied upon by Steelcase, including the Siegal '042 patent and the other applicable prior art for the Modulo 3 panels. In the Modulo 3 panels, the extension cords for connecting one panel to another do not include plug means at each end [limitation (h)]; nor do they contain hinge parts defining a hinge means for permitting relative angular displacement of the panels and approximately aligned with a hinge axis defined by the securing means for connecting one panel to another [limitations (j) and (l)].
131. These limitations in claim 18 are significant because they enable the panels to be adjusted angularly without disconnecting the flexible electrical connector, when rearranging the panels into different work station configurations.

132. Claim 26 of the '733 patent includes the following limitations which are differences over the prior art:

(c) said power block means comprising a boxlike housing constructed of an electrically insulative material...

(g) third opening means formed in said housing and cooperating with the electrically conductive elements for defining second electrical socket means, said second socket means defining a second plug receptacle having a geometrical configuration which is different from the geometrical configuration of said first plug receptacle so that the plug which mates with said first plug receptacle will not mate with said second plug receptacle and vice versa; and

(h) said housing as associated with at least one of said power block means having fourth opening means formed therein for permitting an electrical supply conduit to project into said housing for connection to said electrically conductive elements. [PX 349]

133. These differences in claim 26 over the prior art are directed to: the feature of having the power block means include a box-like housing made of an electrically insulative material [limitation (c)]; the provision of separate opening means formed in that box-like housing defining plug receptacles having different geometrical configurations so that the plug that mates with one of those receptacles will not mate with the other and vice versa [limitation (g)]; and the provision of a fourth opening means in the box-like housing for connection to an electrical supply conduit to bring power into the system [limitation (h)]. (The manner in which these limitations are present in the Haworth patent disclosure are illustrated in the claim comparison chart of PX 349.)

134. These differences in claim 26 over the prior art are neither shown nor suggested by the prior art relied upon by Steelcase, including the Siegal '042 patent and the other applicable prior art for the Modulo 3 panels. In the Modulo 3 panels, there is no power block comprising a box-like housing having four separate openings therein, with two of the openings being designed so that the plug that mates with one of them will not mate with the other, and vice versa. In the channels for the

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617. These openings in the novel Haworth power block enable it to provide the multiple functions that contributed to the success of the Haworth inventions, as noted above in Finding 39(b)-(e). The Modulo 3 panels do not contain any power block at all, let alone a power block having all of those functions and capabilities, as was recognized by Vanden Hock [Vanden Hock Tr. 166, 210-211]—yet those are the very capabilities that Steelcase deliberately incorporated into the power
Modulo 3 panels, all of the openings or sockets provide plug receptacles having the same geometrical configuration so that they may all receive the same type of plug from extension cords or electrical equipment.

135. These limitations of claim 26 are significant because, among other things, they make the panel versatile so that every panel is potentially a feeder panel that can be connected to building power at either end, and they preclude the use of conventional extension cords for panel-to-panel electrical connection.

D. Level of Ordinary Skill in The Pertinent Art

136. The pertinent art to which the asserted claims of the Haworth patents in suit are directed is that of electrification for divider wall panels in the office furniture field.

137. The level of skill in that art in the relevant time frame is exemplified by the following prior art: United States Patent No. 3,759,297 of Westinghouse [JX 284; PX 323, Tab 44]; the use of extension cords or like devices in open troughs or channels to be attached to the panels as practiced, for example, by Herman Miller; the hard wired Steelcase Movable Walls [PX 323, tab 63]; and the Siegal patent and the other applicable prior art for the Modulo 3 panels [JX 299; PX 368].

138. In considering the level of skill in the pertinent art, reference may also be made to the subjective reactions of those persons familiar with that art and who practiced that art up to and around the time of the Haworth inventions. Such persons would include the engineers at Steelcase, Westinghouse and Herman Miller and the rest of those in the office furniture industry who worked without success on a solution to the wiring problem for office divider panels during the time frame of 1968-1976.

E. Novelty and Unobviousness of the Subject Matter of the Asserted Claims

139. None of the prior art references and publications, including the Siegal patent and the other applicable prior art on the Modulo 3 panels, taken alone or together, discloses or anticipates the subject matter of the asserted claims of the Haworth patents in suit since each of those references fails to show or suggest the claim limitations referred to in Findings Nos. 123-135, above.

140. Steelcase's concedes that the Siegal patent and the Modulo 3 panels, alone, do not disclose or anticipate the subject matter of the asserted claims. Steelcase argues that it would have
been obvious to modify the Modulo 3 panels so that both ends of the extension cords would be disposed substantially between or flush with the panel sides in view of the Steelcase Movable Walls publication and the Tacke, D'Ausilio and Rugg references. There is no suggestion, however, in any of the references relied upon by Steelcase for making such a modification to the Modulo 3 panels. That suggestion only comes from a hindsight consideration of this prior art after seeing the Haworth inventions. Furthermore, there would be no room within the Modulo 3 panel raceway to dispose the receptacle outlets sufficiently inwardly from the panel sides without completely destroying or reconstructing the Modulo 3 raceway.

141. (a) Steelcase also argues that it would have been obvious to employ the connector shown in the Case patent No. 625,828 for the extension cord in the Modulo 3 panels to meet the limitation in the claims that the flexible connector has plugs on each end for reception within sockets on adjacent panels. Such a modification of the Modulo 3 system would be completely untenable. First of all, it would result in live, exposed hot prongs when one end of the Case connector was inserted into the socket of a panel connected to building power. Furthermore, the sockets in the Modulo 3 panels would then have to be redesigned to receive the four horizontally aligned prongs of the Case connector.

(b) Such a redesign could only be made without taking into account the whole disclosure of the Siegal patent and the Modulo 3 panels, for it would then negate the Siegal objective of being able to use that same connector in the standard outlets on the sides of the raceway used to receive the conventional three pronged plugs of electrical office equipment. Further, it would negate the Siegal objective of using conventional extension cords to arrange and power Modulo 3 panels in a T, Y or X configuration, as shown in Figure 8 of the Siegal patent. But even leaving all these points aside, Steelcase has failed to demonstrate that anyone working in this art would consider looking for enlightenment in the non-analogous art of cable coupling for railroad cars, the art to which the Case patent is directed.

142. Steelcase also argues modifying the Modulo 3 panel sockets so that they have different configurations, relying now on the Edwards and/or Herbenar patents. Here again, Steelcase's suggested modification of the Modulo 3 panels ignores that there is no suggestion anywhere in the art of office divider panels for making the internal sockets and the external receptacle outlets of the Modulo 3 raceways of different configuration, except for the Haworth inventions. The Edwards and Herbenar patents are from completely nonanalogous arts. Furthermore, to make the internal sockets and external receptacle outlets of the Modulo 3 raceways of different configuration would negate the Siegal
objectives, as noted in the preceding finding. Hence, there would be no logic whatsoever to modifying the Modulo 3 panel construction in this manner.

143. The asserted claims of the Haworth '008 and '733 patents satisfy all conditions of patentability and are, therefore, valid. Steelcase has failed to prove facts which demonstrate to this Court that the asserted claims are invalid.

[SECONDARY CONSIDERATIONS]

144. The Haworth inventions recited in the asserted claims represent a significant advance in the office furniture industry, inter alia, for the following reasons:

(a) They satisfactorily solve the problem of providing an office divider panel with a non-handed and versatile prewired power system that would meet Code approval in major cities through the country yet would be flexible enough to be conveniently reconfigured into different work stations arrangements;

(b) In spite of the fact that there was a long felt need for such a solution in the time frame of 1970-1976, the best engineers in the industry, including those at the industry leader, Steelcase, who were working on the problem all failed to solve it during that time frame;

(c) The other major systems office furniture manufacturers in this country, including Steelcase, have now adopted the Haworth inventions covered by the asserted claims;

(d) The Haworth ERA 1 panel with prewired power system, as covered by the asserted claims of the patents in suit, was utilized as a benchmark for Steelcase's design and development work of the accused panels; and

(e) Steelcase's praise to the industry of the prewired power system of the accused panels, which embody the Haworth inventions of the asserted claims of the patents in suit, was further recognition that the Haworth inventions were of such novelty and importance as to mark a distinct and significant step forward in the progress of the art.
APPENDIX B

EXCERPTS ON NON-OBVIOUSNESS FROM THE PRE-TRIAL PROPOSED FINDINGS OF FACT OF HAWORTH, INC., IN HAWORTH, INC., V. STEELCASE, INC., 685 F. SUPP. 1422 (W.D. MI. 1988); REVERSED IN PART, 10 U.S.P.Q. 1251 (FED. CIR. 1989)

I. VALIDITY

(a) Novelty and Nonobviousness

B. The starting point in any consideration of patent validity is 35 U.S.C. § 282: "A patent shall be presumed valid. . . . The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity."

C. "[T]he burden of persuasion is and remains always on the party asserting invalidity." Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1359 (Fed. Cir. 1983).

D. The claims of the patent are the measure of the invention and "each claim must be considered as defining a separate invention." 35 U.S.C. § 282; Jones v. Hardy, 727 F.2d 1524, 1528 (Fed. Cir. 1984). Hence, the burden of establishing invalidity of the claims in suit rests upon Steelcase. It is a heavy burden that may be met only by clear and convincing evidence. Alco Standard Corp. v. Tennessee Valley Auth., 808 F.2d 1490, 1498 (Fed. Cir. 1986).


(a) "When the burden has not been carried a court need only so state." Id. at 1570.

F. The Federal Circuit has recognized "that when the prior art before the court is the same as that before the PTO, the burden on the party asserting invalidity is more difficult to meet." Bausch & Lomb, Inc., v. Barnes - Hind/Hydrocurve Inc., 796 F.2d 443, 447 (Fed. Cir. 1986). See also, Hughes Aircraft Co., 717 F.2d at 1359.

G. The Modulo 3 panels principally relied upon by Steelcase were fully and duly considered by the PTO with respect to both

618. The United States Court of Appeals for the Federal Circuit (Fed. Cir.) was established in October 1982 as the single and only appellate, reviewing court for appeals from patent infringement litigation in all of the federal district courts in this country. 28 U.S.C. § 1295. Hence, any appeal from a final decision of the district court in the subject litigation will be heard by that court so that the decisions of that court are controlling for the substantive issues in this civil action.
patents in suit. The additional Modulo 3 literature and information in the files of Haworth and not disclosed to the PTO was merely cumulative, at best, and added nothing material to the information before the Examiner on the Modulo 3 panels. Furthermore, the other prior art references relied upon by Steelcase fall into two categories. They were either (a) considered by the PTO or (b) are of no greater relevance and no better than the references cited and considered by the PTO [Findings of Fact Nos. 112-122, above].

H. When the prior art relied on by the attacker adds nothing material to that which was considered by the PTO Examiner, the attacker has the "added burden of overcoming the deference that is due to a qualified governmental agency presumed to have properly done its job". That agency, the Patent Office, "includes one or more examiners who are presumed to have some expertise in interpreting the references and to be familiar from their work with the level of skill in the art, and whose duty it is to issue only valid patents." *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359 (Fed. Cir. 1984), cert. denied, 469 U.S. 821 (1984) (emphasis added).

I. Furthermore, where, as here, there was a contested, adversarial proceeding in which the defendant fully participated [JX 1005, p. 404], and the prior art evidence at trial was merely cumulative of the PTO proceedings, a lower court will not err in giving to the PTO decision the "deference" that is due to a qualified governmental agency. *Windsurfing Int'l Inc. v. AMF Inc.*, 782 F.2d 995, 998-99 (Fed. Cir. 1986), cert. denied, 91 L.Ed.2d 565, 106 S. Ct. 3275 (1986), citing *American Hoist & Derrick Co.*, 725 F.2d at 1359. See also, *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1139 (Fed. Cir. 1985) (Burden made heavier by a reissue proceeding which concentrated on those references and reasons that occasioned its filing.)


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619. Much of the literature on Modulo 3 panels that was not submitted by Haworth to the PTO was not available as prior art under 35 U.S.C. § 102(a) or (b) [Finding of Fact No. 162].
K. With respect to the question of nonobviousness under 35 U.S.C. § 103, the scope and content of the prior art and the differences between the prior art and the claims at issue are to be determined. The level of ordinary skill in the pertinent art must also be resolved. Against this background the question of obviousness or nonobviousness of the claimed subject matter is decided. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 86 S. Ct. 684, 15 L. Ed.2d 556 (1966). See also, *Panduit Corp.*, 810 F.2d at 1564. The "usual way" of determining the level of ordinary skill in a particular art "is by referring to the subjective reaction of a person thoroughly familiar with the particular art and, if possible, one who practiced the art at the crucial time in question." *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 772-773 (Fed. Cir. 1983), cert. denied, 456 U.S. 1026 (1984) (quoting *Maisbary Mfg. Co. v. Ald, Inc.*, 447 F.2d 809, 811 (7th Cir. 1971). Therefore, reference may be made to actions of the skilled engineers at Steelcase, Herman Miller and Westinghouse and the rest of the industry during the relevant time period, including the wire manager approach of the Westinghouse patent No. 3,759,297, the Herman Miller approach of using troughs or channels at the bottom of the panels and containing extension cords, the unsuccessful efforts of the Steelcase engineers working with and under Mohr, and the Siegal-Modulo 3 panel approach of using extension cords [Findings of Facts Nos. 136-138].

L. Six factors relevant to a determination of the level of ordinary skill in the art are: (a) the educational level of the inventors; (b) the type of problems encountered in the art; (c) prior art "solutions" to those problems; (d) rapidity with which innovations are made; (e) sophistication of the technology; and (f) educational level of active workers in the field. *Bausch & Lomb, Inc.*, 796 F.2d at 449-50; *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696-97 (Fed. Cir. 1983), cert. denied, 464 U.S. 1043 (1984).

[M. Secondary Considerations] Secondary considerations of nonobviousness are also applicable to give light to the circumstances surrounding the origin of the patented subject matter and they have relevance to the determination of obviousness or nonobviousness of such subject matter. *Graham*, 383 U.S. at 17-18, *Simmons Fastener Corp. v. Illinois Tool Works*, 739 F.2d 1573, 1575 (Fed. Cir. 1984), cert. denied, 471 U.S. 1065 (1985). Such secondary tests, also called "objective evidence", include:

1. Did the patented Haworth inventions fulfill a long-felt need in the industry to which they apply? *Rosemount, Inc., v. Beckman Instruments, Inc.*, 727 F.2d. 1540, 1546 (Fed. Cir. 1984); *In re Piasecki*, 745 F.2d 1468, 1474-75 (Fed. Cir. 1984) (Finding of
longstanding problem supported by the fact that the "industry leader" was also funding and promoting development of a similar product.) [See Findings of Fact Nos. 21 - 36, above]

2. Did others fail to solve the problem of designing flexible office divider panels with a prewired power system that would be flexible and versatile and, further, that would consistently meet the requirements of local code authorities throughout the country? *Alco Standard Corp.*, 808 F.2d at 1500 (Weight given to the fact that "Westinghouse, a large corporation working on this matter had tried but failed."); *Rosemount, Inc.*, 727 F.2d at 1545 (The industry leader was doing all it could to preserve its lead in the marketplace, yet it failed in that effort.) [Findings of Fact Nos. 21-36].

3. Did the patented Haworth inventions meet with commercial success upon their introduction to the market? In that regard, did they supplement other products then in use and also receive widespread recognition in the industry? *Panduit Corp.*, 810 F.2d at 1572; *Rosemount, Inc.*, 727 F.2d at 1544. A nexus between the Haworth patented inventions and their commercial success is clearly established and the evidence of secondary considerations is entitled to great weight. *Simmons Fastener Corp.*, 739 F.2d at 1575-76. [See Findings of Fact 91-96, 153-154, above]


5. Has Steelcase praised the patented Haworth inventions? *Rosemount, Inc.*, 727 F.2d at 1546. [See Findings of Fact 95, above]

N. The answer to all of these inquiries is "yes."

O. The Federal Circuit has held that these secondary consideration inquiries are an "essential and integral part" of the determination of nonobviousness. *Alco Standard Corp.*, 808 F.2d at 1498. The Federal Circuit has also held:

the judicial process requires that a court withhold a conclusion of obviousness until it has fully assessed the impact of any objective evidence [secondary considerations] of nonobviousness. Only then can a court base its judgment, as it must on all probative evidence of record. *Panduit Corp.*, 810 F.2d at 1570-71.

P. Hence, the secondary considerations are to be considered as part of all the evidence, not just when the decision maker remains in doubt about nonobviousness after reviewing the art. Indeed, evidence of secondary considerations may often be the most probative and cogent evidence of nonobviousness in the record. *In
re Piasecki, 745 F.2d at 1475.

Q. The Federal Circuit Court of Appeals has observed that:

[t]hose charged with determining compliance with 35 U.S.C. § 103 are required to place themselves in the minds of those of ordinary skill in the relevant art at the time the invention was made, to determine whether that which is now plainly at hand would have been obvious at such earlier time.

The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time. Interconnect Planning Corp., 774 F.2d at 1138 (emphasis added).

R. In determining the scope and content of the prior art, references “must be read as a whole and consideration must be given where the references diverge and teach away from the claimed invention.” Akzo N.V. v. United States Int’l. Trade Comm’n, 808 F.2d at 1481 (emphasis added). For instance, use of extension cords and conventional or standard-type plug receptacles was an essential part of the Modulo 3 panel envisioned by its inventor Burton Siegal [Findings of Fact Nos. 113, 141-142, above].

S. When considering whether to combine references “there must be some reason for the combination other than the hindsight gleaned from the invention itself.” Interconnect Planning Corp., 774 F.2d at 1143, citing ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577 n.14 (Fed. Cir. 1984). There must be “something in the prior art as a whole to suggest the desirability, and thus the obviousness of making the combination.” Id. at 1143 (emphasis added) (quoting Lindemann Maschinenfabrik GmBH, 730 F.2d at 1462). This prevents a challenger from using the “mosaic” approach where the claims are used as a frame, and individual noted parts of separate prior art references are employed to recreate a facsimile of the claimed invention. Interconnect Planning Corp., 774 F.2d at 1143, citing W.L. Gore & Assoc., Inc., v. Garlock, Inc., 721 F.2d 1540, 1552 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984); Panduit Corp., 810 F.2d at 1574. Thus, as in Akzo N.V., 808 F.2d at 1481, where the challenger could not show how the prior art patents could be brought together to render the invention obvious without reconstructing the teachings of those patents assisted by hindsight, there is no teaching or suggestion here from the Modulo 3 panel inventor, Burton Siegal, or from any other prior art reference which would have led one of ordinary skill in the art at that time to modify the Modulo 3 panel as is now suggested by Steelcase [Findings of Fact Nos. 139-142].

T. Further, proposing a combination of references requiring a reconstruction of the primary reference in a manner that “would completely alter the construction and mode of operation of the primary reference” so that it would not function in its intended
manner supports the view that the "obviousness of the proposed changes is not derived from the cited prior art, but only from the appellant's [inventor's] disclosure." *Ex parte Weber*, 154 U.S.P.Q. 491, 492 (Pat. Off. Bd. App. 1967) (emphasis added). See also, *Diamond Int'l Corp. v. Walterhoefer*, 289 F. Supp. 550, 559 (D. Md. 1968) (The court notes there was no authority for the proposition that, and has great difficulty in understanding how, a device which requires a modification making it unworkable suggests such a modification). Such modification of the channel of the Modulo 3 panels as suggested by Steelcase, would require a complete reconstruction of those channels and an elimination of extension cords for electrically connecting one panel to another. Yet, the use of such extension cords was an essential part of the prewired panels envisioned by Siegal, the inventor of the Modulo 3 panels. In any event, the modifications of the channels of the Modulo 3 panels proposed by Steelcase would destroy the purpose of the structure and operation of that device as expressly envisioned by the inventor [Findings of Fact Nos. 141-142, above].

[NEED TO CONSIDER THE CLAIMED INVENTION, AS A WHOLE, NOT JUST THE CLAIMED DIFFERENCE]

U. In comparing the differences between the prior art and the claims at issue:

it is improper . . . to consider the difference as the invention. The 'difference' may have seemed slight (as has often been the case with some of history's great inventions, e.g., the telephone), but it may have been the key to success and advancement in the art resulting from the invention. . . Hence the statute, the law established not by judges but by Congress requires that the invention as claimed be considered 'as a whole' when considering whether that invention would have been obvious when it was made. 35 U.S.C. § 103. *Jones v. Hardy*, 727 F.2d at 1528 (emphasis added).

V. Measured by the foregoing tests, the subject matter of the asserted Haworth claims from the '008 patent and the '733 reissue patent was not obvious at the time the inventions were made to those skilled in the art, particularly as to the Steelcase engineers who found it necessary to base the development of the accused Steelcase panels on the Haworth inventions [Findings of Fact 73-90, above].

W. Steelcase has failed to meet its burden of proving invalidity of any one of the asserted claims by clear and convincing evidence. Therefore, claims 5 and 29 of the '008 patent and claims 18 and 26 of the '733 patent are valid.
APPENDIX C

The following instructions were taken from the AIPLA's "GUIDE TO JURY INSTRUCTIONS IN PATENT CASES."\textsuperscript{620}

OBVIOUSNESS UNDER 35 U.S.C. § 103

In order to be patentable, an invention must not be obvious to a person of ordinary skill in the art at the time the invention was made. The issue is not whether the claimed invention would be obvious to you as a layman, to me as a judge, or to a genius in the art, but whether it would have been obvious to one of ordinary skill in the art at the time it was made.

GRAHAM V. JOHN DEERE TEST

You can conclude that the patent granted by the Patent and Trademark Office is invalid, even though not identically disclosed in a single prior art device or reference, if the defendant has established by clear and convincing evidence that the claimed subject matter as a whole would have been obvious to a person of ordinary skill in the pertinent art at the time the patented invention was made.

In determining whether the defendant has established obviousness of the claimed subject matter the following steps should be taken by you:

1. Compare the scope and content of the prior art relied upon by defendant against the patent;

2. Identify the difference or differences between each claim of the patent and the prior art; and

3. Determine the level of ordinary skill in the pertinent art at the time the invention of the patent in suit was made.

Against this background, you will then make your conclusion whether the evidence clearly and convincingly establishes that the claimed subject matter would have been obvious to a person of ordinary skill in the pertinent art at the time the invention was made. Before reaching a conclusion, you must also consider evidence submitted by the plaintiff to establish commercial success as a result of the invention, long felt but unresolved need filled by the invention, failure of others to solve the problem solved

\textsuperscript{620} GUIDE TO JURY INSTRUCTIONS, supra note 48, at 25-29.
by the invention, acquiescence in the validity of the patent by others.

**SCOPE AND CONTENT OF THE PRIOR ART**

In arriving at your decision of whether or not the claimed invention is obvious, you must first determine the scope and content of the prior art. The prior art includes the following items received into evidence during the trial:

1. Patents that issued more than one year before the filing date of the patent or before the date of invention;
2. Publications having a date more than one year before the filing date of the patent or before the date of invention;
3. U.S. patents that have a filing date prior to the date of invention of the claimed subject matter in the patent;
4. Anything in public use or on sale in the U.S. more than one year before the filing date of the patent in suit;
5. Anything that was publicly known or used by others in this country before the date of invention of the claimed subject matter in the patent; and
6. Anything that was made or built in this country by another person before the date of invention of the claimed subject matter in the patent where the thing made or built was not abandoned, suppressed or concealed.

**DIFFERENCES OVER THE PRIOR ART**

The next factor that you must consider is whether the difference or differences alleged by the defendant to exist between the prior art and the claimed invention has or have been established by clear and convincing evidence. Although it is proper for you to note any such differences between the claimed invention and the prior art, you must not consider those differences as the invention because the test is whether the claimed invention as a whole would have been obvious to one of ordinary skill over all of the prior art. Each claim must be considered in its entirety and separately from the other claims.

**LEVEL OF ORDINARY SKILL**

Factors to be considered in determining the level of ordinary skill in the pertinent art include all of the evidence submitted by plaintiff and defendant to show:
FACTORS INDICATING NONOBVIOUSNESS

Before reaching your conclusion as to whether the defendant has established the obviousness of the claimed invention you must consider the following evidence which may tend to negate defendant's evidence of obviousness: (use only those applicable)

1. Commercial success of products covered by the patent in suit due to the merits of the invention and not other factors such as advertising;
2. A long-felt need in the art which was satisfied by the invention of the patent in suit;
3. The failure of others to make the invention;
4. Copying of the invention by others in the field;
5. Unexpected results achieved by the invention;
6. Praise of the invention by the infringer or others in the field;
7. The taking of licenses under the patent by others.
8. Expressions of disbelief by experts and those skilled in the art; and
9. The patentee proceeded contrary to accepted wisdom of prior art.

You must be satisfied there is a causal connection between the evidence showing the existence of one or more of the listed facts and the claimed invention. For example, if you conclude that commercial success is due solely to advertising, promotion, salesmanship or the like, or is due to features of the product other than those claimed in the patent in suit, then it is not established that commercial success has a relation to the invention itself and should weigh against defendant's evidence on the question of obviousness.

OBVIOUSNESS—HINDSIGHT

The question of nonobviousness is simple to ask, but difficult to answer. A person of ordinary skill in the art is presumed to have knowledge of the relevant prior art at the time of the patentee's invention. If you find the available prior art shows each
of the elements of the claims in suit, you must determine whether it would then have been obvious to a person of ordinary skill in the art to combine or coordinate these elements in the same manner as the claims in suit. The difficulty that attaches to all honest attempts to answer this question can be attributed to the strong temptation to rely on hindsight while undertaking this evaluation. It is wrong to use the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.

**Obvious to Try**

The evidence might indicate to you that what the inventors did was obvious to try. If so, this does not necessarily indicate the patent is invalid for obviousness. "Obvious to try" is not the standard. The standard is whether the invention as a whole would have been obvious to one of ordinary skill in the field to which the invention pertains at the time the invention was made.

**State of the Art—Cannot Use Hindsight**

You are instructed that when you consider the prior art, whether in the form of writings, physical exhibits, or patents, you must consider them for what they actually disclose to one of ordinary skill in the art, and no more. You cannot use hindsight to assemble the invention from parts made up of individual elements of the prior art devices, nor can you reconstruct any of the prior art devices or materials unless obvious to one of ordinary skill in the art to do so.
APPENDIX D

The following are selected from 4 L. Sand, et al., Modern Federal Jury Instructions: 621

NON-OBSERVABILITY

The defendant contends that the patent is invalid because the invention was "obvious."

I instruct you that a patent is invalid if the defendant establishes by clear and convincing evidence that the subject matter as a whole would have been obvious to a person of ordinary skill in the pertinent art at the time the invention was made.

The question of whether the invention was obvious ultimately is a question of law for me to decide. However, I will decide that question based upon whether you find the following facts to have been proved by clear and convincing evidence:

1. What was the scope [and content] of the prior art at the time the [e.g., product] was invented?
2. What the differences are between each claim of the patent and the prior art?
3. What was the level of ordinary skill in the prior art at the time the invention was made?
4. Whether there are secondary considerations that negate defendant's claim of obviousness?

DIFFERENCES BETWEEN PRIOR ART AND INVENTION 622

The next factual issue you must consider is what are the differences between the prior art and the invention.

The defendant has the burden to show that the prior art taken as a whole suggests the obviousness of making the combination that is in the form of the patented invention. In determining what, if any, differences there are between the prior art and the patented invention, you should consider the prior art as it appeared to a person of ordinary skill in the art at the time. You cannot use hindsight to reconstruct any of the prior art devices or materials, nor can you assemble the invention from parts made up of individual elements of the prior art devices, unless it would have been obvious to do so at the time to one of ordinary skill in the art.

621. 4 Leonard B. Sand et al., Modern Federal Jury Instructions § 86.03 (1995) (citations and comments omitted).
LEVEL OF ORDINARY SKILL

I have referred in these instructions to a person of ordinary skill in the art. What do I mean by such a person? The person of ordinary skill is a hypothetical person who is presumed to be one who is aware of all pertinent prior art. The skill of the actual inventor is irrelevant, because inventors may possess something which sets them apart from the workers of ordinary skill in the art.

Factors to be considered in determining what is the level of ordinary skill in the pertinent art include all of the evidence submitted by the parties that show:

1. the education level of the inventor;
2. the types of problems encountered in the art;
3. the prior art patents and publications;
4. the activities of others;
5. prior art solutions to the problems encountered by the inventor;
6. the rapidity of innovation in the field;
7. the sophistication of the technology; and
8. the education of others working in the field.

SECONDARY FACTORS INDICATING NON-OBJVIOUSNESS

The following secondary facts that may tend to negate the defendant's claim of obviousness include the following:

1. Commercial success of products covered by the patent due to the merits of the invention and not from other factors such as advertising;
2. A long felt need in the art which was satisfied by the invention of the patent in question;
3. The failure of others to make the invention;
4. Copying of the invention by others in the field;
5. Unexpected results achieved by the invention;
6. Praise of the invention by the infringer or others in the field;
7. The taking of licenses under the patents by others;
8. Expressing of disbelief by experts and those skilled in the art; and
9. The patentee proceeded contrary to accepted wisdom of prior art.

If you find any of these facts, you must make the additional finding of whether there is a causal connection between the listed

623. Id.
624. Id.
facts you find and the claimed invention.

(If applicable: For example, if you conclude that commercial success, if any, is due solely to advertising, promotion and salesmanship and is not due to features of the product claimed in the patent, then the evidence of commercial success should not weigh against defendant’s evidence on the question of obviousness.)