The law of inventions, or patent law, is the machinery by which the domain of received public knowledge is enlarged through encouraging the prompt contribution to the public of new ideas or knowledge and by condemning and penalizing the withholding of such knowledge from the public by the inventor. Men are thus constrained to bring their new and useful ideas to the public promptly or suffer the legal consequences. The patent law condemns secret uses such as the Chamberlen family resorted to in keeping the knowledge of forceps from the public for many generations, thereby depriving humanity of the general use of an instrument valuable in saving the lives of women and children at childbirth.

Frequently the progress of a whole field of knowledge is obstructed until someone comes forward with one item of knowledge which removes the obstacle. As soon as knowledge becomes public property, its possibilities may then naturally develop within its particular field by receiving the attention of those working in that field. The progress of science and the useful arts is promoted by promptly putting knowledge into the possession of the public that it may grow and bear fruit.

The Constitution of the United States in Article I, Section 8, Clause 8, has given Congress power to bring this about in a specific manner, namely, by granting to the inventor as an inducement to prompt disclosure the exclusive use of his contribution for a limited period. This indicates the doctrinal basis which is to be developed. Congress has legislated and provided for such a grant to the inventors who bring new ideas of certain types to the public. But as a condition precedent to the grant, the inventor must put the public sufficiently into possession of the idea that its possibilities will be clearly understandable. It must, indeed, be so far understood as to contribute to the sum of human knowledge, and be accessible to the public as an established fact in the art. Congress therefore has expressly required, as a prerequisite to the grant of a patent, a written description of the invention in “full, clear, concise, and exact” words.

† United States Naval Academy, 1924; LL. B., 1929, University of Pennsylvania; member of the Philadelphia Bar.
This limited monopoly of seventeen years in itself aids in the promotion of the progress of science and the useful arts, aside from its function as a reward and inducement to inventors promptly to bring their inventions to the public domain. The limited monopoly which is in a sense given in exchange for the disclosure filed in the Patent Office invites the commercial development and practical perfection of the invention because it offers a reasonable inducement for the expenditure of capital during the problematic and non-productive period of speculative development. The benefits and protection of the monopoly are instrumental in giving the invention a start in overcoming strong prejudices in favor of the old and in combating deep antagonism to change by the introduction of a new invention. This artificial stimulus is necessary to bring home to an unsympathetic public a full realization of the possibilities in an invention. Sir William Osler recognized the difficulty in getting inventions accepted when he said, "In science the credit goes to the man who convinces the world, not to the man to whom the idea first occurs." There is another way in which the monopoly stimulates development industrially. The efforts to get around the monopoly, to evolve something to compete with the invention, direct inventive attention and effort to the new field and frequently new and better ideas emerge which surpass the pioneer invention. Improvement begins long before the monopoly expires because the public has full possession of the idea at the inception of the monopoly for pure experimentation even though commercial and general use is restricted.

Many countries further insure an early and prompt realization of the possibilities of a new invention by attaching working requirements to the patent grant. These working requirements appear in various forms, but all are designed to prevent a patentee from standing in the road of practical commercial development if he himself is unwilling or unable to practice the invention. In some countries there is provision for a compulsory license from one who is not working his invention; in other countries a forfeiture may result from the failure to work the invention and benefit the public in whose name the monopoly is given to the inventor. In the United States a patentee need not practice his invention to preserve his monopoly, though the justice of the working requirement is recognized in the rule that a paper

7. (1934) 16 J. PAT. OFF. Soc. 82-83.
THE PATENTABLE INVENTION

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patent, that is, one which has not been worked, will be strictly construed and limited.9

This increase of the store of received public knowledge is the dominant consideration at the root of the patent law, and the rewarding of an inventor, however meritorious his efforts, is purely incidental and subordinate.10 It is the putting of the public into possession of something it did not previously enjoy that entitles one to a patent. A patent monopoly given only as a reward for meritorious efforts was illegal at common law. Novelty is the essential justification of the monopoly. When the monopoly is limited to a novel contribution, the public is not deprived of anything that it had before the inventor came forward with his idea.11

The principle that novelty is the justification of the monopoly appeared early in the history of patent law. The monopoly in the early common law was unlawful if it deprived the public of something it possessed before the patentee's contribution was made. The odious monopoly lacked the basis of novelty of subject matter. This principle was embodied in statutory form in the famous statute against monopolies passed by Parliament in the reign of James I.12 The statute prohibited all monopolies except monopolies "to the first and true inventor or inventors of such manufactures, which others, at the time of the making of such letters patent and grants did not use, as they be not contrary to the law, nor mischievous to the state".13

This distinction in monopolies is sound and lies at the root of the patent law. It was recognized both by common law and by statute at a time when the abuse of the monopoly was at its worst. Even Soviet Russia, although abolishing private property, retains a patent system for granting private monopolies in the use of new inventions.14 The patent right based on novelty is the most dignified of property rights, for the patentee takes nothing from the public but only gives.15

11. Costruzioni Meccaniche Canavesi v. Mavani and Ferrari, 34 Pat. & T. M. Rev. 124 (Court of Appeals, Genoa, Italy, Feb. 1936), showing a full appreciation of the operation of the principle of novelty to protect the public from being deprived of anything not contributed by the inventor. To the same effect, see ÉTIENNE BLANC, TRAITÉ DE LA CONTREFACON (4th ed. 1855) 464.
12. 21 Jac. I, c. 3 (1623). See I Robinson, LAW OF PATENTS (1890) 3-67, for the historical background of patent law.
13. 21 Jac. I, c. 3 (1623).
The far-reaching effect of the principle of novelty is shown in the history and the present law of the disclaimer. Before the disclaimer statute, it was settled law that should a patent be found to claim more than the novel invention, the whole patent was completely void. Even under the ameliorating disclaimer statute, the failure promptly to disclaim matter not properly the subject of the monopoly voids the patent in its entirety. The public should never have been deprived of it in the first place because it was not novel and hence not part of the patentee's contribution. When the public already possesses something, it is idle to talk of a contribution.

Therefore the basis of the patent law may be summarized in this fashion: The aim of the patent law is the promotion of the progress of science and the useful arts by permanently increasing the store of received public knowledge; the means to this end is the grant of the limited monopoly to inventors on their novel contributions; and the justification of this monopoly is found in the principle of novelty which limits the subject matter of the monopoly to what was not previously enjoyed by the public. This relationship of patentee and public is peculiar and their conflicting interests are best resolved according to the principle of novelty. To draw analogies to the grant, the reward or the contract only obscures the reality of the interests involved. The grant of the limited monopoly should not be construed against or in favor of either interest. An unbiased approach to the determination of the extent of novelty in each case is the best rule: “Has the patentee added anything of value to the sum of human knowledge, has he made the world's work easier, cheaper and safer, would the return to the prior art be a retrogression?”

INTERESTS IN INVENTIONS BEFORE PATENTING, AND SECRET PROCESSES

The only legal protection given to unpatented inventions is indirectly by way of equitable relief against a breach of trust. It is the breach of trust at which the law strikes primarily; the invention is protected only inci-

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dentally and to a limited extent. The patent law abhors a secret and begrudges its equitable protection to the trade secret disclosed in a confidential relationship. Where parties have been drawn into a confidential relationship by contract, express or implied, contemplating the preservation of secrecy in regard to knowledge revealed through the special confidence so accepted, equity will enjoin the breach of this faith. The recipient of this confidence will be restrained from abusing the trust reposed in him by reaping the benefit of the confidential knowledge himself or by disclosing it to others. This protection extends to strangers to the confidential relationship who obtain the knowledge by inducing, or participating knowingly in, a breach of trust. Thus the difference between rights in a patented invention and rights in an unpatented invention is that the former operate against all the world, but the latter operate against only those who obtained the invention through a breach of trust. The former are rights in rem, the latter rights in personam only.

When an unpatented invention is kept as a trade-secret, a confidential relationship between employer and employee arises by implication in the absence of an express contract of secrecy. Even though an invention is not patentable, it may nevertheless be a trade-secret and the basis of a confidential relationship. Public policy against restraint of trade, however, prohibits a trade-secret in common knowledge which workmen freely possess in the art and need for gaining a livelihood when they leave one employer for another. Absolute secrecy is not necessary but there must be a qualified secrecy to support a confidential relationship such as is implied between employer and employee. If a confidential relationship is definitely estab-

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19. DuPont De Nemours Powder Co. v. Masland, 244 U. S. 100 (1917) (leading case on protection of trade secrets); Board of Trade v. Christie Grain & Stock Co., 198 U. S. 236, 250-251 (1905); Dr. Miles Medical Co. v. Park & Sons Co., 220 U. S. 373, 402-403 (1911); Hoeltke v. Kemp Mfg. Co., 80 F. (2d) 912, 923 (C. C. A. 4th, 1936) (a secret disclosed in confidence is protected "upon the principle that equity will not permit one to unjustly enrich himself at the expense of another"); Pressed Steel Car Co. v. Standard Steel Car Co., 210 Pa. 464, 60 Atl. 4 (1904).
20. See supra note 19.
22. Feasal v. Noxall Polish Mfg. Co., 268 Fed. 887, 892 (E. D. Pa. 1920); Tower Mfg. Co. v. Monsanto Chemical Works, 29 F. (2d) 386, 387 (S. D. N. Y. 1927) ("The owner of a secret process has no right, except against those who have contracted expressly, or by implication, not to disclose the secret, or who have obtained it by unfair means."); Allen-Qualley Co. v. Shellmar Products Co., 31 F. (2d) 293 (N. D. Ill. 1929). But the voluntary divulging of a good suggestion, even though adopted, is not a sufficient reason for implying a confidential relationship where there is no actual contract, express or implied. Moore v. Ford Motor Co., 28 F. (2d) 529 (S. D. N. Y. 1928); Lueddecke v. Chevrolet Motor Co., 70 F. (2d) 345 (C. C. A. 8th, 1934).
26. Vulcan Detinning Co. v. American Can Co., 72 N. J. Eq. 387, 62 Atl. 339 (1907); 75 N. J. Eq. 542, 72 Atl. 970 (1909). But "No Admittance" signs on a manufacturing plant are not evidence that the methods used are secret, and that employees are legally precluded
lished, as by contract, the secrecy becomes relatively unimportant, provided no question of restraint of trade arises. In some cases secrecy has been presumed where a violation of confidence is shown; in others, secrecy from rivals in competition is sufficient to obtain protection against inequitable competition arising out of a breach of confidence.27

Though the trade-secret and unpatented invention are frequently spoken of as property, the truth is that the characteristics of property flow incidentally from the primary fact that the law makes some rudimentary requirement of good faith. Through this incidental protection, the trade-secret and unpatented invention can be in a sense transferred, held in trust and dealt with as a res.28 In strict theory the trade-secret and unpatented invention are not property, though they may be the basis of a patent which is property.29 In spite of this indirect protection any extended use of an invention as a trade-secret is condemned by a loss of patent rights.30

The Patentable Invention

Defined by Statute

The basic patent statute provides that “any person who has invented or discovered any new and useful art, machine, manufacture or composition of matter or any new and useful improvements thereof” may obtain a patent therefor unless the invention has been abandoned.31 The remainder of this section of the statute is directed to a definition of what shall constitute the limits of public knowledge for the determination of novelty and what shall amount to constructive abandonment. The word “discovered” has in effect been deleted by a long settled construction giving it the same meaning as “invented”.

The statute strictly limits the field of public knowledge at the date of the invention to what has been in public use, including on sale, in this coun-

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31. 29 STAT. 692 (1897), 35 U. S. C. A. § 31 (1929), amended by 46 STAT. 376 (1930), 35 U. S. C. A. § 31 (Supp. 1936). Designs and plants which are included in the statute are more conveniently treated separately from the “utility” patent, and for that reason are not included here. The same fundamental principles apply to all types of patentable subject matter with differences in detail. Novelty is the justification of all types of patentable subject matter whether useful or ornamental. Cf. the Italian Patent Statute, September 13, 1934, No. 1602, Articles 14 and 17, showing a simple statement of patentable invention in terms of novelty and utility followed by a definition of novelty; also the German statute law, STRINGHAM, PATENTS AND GEBRAUCHSMUSTER IN INTERNATIONAL LAW) (1935), 151, 197-199.
try, or patented or described in a printed publication in any country.\textsuperscript{32} The novelty of the invention is judged and considered with reference to this limited field of prior art, all other forms of knowledge being excluded as vague and transitory. There is a measure of permanency in knowledge appearing in the form of a public use or a printed publication.

The statute is equally definite on what shall amount to constructive abandonment of all patent rights. It provides that when an invention has become part of the prior art by public use in this country, or patenting or publication in any country, abandonment will be conclusively presumed unless a patent application is filed within two years. This is a statutory basis for the general principle that after an invention has been in the possession of the public for two years, monopolistic restrictions should not be allowed except in special situations.\textsuperscript{33} Where an invention has been given to the public by actual abandonment there remains no justification for the monopoly thereafter because of a lack of novelty.

Briefly, a patentable invention is definable as one which is new and useful, and has not been abandoned, actually or constructively. Novelty, the most fundamental of these qualities, is determined by a comparison with the field of public knowledge as it existed when the invention was made.\textsuperscript{34} The public knowledge is strictly limited to what has been publicly used in this country, or described in a printed publication or patent in any country.\textsuperscript{35} All patent rights to an invention may be lost through abandonment or through constructive abandonment, the latter being conclusively presumed from a delay in filing a patent application for two years after the invention became prior art. Utility, the other fundamental quality of a patentable invention, must flow directly from the novel features by causal relation. The utility is the advantage or benefit of the change over the prior art. The effect of a prior foreign or domestic patent to the inventor in terminating the patentability of his invention is a collateral limitation.

\textit{Patentable Subject Matter}

The subject matter of a patentable invention is limited by the statute to an "art, machine, manufacture or composition of matter." Thus it may be stated generally that arts and instrumentalities include all patentable subject matter. The term "art" or method is, however, subject to three limitations. First, a pure idea residing only in the mind and having no

\begin{footnotesize}
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\item \textsuperscript{32} Secret knowledge and use are not part of prior art because not in a form accessible to the public, nor is an abandoned patent application a part of the prior art. United Chromium v. General Motors Corp., 11 F. Supp. 694 (N. D. Mich. 1935).
\item \textsuperscript{33} Hendrickson v. Ronning, 76 F. (2d) 137 (C. C. A. 8th, 1935).
\item \textsuperscript{34} This strict and definite use of the term "novelty" is in contrast with the present vague and loose use of the term by digest writers.
\item \textsuperscript{35} See United States Hoffman Machinery Corp. v. Pantex Pressing Machine, 35 F. (2d) 523, 524 (D. Del. 1929), in which it is said that things may be "known to the art through patents, publications or use." See Robinson, PATENTS (1890) 423-425.
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operation outside the mind in intimate relation to physical substance is not patentable subject matter.\textsuperscript{36} Second, a principle of operation having no existence except as part of an instrumentality is not patentable as an art.\textsuperscript{37} Third, a law of nature is not patentable subject matter.\textsuperscript{38}

That pure ideas or abstract mental processes are not patentable subject matter is in accord with the spirit of the thoroughly practical patent law. The statutory classification, considered in its totality, limits "art" by interpretation to the industrial methods of the artisan according to the general character of the other three classes. A patentable art must be intimately associated with a physical instrumentality through the manner of the use or manufacture of the instrumentality. This interpretation is further strengthened by the rigid rule of reduction to practice which holds that an invention is not completed until it has been successfully embodied in practical form, and fugitive ideas remaining in the realm of pure thought have no legal standing as inventions. Arts or methods which are actually practiced with intimate relation to an instrumentality find a physical basis in that way and are rescued from the realm of pure thought. Printing or writing without structure is not patentable subject matter.\textsuperscript{39} Therefore, patentable subject matter must be either a physical instrumentality or an art or method intimately related to the operation or manufacture of a physical instrumentality.\textsuperscript{40}

On the other hand, a method which is so bound up with the operation of an instrumentality that the method cannot exist other than as part of the instrumentality is not patentable separately as an art.\textsuperscript{41} A principle of operation links the instrumentality to its purpose after the principle of cause and effect. This causal relation describes the way in which the instrumentality is used to accomplish its purpose. If the method of operation is performable by hand, for example, it has separate existence of its own and is patentable as an art.\textsuperscript{42}

\textsuperscript{36} The Canadian Patent Act of 1923, c. 23, § 7 (2), which closely follows the United States Statutes, expressly provides that no patent shall issue for any mere scientific principle or abstract theory. I Walker, Patents (6th ed. 1929) §§ 18, 20; Robinson, Patents (1890) § 166. The question of the patentability of a business method or system was purposely avoided in In re Wait, 453 Official Gazette Pat. Off. 730 (App. D. C. 1920).

\textsuperscript{37} I Walker, Patents (6th ed. 1929) § 25; In re McCurdy, 76 F. (2d) 400 (C. C. P. A. 1935).


\textsuperscript{39} In re Sterling, 70 F. (2d) 910 (C. C. P. A. 1934); In re McKee, 75 F. (2d) 991 (C. C. P. A. 1935); In re Scott, 76 F. (2d) 136 (C. C. P. A. 1935).

\textsuperscript{40} "A patentable process is a method of treatment of certain materials to produce a particular result or product." Holland Furniture Co. v. Perkins Glue Co., 277 U. S. 245, 255 (1927); Robinson, Patents (1890) 229.

\textsuperscript{41} Smith Engineering Works v. Nordberg Mfg. Co., 68 F. (2d) 492 (C. C. A. 7th, 1934); Interstate Folding Box Corp. v. Empire Box Corp., 68 F. (2d) 500 (C. C. A. 7th, 1934).

\textsuperscript{42} Waite, Patent Law (1920) 22-24; I Walker, Patents (6th ed. 1929) 25; Robinson, Patents (1890) § 159; In re McCurdy, 76 F. (2d) 400 (C. C. P. A. 1935).
A law of nature is not patentable as an art because it has in a sense a previous existence awaiting discovery by man. As natural laws they are not originated by man; they cannot be invented in the sense of the statute; and they are never patentable subject matter of themselves. Means utilizing these laws of nature may, however, be patentable subject matter. In cases of this type the novelty must be found in what was created to make use of the discovered law. The means need not be patentable over the law thus utilized because laws of nature are not part of the prior art. There must be something more than a law of nature to constitute patentable subject matter. This idea is frequently expressed in the cases holding that a claim for a law of nature is too broad and must be limited to some particular means employing that law of nature.

**Invention**

*Originality, the Essence of Invention*

The term "invention" is used very loosely and without consistency in its meaning. Frequently invention is used in the sense of creation and again in the sense of simple origination. Invention is at times confused with novelty as if novelty were an element of invention. Invention is also used to imply patentable invention. This vagueness obscures to some extent the path of reason and the significance of the conclusions reached.

The theory which regards invention as creation requires a psychological investigation of the inventor's mind to determine whether the invention evolved from the intuitive faculties of the mind or proceeded from the reasoning faculties. For this investigation, the inventor is fictitiously presumed to know all the prior art, and invention is judged accordingly. Much effort has been expended by the courts in trying to work out a definition of invention in terms of the creative powers of the mind and the line has been drawn between the intuitive faculties which mark creation and the inferior reasoning faculties. Finally the Supreme Court of the United States candidly gave up hope of defining invention in this sense and reluctantly turned to the numerous rules of thumb which had grown up as aids in dealing with the problem.

This theory is unsatisfactory for two reasons. First, it does not recognize emphatically that the justification of the patent monopoly lies in novelty and not in creation. The field of public knowledge is increased by a novel contribution quite irrespective of how the invention was conceived; and whether an invention proceeded from the intuitive faculties as a creation or from the powers of reason is not material to the justification of the award


44. McClain v. Ortmayer, 141 U. S. 419, 427 (1891) : "The 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."
of the monopoly. Second, this theory confuses invention and novelty by bringing the prior art into the question of invention through the fictitious presumption that the inventor knew all the prior art when he made his invention. Novelty as a separate statutory consideration is much better dealt with on the standard of the average man in patent law, the skilled artisan. Instead of working on an undefinable and mystical standard of creation, it is better to judge on the basis of the average man as is done in all other fields of the law.

Consequently, it is preferable to regard originality as properly of the essence of invention and novelty as a separate consideration. If the idea was copied, or stolen, or derived from another, originality is lacking and the idea is not an invention. This meaning is simple and avoids the hopeless search for a practical definition of invention as creation. Stealing, copying and servile imitation are properly discouraged and the inventor is given the reward, if justifiable on the basis of novelty. There is no occasion for wasting time to investigate the inventive or creative faculty when novelty is the crucial consideration of each case. An investigation of the mental process of an inventor must always lead into a hopeless labyrinth and at the same time it improperly emphasizes the character of the inventor's mind when the attention should be focused on what new contribution was made if any. Therefore, invention may be defined as origination in contradistinction to copying or imitation, and an invention may be new or old depending on the prior art at the date of the invention. A patentable invention is thus an invention that is new and useful.

**Reduction to Practice**

Even though an idea be the product of original thinking in contradistinction to copying, it does not amount to invention in the eyes of the patent

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46. The basis of this theory is clearly indicated in the following quotation: "Originality is the basis of copyright protection and mere copying can in no way satisfy the constitutional aims of the law. This requirement is also true in patent law. But in copyright law it is not necessary that there be novelty which is an added requirement for patent protection." See Fred Fisher, Inc. v. Dillingham, 298 Fed. 145 (S. D. N. Y. 1924) in which originality and novelty are carefully distinguished.

47. "The merit is the same, whether the invention was the fruit of accident or design; because the merit consists in having realized the idea and carried it out in practice." Curtis, *Patents* (3d ed. 1867) 27. "Still, we read in many of the adjudged cases frequent discussions of the question, whether the inventive faculty has been at work in the production of a particular thing. And nothing is more common than to witness at the bar, in the trial of patent causes, a great expenditure of evidence and argument upon the inquiry whether a particular change from an old to a new article, process, method of operation or combination amounts to an invention, within the meaning of the patent law. It may be doubted, whether all the different forms of stating or investigating the question of sufficiency of invention are anything more than different modes of conducting the inquiry, whether the particular subject of a patent possesses the statute requisites of novelty and utility, both of which qualities must be found uniting in it." Id. at 23-24.
law until it has been put into practical form. The fugitive idea has no standing without a physical basis. A reduction to practice tests the completion of the idea in practical form and carries with it the best demonstration of the utility and worth of the invention. Publication is not an element of reduction to practice; a reduction to practice may take place in secret. When an invention is fully described and claimed in an application for a patent, it is thereby represented in a physical form and in effect reduced to practice, if found allowable by the Patent Office. Whether there must be an actual use depends on the character of the invention, but in the great majority of cases a convincing use is necessary as the final test of operativeness and completion. In certain exceptional cases where the successful operation is at once apparent from the physical embodiment itself, an actual use is not necessary. An abandoned experiment has no standing as an invention because without recognized success there is no completion in practical form. An invention, therefore, is an original idea physically expressed in practical form.

The Date of Invention and Priority between Rival Claimants

The date of invention is important for the determination of the field of the prior art on which novelty is to be judged. It is also important where there are rival claimants to the same invention. Logically, the date of invention is the date of its reduction to practice or completion; and prima facie the first to reduce to practice or file a patent application is the first inventor. He who first completed the invention and made it available to the public in practical form should be the first inventor because he first gave the knowledge to the public. However, out of considerations of justice to the inventor, it is recognized that the meritorious part of the inventive act is the conception; and hence the date of conception may be recognized as the date of invention, provided it is shown that there was no lack of diligence in reducing to practice. By the requirement of diligence, the interests of the public in a

50. An abandoned application is not a constructive reduction to practice; it is only evidence of conception. Euth v. Oliver, 70 F. (2d) 110 (C. C. A. 2d, 1934).
54. See in this connection the Canadian Patent Act, 1923, c. 23, § 37a (1), providing that a prior inventor must disclose his invention or use it in such manner that it becomes available to the public in order to establish priority. Compare in this connection the United States rule that the date of invention is limited to presence or first introduction into the United States. Rebuffat v. Crawford, 68 F. (2d) 980 (C. C. P. A. 1934).
prompt completion are thus harmonized with a feeling of justice toward the individual who first conceived the invention.55

The recognition of the merit of the first to conceive the invention is further evidenced by the relaxation of the rule of diligence in favor of the first to conceive where there are rival claimants to the same invention. Here the first to conceive is regarded as the first inventor regardless of diligence if he was also the first to reduce to practice. There is considerable justice in awarding the status of first inventorship to him who was first to conceive and also first to reduce to practice; he was the first to do the more meritorious part of the inventive act and also the first to satisfy the interests of the public in a reduction to practical form.

To sum up, the date of invention is the earliest date of conception from which diligence in reducing to practice can be shown.56 As an exception to this rule in the case of rival claimants, the first to conceive will be regarded as the first inventor if he was also the first to reduce to practice, diligent or not.57

The status of first inventorship, however, may be lost by abandonment, concealment or suppression, because such conduct is antagonistic to the spirit of the patent laws to encourage the prompt disclosure of new ideas. The doctrine of loss of rights by abandonment, concealment or suppression has its root in the case of Mason v. Hepburn.58 Later cases following Mason v. Hepburn have restricted the doctrine to those cases involving a stimulation or spurring into activity of the first inventor by knowledge of the acts of a rival inventor. Abandonment, concealment or suppression will not be inferred from a mere failure to file a patent application promptly.59


56. Under Rule 75 of the Rules of Practice of the Patent Office, an affidavit avoiding a prior art reference on the ground that the date of the invention is prior to the filing date of the reference, must show diligence to take advantage of the earlier conception date as the date of the invention which determines the prior art.

57. On priority and the date of invention, see generally Laas v. Scott, 161 Fed. 122 (E. D. Wis. 1908); Automatic Weighing Machine Co. v. Pneumatic Scale Corp., 166 Fed. 288 (C. C. A. 1st, 1909); Underwood, Interference Practice (1928) § 68.

58. 13 App. D. C. 86 (1898) in which an inventor reduced his invention to practice in the presence of a few witnesses and then for a long period did nothing further. After a later inventor had already obtained his patent on the same invention, the first inventor filed a patent application, and the patent was, in the interference proceeding, awarded to the second inventor in fact because he was in law the first inventor.

there is a distinction between a first inventor in fact and a first inventor in the sense of the patent law. Cases of the type of Mason v. Hepburn should be distinguished from cases where there was a use amounting to a "public use." On principles similar to those of Mason v. Hepburn, a prolonged secret use may work an abandonment of all patent rights to the inventor, deprive the inventor of any recognition as such under the patent laws, and invalidate any patent obtained by him for that invention.

NOVELTY

The Standard for Distinguishing Inventions From the Prior Art and From Each Other

Novelty is the justification for the grant of the patent monopoly, for when the subject matter of the grant is new the public is deprived of nothing it previously enjoyed. Thus the question of novelty involves a consideration of what the public possessed in the field of public knowledge at the date of the invention. A novel invention is one not found in the field of public knowledge, that is, it has differences distinguishing it from the old.

Consequently novelty becomes a matter of distinctions or differences from the prior art; it involves determining which of the infinite variations of subject matter in the prior art are within the possession of the public and which are not. Clearly certain variations of old subject matter which are within the grasp of the average skilled artisan are really in possession of the public in a practical sense. An art progresses naturally from the routine ingenuity of the average craftsman and the fruit of this normal growth of the art is but a part of the prior art. The public is in potential possession of all improvements within the grasp of the average skilled artisan. The prior art includes the implications of existing knowledge according to the

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62. "En effet, la loi sur la propriété industrielle, tout en accordant une protection efficace à l'invention, défend avec une égale sollicitude les intérêts du domaine public contre les empiétements de ceux qui sous le titre d'inventeurs, chercheraient à dépouiller l'industrie des ressources dont elle s'est enrichie antérieurement. Aussi la première condition imposée par la loi, c'est la nouveauté de l'objet breveté. Cette exigence est telle que si l'objet décrit dans le brevet n'est pas nouveau, le brevet ne peut être validé par l'ajout de détails consignés dans le certificat d'addition." BLANC, TRAITÉ DE LA CONTREFAÇON (4th ed. 1855) 464.

63. "Those decisions which emphasize the implications of existing knowledge . . . are speaking of smaller gains within the compass of the routineer chemist, electrician or artisan; that is not a severe test. But while the law grants its monopoly only to those whose originality is out of the common (new), it does not demand genius." Judge Learned Hand in United Chromium v. International Silver Co., 60 F. (2d) 913, 916 (C. C. A. 2d, 1932). See Embankment Patent Co. v. Miller, 8 F. Supp. 283, 285 (E. D. La. 1934) (the grant of a monopoly on a slight advance is unjust in principle).
standard of the average artisan and those variations within the grasp of the average artisan are not novel.  

The principles of the patent law are thus brought down to the average man of the art as a standard. The time is ripe in patent law for a more complete recognition of standards to operate harmoniously with those rules that have proved of value. Rigid rules which cannot take into account all circumstances of a situation have limitations and it is necessary to supplement these rules with principles and standards which do have regard for all surrounding circumstances. The standard of the average artisan is sound and understandable, and it provides the flexibility that the rigid rules lack.

The following quotation from Judge Learned Hand is pertinent here:

“In patents, as in other branches of the law, the question is of the interests involved; (patentable) inventions depend upon whether more was required to fill the need than routine ingenuity of the ordinary craftsman. Such a standard is no more a will-o’-the-wisp than others which the law adopts, reasonable care, reasonable notice, and the like; the effort is to fix the 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.”

To sum up, novelty is that attribute which an idea possesses when it was not before known to the prior art, nor was an obvious or natural development therefrom according to the standard of the average artisan skilled in that art. Developments obvious to the average artisan are part of the prior art as a natural accretion and hence are potentially in possession of the public.

Inventions are distinguished from each other in the same way as inventions are distinguished from the prior art in determining novelty. The obvious variations of an invention which are within the grasp of the average artisan are part of that invention just as similar variations of the prior art are part of the prior art. Each invention includes all obvious variations and developments therefrom according to the standard of the average artisan; and consequently, inventions are identical unless so different that one would not be an obvious development from the other by the average artisan. Inventions which are so different that more than the routine ingenuity of the

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67. This statement is similar to Article 2 of the German Statute. See Stringham, op. cit. supra note 31, 144.

68. The principle that each invention includes all obvious variations thereof according to the standard of the average artisan is the basis of the rather technical doctrine of equivalents which extends patent protection to a range of equivalent elements specified in the claims of a patent. The frequently encountered statement that infringement is not avoided by a change in detail has the same basis as the doctrine of equivalents. See H. Ward Leonard v. Maxwell Motor Sales Corp., 252 Fed. 584, 589 (C. C. A. 2d, 1918).
average artisan is necessary to develop one from the other are diverse. Inventions are thus either identical or diverse according to the standard of the average artisan and this is of particular importance in cases of interference and of double-patenting.

The Application of the Standard of Novelty

The determination of novelty is primarily a matter of the application of the standard of the average skilled artisan; this requires a consideration of all the circumstances of each particular situation. Any factor which throws light on the question whether an invention was within the grasp of the average artisan is pertinent to novelty. This standard thus relieves the rigidity of the narrow rules which are the skeleton of a legal system and must be rigid in their very nature.

There is, however, a regrettable tendency to obscure the operation of this simple standard by a number of rules of thumb which cannot have a universal application from their very nature. These so-called rules are usually of a negative character and are no more than empirical summations of the holdings of a number of similar cases; they have no force in themselves as true rules of law. As an aid in the application of the standard of the average artisan, they summarize factors which may be pertinent to the question of novelty. When these guides are blindly given a supremacy as rules of law and the superior standard lost sight of or subordinated to them, error and confusion is the result. Like Gresham's law in regard to the circulation of money, the spurious rule made as a hasty generalization with a superficial appearance of truth tends to drive the superior but more subtle principle and standard out of circulation in the legal world. These generalizations of what factors may throw light on the question of novelty must not be allowed to interfere with the full operation of the standard of the average artisan, their only excuse for existence.

There are many of these factors which bear more or less on the question of novelty. If many people have independently contrived the improvement in question, or if any average artisan when shown the prior art and given the problem produces the improvement, this is evidence of the lack of novelty. But if a particular need has been long recognized and unsuccessful efforts made towards a solution of the problem, it can hardly be said in the

69. See supra note 45; Eibel Co. v. Paper Co., 261 U. S. 45, 63 (1923).
absence of other circumstances to have been within the grasp of the artisan no matter how simple the improvement. Immediate acceptance by the public and great commercial success may evidence the widely felt need which awaited something more than the efforts of the average artisan, provided of course that the need was not afterwards created by the commercializing of the improvement. Even the attitude of the public generally toward an invention, or the way in which the art and competitors received and regarded the invention may be pertinent. Thus novelty in terms of the skilled artisan "is always a function of the particular situation, of the conditions which preceded and followed the appearance of the composition or the machine" and this is a better standard "than easy absolutes which fit the immediate occasion but lie athwart any realistic treatment of the next case." This is the historical method advocated by Judge Learned Hand; it looks to the history of the art and to all the surrounding circumstances for a determination by the standard of the average artisan of the question whether a novel contribution has been made to the public knowledge or not.

Many of these generalizations which are in the form of simple rules are concerned with the specific character of the improvement made. For example, excellence of workmanship is generally no basis for novelty because it is usually found in the field of artisanship. Likewise, duplication, changes of degree, proportion, size or material, omission of elements, substitution of equivalents, mere juxtaposition of elements, and analogous use are matters usually within the sphere of activity of the average skilled artisan. But these rules are not true legal rules; if in a particular case any of the types of improvements mentioned above is beyond the skill of the average artisan, novelty is present regardless of the rule. This is illustrated in the case of the Edison incandescent light which involved a mere change in the diameter of the light filament. This simple change of size was held to be a patentable invention, that is novel and useful.

74. Cases collected in 1 WALKER, PATENTS (6th ed. 1929) 74.
78. Edison Electric Light Co. v. United States Electric Lighting Co., 52 Fed. 300 (C. C. A. 2d, 1892). To be patentable, a change in proportion or degree must be "critical", producing a difference in kind rather than a difference in degree. In re Dreyfus, 73 F. (2d) 931, 934 (C. C. P. A. 1934). See Remington Rand Bus. Service v. Acme Card System Co., 71 F. (2d) 628, 632 (C. C. A. 4th, 1934) in which the court said: "There is, however, no rule of law that the substitution of a new material for an old is not patentable. The question is always whether the alteration requires invention or merely the exercise of mechanical skill and judgment." See Judge Learned Hand in B. G. Corp. v. Walter Kidde & Co., 79 F. (2d) 20, 22 (C. C. A. 2d, 1935).
The determination of the patentability of combinations of old or partly old elements such as the combination of an eraser and a lead pencil has been something of a problem, judging from the confusion in the cases.\textsuperscript{79} The realities of the problem itself have been obscured by the growth of a puzzling doctrine of "aggregation", as is frequently the case with difficult knots in the law. Apparently, an aggregation is a combination which is obvious to the average artisan, or perhaps, it is a combination which consists merely of juxtaposed old elements and hence is not usually novel.\textsuperscript{80} Judge Learned Hand has pronounced the doctrine both useless and incomprehensible. He tells us that "aggregation" is a catchword without definite meaning.\textsuperscript{81}

Actually the problem is best dealt with on the standard of novelty based on the average artisan like any other case. If the combination by which the advantages of the invention are secured is not within the grasp of the average artisan, novelty is present and the combination is patentable.\textsuperscript{82} If novelty is lacking there is no need to coin a new legal term such as "aggregation" to damn it. Doubtless an aid in the application of the standard of novelty is found in the empirical rule summarizing the cases of this type to the effect that mere aggregation or juxtaposing of old elements is usually obvious to the average artisan.\textsuperscript{83}

Possibly the doctrine of aggregation is the expression of a faint hope that the way in which the elements are related in a combination may solve mechanically the question of novelty, but even absence of mechanical interaction is no test of aggregation.\textsuperscript{84} At any rate it contributes little to the solution of the problem of determining a patentable invention, and it is best to abandon it for the simple standard of the average artisan.\textsuperscript{85}

\textsuperscript{79} Reckendorfer v. Faber, 92 U. S. 347 (1875); see also Grinnel Washing Machine Co. v. Johnson Co., 247 U. S. 426 (1917) in which the combination in question was of a washing machine and wringer.

\textsuperscript{80} A frequent quotation from a classic case on this point is: "Merely bringing old devices into juxtaposition and there allowing each to work out its own effect without producing something novel is not (patentable) invention." Hailes v. Van Wormer, 87 U. S. 353, 357 (1873). In an inspired effort to give this doctrine life, an analogy has been drawn to a football team and a track team, the former being like a patentable combination and the latter like an aggregation. Skinner Bros. Belting Co. v. Oil Well Improvements Co., 54 F. (2d) 896, 898 (C. C. A. 8th, 1931).


\textsuperscript{82} "If the result flows from such combination which is new and useful, and which is not inherent in each of the features assembled, and which is beyond the skill of the mechanic, the issuance of a patent for such a combination may be justified." In re Gehres, 73 F. (2d) 505, 506 (C. C. P. A. 1934); In re Cordes, 76 F. (2d) 302, 304 (C. C. P. A. 1935)—"the combination is obvious to persons skilled in the art and, therefore, not new or novel in the patentable sense"; In re Haldler, 73 F. (2d) 507 (C. C. P. A. 1934) ("a vital union" is necessary).

\textsuperscript{83} This is all that is implicit in the case of Hailes v. Van Wormer, 87 U. S. 353, 357 (1873).

\textsuperscript{84} Sachs v. Hartford Electric Supply Co., 47 F. (2d) 743 (1931).

\textsuperscript{85} Ibid.
The Substance and Limits of the Prior Art

Prior art is the field of public knowledge on which the novelty of an invention is judged. It is a stable and definite body of knowledge which is actually in the possession of the public and from which the more casual type of knowledge is excluded as too vague and fugitive to gain a foothold in the art. Until casual knowledge becomes an established fact by appearing in a public use or in a published record, it is not actually in possession of the public. Therefore the prior art is strictly limited to knowledge which has either gone into public use in this country or been recorded anywhere in a printed publication or patent. Public uses outside this country are so unlikely to come to the attention of the art that they are excluded from the prior art as casual knowledge. Nor does the prior art include a “lost art”, which is knowledge that was once prior art but has since been forgotten and is no longer recorded in a printed publication or patent.

A public use must be something more than a mere casual or experimental use; it must be a use “so far understood and practiced or persisted in as to become an established fact, accessible to the public and contributing definitely to the sum of human knowledge.” Nothing short of a reduction to practice will do. A public use is determined by its relation to the public knowledge, a relationship which permeates and dominates the growth of patent law; and questions of public use are decided by “considering whether in fact the use was such as to impart knowledge to the trade at large.” All circumstances are to be taken into consideration. There can be no question of public use until the stage of experimentation is past and a reduction to practice accomplished. A simple placing “on sale” has the effect of a public use under the statute; the statutory words “on sale” are properly interpreted as a species of public use which is commercial in character and peculiarly well adapted to inform the art.

86. Just as “a conception of the mind is not an invention until represented in some physical form” [Symington Co. v. National Casting Co., 259 U. S. 383, 386 (1919)], also a conception of the mind is not prior art until represented in some physical form. “It is not public knowledge of his invention that precludes the inventor from obtaining a patent for it, but a public use or sale of it.” Elizabeth v. Pavement Co., 97 U. S. 126, 136 (1877).

87. ROBINSON, PATENTS (1890) 423 et seq.

88. WAITE, PATENT LAW (1920) 92-96.


92. See Peerless Roll Leaf Co. v. H. Griffin & Sons Co., 29 F. (2d) 646, 648, 649 (C. C. A. 2d, 1928); ROBINSON, PATENTS (1890) § 324, to the effect that the real test of a prior use is the degree of knowledge it confers on the public.

A use which is experimental in character does not amount to a reduction to practice and until success terminates the stage of experimentation, there can be no public use. An experimental use is a use conducted in good faith for the main purpose of testing the qualities of an invention and for no other purposes not naturally incidental to that. An incidental profit or sale is not necessarily inconsistent with experimentation. The character of a use depends upon a full consideration of all surrounding circumstances.

A "printed publication is anything which is printed and without any injunction of secrecy, made accessible to any part of the public. . . . While it is true that the phrase 'printed publication', presupposes enough currency to make the work part of the possessions of the art, it demands no more." A single copy in a library gives sufficient currency to put the public into possession; and a freely circulated catalog, however ephemeral its existence, is even more fitted to inform the art because the catalog goes directly to those whose interests make them more likely to observe and remember whatever may be new and useful. A typewritten publication is probably not a "printed publication" because it is less permanent in character and is limited to a few copies. On the other hand, a "printed publication" is not limited to words but includes drawings and figures. The question of what constitutes a printed publication depends upon what the art necessarily gathered from what appeared; currency and a form understandable to the average artisan are necessary to impart knowledge to the art.

94. Utilities Service v. Walker, 78 F. (2d) 18 (C. C. P. A. 1935). Where a use demonstrates that the invention is complete and is capable of producing the result sought to be accomplished the experimental stage ends. Hall v. Macneale, 107 U. S. 90 (1883). Improvements may still be desirable. Smith and Griggs Co. v. Sprague, 123 U. S. 249 (1887).

95. Elizabeth v. Pavement Co., 97 U. S. 126 (1877); 1 Walker, Patents (6th ed. 1929) § 139.

96. 1 Walker, Patents (6th ed. 1929) § 139. But a public use by one other than the inventor does not raise any question of a public use unless the use was subject to restrictions and under the control of the inventor for the main purpose of experimentation. Root v. Third Ave. R. R., 146 U. S. 210 (1892); Elizabeth v. Pavement Co., 97 U. S. 126, 134 (1877); Egbert v. Lippman, 104 U. S. 333, 336 (1881); Swain v. Holyoke Mach. Co., 102 Fed. 910 (D. Mass. 1900). The main purpose of the transaction involving the alleged use is a prime consideration. Denivelle v. MacGruer & Simpson, 14 F. (2d) 329 (C. C. A. 9th, 1925).


98. Jockmus v. Leviton (Judge Learned Hand), 28 F. (2d) 812, 813 (C. C. A. 2d, 1928); Imperial Glass Co. v. A. H. Heisey & Co., 294 Fed. 267 (C. C. A. 6th, 1923). "Something more than printing is required. The statute goes upon the theory that the work has been made accessible to the public, and that the invention has been thereby given to the public and is no longer patentable to anyone." Collier v. Simpson, 20 Fed. 906, 910 (D. Ore. 1884).


A patent is a form of publication; the public is in possession of all that is clearly described according to the standard of the average artisan. A foreign patent is effective as a publication from its issuing date; a United States patent, from its filing date. The distinction is explainable on the ground that foreign patents are not in the possession of the public of the United States until sealed and issued, but the filing of an application for a United States patent is a contribution to the public by the filing.

**Utility**

A patentable invention must be new and useful. The utility must flow from the novel feature of the subject matter of the invention in the form of some advantage or benefit; the utility or advantage must be caused by the novel feature. In this way the utility and novelty unite together in the same invention. If the advantages or benefits are mischievous or prejudicial to the public welfare, there is no utility in a legal sense. If the invention is inoperative, it cannot be said to be useful because its purpose is not satisfied and no benefits or advantages flow from the novelty. The degree or amount of utility is not important; presence of any utility whatsoever is sufficient to sustain a patent. The degree of the invention depends upon how novel the change from the prior art was, irrespective of whether the benefit was great or small. Commercial success is evidence of utility; and the act of infringement itself estops the infringer from even questioning utility.

**Abandonment**

The final requisite of a patentable invention is that it has not been abandoned. Abandonment may be actual or constructive. Actual abandonment occurs whenever there is an unequivocal relinquishment of all expectation of securing a patent therefor, and an accompanying formation of an expectation that the invention will always be free to the public.

103. Alex. Milburn Co. v. Davis-Bournonville Co., 270 U. S. 390 (1926); Hazeltine Corp. v. R. E. B. Service Corp., 8 F. Supp. 100, 105 (E. D. N. Y. 1934). See In re Youker, 77 F. (2d) 624 (C. C. P. A. 1935) (the court treated a patent as prior art as of its filing date but observed that it was not technically prior art at that time).
104. 1 Walker, Patents (6th ed. 1929) § 117; Waite, Patents (1920) 107-117.
110. 1 Walker, Patents (6th ed. 1929) § 132.
For example, a patentee abandons on the issue of his patent all unclaimed subject matter, unless abandonment is negatived by other then pending applications on the same invention.\textsuperscript{111} All rights are preserved through other copending applications until a hiatus in prosecution occurs. Constructive abandonment is a conclusive presumption arising from an appreciable period of possession of an invention by the public, regardless of the intent of the inventor. For example, the statutory bars to applications for a patent fix this period of public possession as part of the prior art at two years.\textsuperscript{112} Abandonment is a bar to the grant of a patent because the invention is then irrevocably public property; there can be no novelty thereafter to justify the grant of a monopoly.

Constructive abandonment is traceable directly to the early patent statutes which included as an element a limited consideration of the intent of the inventor towards his invention. Constructive abandonment now excludes any consideration whatsoever of the mental element of abandonment and regards only the length of time that the public has possessed the subject matter as part of the prior art. If an invention has been in the prior art for two years, it is conclusively presumed to be abandoned and not patentable on an application filed thereafter. The prior art in questions of constructive abandonment is determined in the same manner as in questions of novelty with the possible exception that a United States patent in questions of abandonment is considered to become prior art on its sealing or issuing date instead of its filing date.\textsuperscript{113}

Constructive abandonment appears to be a deep principle or doctrine which is slowly taking form in the patent law. It first appeared in the form of statutory bars to the filing of applications for a patent after the invention had been in the prior art for a two-year period. It spread later to the amendment of a patent or application and restricted a reissue, a divisional application, or an amendment copying claims from issued patents, to a two-year period after the subject matter had become prior art, unless special


\textsuperscript{113} Stelos Co. v. Hosiery Corp., 72 F. (2d) 405 (C. C. A. 2d, 1934). See Milburn v. Davis-Bournonville Co., 270 U. S. 390 (1926). Compare the rule in interference proceedings which limits the prior art in questions of constructive abandonment or laches in presenting claims to a consideration of patents only, thus narrowing the issue of priority. Hendrickson & Nelson v. Romming & Romming, 76 F. (2d) 137 (C. C. P. A. 1935).
circumstances be shown justifying the delay. This principle recognizes that subject matter in the prior art should be freed from the threat of future monopolistic restrictions after a reasonable period in the possession of the public.

If an invention is not patented, the free use of the public should not be disturbed after two years; if it is patented, the patentee, his assignees, licensees and grantees should not be disturbed. In order that a new idea may be fully developed in use without apprehension of further monopolistic rights, the public is invited by this principle to regard a two-year period in the prior art as a limit beyond which further restrictions may not attach, except in special circumstances shown as justification of the delay. A delay of two years or more after subject matter became prior art must be justified by a showing of special circumstances to sustain an amendment by a reissue, a divisional application, or a presentation of claims in a pending application directed to this subject matter.

The doctrine of constructive abandonment may be summarized thus:

(1) After subject matter has been prior art for two years it is then conclusively presumed to have been abandoned by all who have not previously filed patent applications disclosing that subject matter.

(2) But those who have filed such applications before the running of the two-year period may further protect the subject matter originally disclosed, by other claims introduced by amendment, provided the delay is justified in the light of special circumstances.

CONCLUSION

This paper has been restricted to the basic principles on which an invention is granted legal protection by the issuance of a patent; matters concerning the patent itself, such as interpretation, infringement, and pro-


115. The requirement of diligence (under the doctrine of laches) in the filing of a reissue to broaden a patent is a later development and an added limitation to the reissue doctrine. It should not be confused with constructive abandonment which was an earlier limitation attached to the reissue right. Though a delay of less than two years need not be justified by an affirmative showing of additional circumstances, an unreasonable delay of any length of time after the error was or should have been discovered may invalidate a reissue under the doctrine of laches. Today the requirement of diligence in the reissue doctrine seems to be supplanting the doctrine of constructive abandonment as a much greater limitation on the doctrine.

procedure for obtaining a patent, have been put aside for separate treatment. Patentability is after all simply a function of originality, novelty and utility. In a real sense, abandonment is included in novelty, because what is abandoned is then in the public domain and hence no longer new. Novelty is judged on a prior art composed of patents, publications and domestic public uses, according to the legal standard of what is obvious to the average skilled artisan. The public is protected in what it enjoyed and possessed before the inventor's novel contribution; the progress of science and the useful arts is promoted in a just manner by the grant of a limited monopoly to the inventor on his novel contribution.\footnote{17}

\footnote{17. Mention should be made of a collateral limitation on patentability which is not to be confused with the main requisites. Two patents to the same inventor claiming the same invention might be cumulative and thus extend the monopoly on that invention. Consequently, patentability is terminated so far as the invention claimed is concerned by the issuance of a patent thereon. See Stringham, Double Patenting (1933). Further, the issuance of a foreign patent tolls the inventor's rights to a domestic patent unless preserved by an application filed within twelve months of the filing of his first foreign application. 32 Stat. 1225 (1903), 35 U. S. C. A. § 32 (1929).}