

**[Letter to Hon. C. Cushing, Attorney General of the United States,
concerning the patent issued to Dr. W.T.G. Morton].**

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National Library of Medicine (U.S.)

Publication/Creation

[Boston?] : [publisher not identified], [1855?]

Persistent URL

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HON. C. CUSHING,

Attorney General of the United States.

Sir—Dr. W. T. G. Morton holds a patent for “ a new and useful improvement in surgical operations,” which is described in his specification as consisting of the application of etheric vapor, by inhalation, producing thereby a state of insensibility to pain, while the patient is under the action of the knife or other instrument of surgical operation. I understand that the question of the validity and scope of the patent has been referred to you by the President, with the view of some action by the government on the subject of compensating Dr. Morton for the use of his invention in the army and navy of the United States.

Assuming, what I understand to be conceded by the President, that Dr. Morton is the inventor or discoverer of what is now known in surgery as *etherization*, and that in the year 1846 Letters Patent were granted to him for this invention, while, at the same time, the government have all along made use of the discovery in the army and navy without any compensation to the patentee ;—I presume that the question now referred to you is, substantially, whether the subject matter of the patent belongs to the class of inventions or discoveries intended to be embraced by the Patent Laws ; and, if so, what is covered by the claim of the patentee ?

With regard to the first branch of this question, I have to submit to you, that the government has already acted upon and decided it, in that department which is appointed by law to adjudicate on every question of an alleged patentable discovery or invention, and has issued Letters Patent securing to Dr. Morton the exclusive right to make use of the improvement described in his specification. This adjudication, it is true, does not conclude the question as between individuals. The patentee must still resort to the courts of law, to enforce his claim against private persons, and such persons may there contest his claim ; but even as against individuals, it is the well-settled rule of law, that the Letters Patent are *prima facie* evidence, at least, of their validity, with regard to the novelty of the invention ; and with regard to the patentability of the subject matter described, they are none the less presumptive evidence, even if they are not conclusive.

See the cases of Alden v. Dewey, 1 Story's R. 336. Woodworth v. Sherman, 3 Story's R. 172. Stearns v. Barrett, 1 Mason 153. Philadelphia and Trenton Railroad Co. v. Stimpson, 14 Peters 485.

Such being the rule as between individuals, it is not easy to see why the same rule should not be applied as against the government. Indeed, it may be doubted whether the government can with propriety dispute the validity of its own grant, made by a department specially constituted to determine the very question of patentability, as a prerequisite to the grant itself. I do not mean to present this point in the light of an *estoppel* ; because, as the United States cannot be sued for the infringement of a patent, the question of a strict estoppel cannot arise. But when the government is pleased to meet the paten-

tee in this case *in foro conscientia*, and to pay him compensation, if it has infringed any of his rights, the fact that those alleged rights are held under a grant made by the government itself, is of no small weight and significance. It may, and it is respectfully submitted that it should, be regarded by the government as decisive of the propriety of paying Dr. Morton a compensation, if it appears to be probable that his patent would be sustained in a court of law. The government may well say,—
 “ Let others contest the validity of this patent, and subject it to the severe scrutiny of the rules of law ; it does not become us, totally to deny the validity or value of our own grant ; the patentee has undoubtedly made a great discovery, of infinite importance to the human race, and our soldiers and seamen have had the full benefit of it, after we have undertaken to secure to him the exclusive right to its use ; if it appears to be probable that a court of law would regard the subject of this patent as coming within the scope of the Patent Laws, it is fit that we should pay some compensation for the use of it.”

Treating the question upon this basis, I shall proceed to submit the views which I entertain of the patentability of the discovery or invention made by Dr. Morton.

In the English law, all patents for what are called “ useful inventions,” must be brought within the meaning of the term “ manufactures,” which is the expression employed in the Statute of Monopolies, to describe the subjects of such exclusive grants. But it is curious to observe the efforts that have been made by the English courts to give a wide signification to the term, in order to embrace useful and important discoveries or inventions in the arts, which have resulted in the production of no

distinct new "manufacture,"—using that word to describe the *thing made* by the new process or method,—but which have introduced a new process or method in the manufacture of an article already known; thereby producing some material and important advantage in the art or trade to which the subject matter belongs. Thus, for example, in the manufacture of lace, the flame of oil had been used to singe off the superfluous fibres of cotton adhering to the thread; but a patent for the use of the flame of gas for the same purpose was sustained, upon the ground that it was an improvement in the process. (Hall v. Jervis, Webster's Patent Cases, 100, 103.) So, also, where the invention consisted in the use of anthracite or stone coal, combined with a hot air blast, in the smelting or manufacture of iron from iron stone, or ore; and the using of the hot blast was known before in the manufacture of iron with bituminous coal, and the use of anthracite or stone coal was known before in the manufacture of iron with cold blast; but the combination of the hot blast and the anthracite was not known before in the manufacture of iron; it was held, that, as the result produced by the new combination was a better and cheaper article than that produced by the old process, the new combination might well be the subject of a patent. (Crane v. Price, Webster's Pat. Cas. 393, 408.) In like manner, where a party applied detonating powder, which he did not invent, to the discharge of artillery, mines, &c., as priming, a patent for such new application was sustained. (Forsyth v. Riviere, Webs. Pat. Cas. 95, 97, *note*.)

These instances, which might be greatly multiplied, are cited here for the purpose of showing that the new application of a known substance, producing a new and

useful effect in the arts, is, in the English law, constantly treated as a proper subject for a patent, although the English statute uses only the term "manufacture," to describe the classes of subjects for which patents may be granted.

But, under our law, there is no such restriction to a single term, descriptive of the subjects of Patents for Useful Inventions. Our statute embraces "any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement on *any* art, machine, manufacture, or composition of matter." The question then is, under which of these designations does the discovery or improvement made by Dr. Morton belong? Undoubtedly, it falls within the designation of an improvement in "an art." This term was evidently employed in the statute, to describe those processes of dealing with matter, or subjecting it to the requirements of man by the will of man, which do not fall under the other designation of a "machine," "manufacture," or "composition of matter." Thus, for example, in agriculture, there may be new processes of cultivating known fruits or vegetables, discovered by the new application of substances already existing, or by bringing matter into new and hitherto unknown relations. No new "manufacture" is produced, for the fruit or vegetable, that is aided by the process, is as old as the creation. But it is produced, or its growth promoted, by bringing its natural elements into new relations with other substances, or by subjecting it to new processes; and, therefore, if a patent should be sought for such an improvement or discovery, it must be upon the ground that agriculture is an "art," in which the inventor has made some new

and useful improvement, so important in its effects, as to produce an advantage in the business of raising or cultivating the crop to which it is applied. I use this merely as an illustration of what I conceive to be the meaning of the term "art" in the statute. Other illustrations of the scope of this term frequently occur in the administration of the Patent Office. Take, for instance, a patent granted in 1849, for an "Improvement in Tanning by Electricity;" which consisted in applying a circulation of the electric fluid, to accelerate the process of tanning hides, with any proper tanning material in solution. (Patent Office Report for 1849, Part I. p. 239.) In this case, no new "manufacture" was produced; but an improvement was made in the *art* (itself) of tanning, by the new use of a known agent. Another patent, issued in the same year, belongs to the same class. This was a patent for an "Improvement in destroying Weevil in Grain;" consisting of the application of the combined action of heat and concussion, by a particular mechanism. (Same Report, p. 252.) And in the same volume (p. 260) will be found a patent for an "Improved method of manufacturing Drop Shot;" consisting of the application of an ascending artificial current of air, to cool the descending metal.

But, in truth, the scope of our Patent Law has been so fully and accurately described by Mr. Chief Justice Taney, in delivering the opinion of the Supreme Court of the United States in the case of *O'Reilly v. Morse*, (15 Howard's R. 119,) that it seems only to be necessary to cite his observations, and then to inquire whether the patent of Dr. Morton fulfils the conditions laid down by the Court.

The Chief Justice observes :—

“Whoever discovers that a certain useful result will be produced, in *any* art, machine, manufacture, or composition of matter, by the use of certain means, is entitled to a patent for it ; provided he specifies the means he uses in a manner so full and exact, that any one skilled in the science to which it appertains, can, by using the means he specifies, without any addition to, or subtraction from them, produce precisely the result he describes. And if this cannot be done by the means he describes, the patent is void. And if it can be done, then the patent confers on him the exclusive right to use the means he specifies to produce the result or effect he describes, and nothing more. And it makes no difference, in this respect, whether the effect is produced by chemical agency or combination ; or by the application of discoveries or principles in natural philosophy known or unknown before his invention ; or by machinery acting altogether upon mechanical principles. In either case, he must describe the manner and process as above-mentioned, and the end it accomplishes. And any one may lawfully accomplish the same end without infringing the patent, if he uses means substantially different from those described.”

The observations of Mr. Justice Grier, in the same case, (p. 130) are also important in this connection.

“A new and useful art, or a new and useful improvement on *any known art*, is as much entitled to the protection of the law, as a machine or manufacture. The English patent acts are confined to “manufactures” in terms ; but the courts have construed them to cover and protect arts as well as machines ; yet without using the term art. Here, we are not required to make any lati-

tudinous construction of our statute for the sake of equity or policy ; and surely we have no right, even if we had the disposition, to curtail or narrow its liberal policy by astute or fanciful construction.

It is not easy to give a precise definition of what is meant by the term "art," as used in the acts of Congress ;—some, if not all, the traits which distinguish an art from the other legitimate subjects of a patent, are stated with clearness and accuracy by Mr. Curtis, in his treatise on Patents. "The term art applies," says he, "to all those cases where the application of a principle is the most important part of the invention, and where the machinery, apparatus, or other means by which the principle is applied, are incidental only, and not of the essence of the invention. It applies also to all those cases where the result, effect, or manufactured article, is old, but the invention consists in a new process or method of producing such result, effect, or manufacture."—Curtis on Patents, p. 80.

A *machine*, though it may be composed of many parts, instruments, or devices combined together, still conveys the idea of unity. It may be said to be invented, but the term "discovery" could not well be predicated of it. An *art* may employ many different machines, devices, processes and manipulations, to produce some useful result. In a previously known art, a man may discover some new process, or new application of a known principle, element, or power of nature, to the advancement of the art, and will be entitled to a patent for the same, as "an improvement in the art," or he may invent a machine to perform a given function, and then he will be entitled to a patent only for his machine.

That improvements in the arts, which consist in the

new application of some known element, power, or physical law, and not in any particular machine or combination of machinery, have been frequently the subject of patents both in England and in this country, the cases in our books most amply demonstrate. I have not time to examine them at length; but would refer to James Watt's patent for a method of saving fuel in steam engines by condensing the steam in separate vessels, and applying non-conducting substances to his steam-pipes; Clegg's patent for measuring gas in water; *Jupe v. Pratt*, Webster's Pat. Cas. 103; and the celebrated case of Neilson's patent for the application of hot blast, being an important improvement in the art of smelting iron.

In England, where their statute does not protect an art in direct terms, they have made no clear distinction between an art or an improvement in an art, and a process, machine, or manufacture. They were hampered and confined by the narrowness of the phraseology of their Patent Acts. In this country, the statute is as broad as language can make it. And yet, if we look at the titles of patents, as given at the Patent Office, and the language of our courts, we might suppose that our statute was confined entirely to machines. Notwithstanding, in *Kneiss v. The Bank*, (4 Washington C. C. Rep. 19,) Mr. Justice Washington supported a patent which consisted in nothing else but a new application of copperplates to both sides of a bank-bill, as a security against counterfeiting. The new application was held to be an art, and, therefore, patentable. So, the patent in *McClurg v. Kingsland*, (1 Howard, 204,) was in fact for an improvement in the art of casting chilled rollers by conveying the metal to the mould in a direction approaching to the tangent of the cylinder; yet the paten-

tee was protected in the principle of his discovery, (which was but the application of a known law of nature to a new purpose,) against all forms of machinery embodying the same principle."

These luminous commentaries on the statute were made in a case involving the great patent of Professor Morse for the Electric Telegraph. The question before the Court related particularly to the 8th claim in Prof. Morse's Patent, in which he claimed the use of the electric current, or electro-magnetism, however developed, as a motive-power, for marking or printing characters, signs or letters, at a distance, without reference to the specific machinery employed for transmitting the current or recording the characters. A majority of the Court were of opinion that this claim was too broad, inasmuch as it claimed the use of the electric current by all possible means; and hence the careful statement by the Chief Justice, of the scope of the Patent Law, showing that there must be not only a new and useful *result* produced in an art, but that *some means* of producing it must be described and claimed, and that the claim must be limited to the result as produced by those means. Mr. Justice Grier dissented from the opinion of the Court, and held that the application of the electric current itself was a patentable improvement in an art, irrespective of the means employed. But there was no difference of opinion among the Judges, as their views are stated in the two opinions above cited, upon the question of the patentability of an improvement in an art, when the means are described. All were agreed, that an improvement in an art, consisting of the production of a new and useful effect, by the application of a natural agent hitherto unemployd, is a patentable subject. The doctrine

of the case is, that the means, by which the result or effect is produced, must be stated, and that the claim must be limited to the result as produced by those means, or by what the law will regard as substantially the same.

The observations of both the learned Judges show that an improvement in an "art" is as much the subject of a patent under our law, as an improvement in a machine, manufacture, or composition of matter.

Now there can be no doubt that surgery is an "art." That it operates upon living beings, or organized and sentient animal matter, does not take it out of the term employed in the statute. The expression "art" is used in the most comprehensive sense, as if the Legislature were solicitous to embrace objects or subjects that could not fall under the other classifications. It is not confined to what are commonly called the useful or the polite arts, or to the sciences; but it includes whatever human effort or industry, operating upon matter, is conducted or exerted by method, process, or system.

Again, there is nothing in the statute, or in any commentary upon it by the courts, so far as I know, to confine the subjects of patents to new results or effects produced upon dead or unorganized matter. The whole field of the arts is embraced by the statute, and by the expositions of the Court, which I have cited. There is no decision and no dictum of any American court, that I am aware of, which would exclude new results or effects in the art of surgery or healing. That it is not usual for medical men, or for surgeons, to take patents for discoveries of new effects on the human system of agents hitherto unemployed, proves nothing as to the patentability of such discoveries under our law. If this is the first patent of its class, it should be recollected

that the discovery which it embraces, stands, beyond all question, in the foremost rank of such discoveries, if it is not the greatest and most important ever made in the healing arts ; and that there is no method by which the inventor can be compensated by this Government, except by the admission of his discovery to the benefits and protection of the Patent Law. That he is strictly and legally entitled to that protection, I cannot doubt ; for I have no difficulty in affirming the proposition, that, if a discovery relates to an " art," and constitutes an improvement in that art, it is a patentable subject under our law, provided the result is new, and that the means of effecting it are described and claimed in connection with it. The present age has witnessed, in this very discovery, a case in which the result or effect in an art, produced by the new application of a known agent, is so striking and so certainly the product of the new application of that agent, so beneficial to the human race, so palpable and important, that all question as to the patentability of the subject seems to resolve itself into the inquiry, whether the patent is so drawn as to avoid the difficulty of claiming an abstract principle.

Upon this question, with the patent before me, I cannot entertain the least doubt. The patent avoids entirely the defect which defeated Professor Morse's eighth claim, and conforms in every particular to the requirements laid down by the Chief Justice in that case. Those requirements are two : 1st. A new and useful result in an art, produced by certain means, so described that a person skilled in the art can produce the same result by the use of the means described. 2d. That the claim shall be limited to the result as produced by the means described, or by means that are substantially the same.

The patent held by Dr. Morton describes a new and useful result in surgical operations, consisting of the production of a state of insensibility to pain while the patient is under the operation of the knife. It describes also the means by which this state is to be produced, namely, by the introduction of etheric vapor into the lungs. It also directs the mode or modes in which the etheric vapor may be introduced into the lungs, and it claims the result or effect produced, as effected by the means described. This patent, therefore, describes and claims precisely what it should describe and claim. It enables any one, to use the language of the Chief Justice, "to produce precisely the result described, by using the means specified, without any addition to, or subtraction from them;" and "it confers on the patentee the exclusive right to use the means he specifies, to produce the result or effect he describes, and nothing more."

In considering the question, whether this discovery is a patentable subject, I have already had occasion to state the extent and nature of the claim of the patentee. The rule which determines what will constitute an infringement of this patent, is stated by the Chief Justice in the remarks cited from the case of O'Reilly v. Morse. "Any one," he observes, "may lawfully accomplish the same end without infringing the patent, if he uses means *substantially different from those described.*" Of course, if means substantially the same with those described have been used, the patent has been infringed.

The claim of the patentee, in this case, is not confined to the use of a particular kind of *ether*. The inhalation of *etheric vapor*, is announced in the specification as the means of producing insensibility to pain during surgical operations; and this vapor may, as the specification

declares, be given off by a variety of substances, known by the general term of *ethers*. The patentee states that he prefers the vapor of sulphuric ether, which is one of the varieties, but that any kind of ether may be employed; and when he sums up his claim, he makes it to cover the application of *ether*, of all kinds, in the manner and for the purpose described in his patent.

In the United States Dispensatory of Drs. Wood and Bache, (Philad. 1854, 10th edit.) the article "*Ætherea*," "*Ethers*," (p. 825,) gives three kinds or classes of medicinal ethers, and describes seven different varieties, among which are *sulphuric ether* and *chloroform*. Whether chloroform is or is not to be regarded strictly and technically as one of the ethers, is a question not now practically important; because it is presumed that it has not been extensively used by the army and navy surgeons, as a substitute for what is more commonly known as ether, for the purpose of producing that insensibility to pain claimed to have been discovered by the patentee. The Medical Bureaux of the Army and Navy will be able to state what agents they have employed for this purpose, in surgical operations, since this patent was issued; and to the extent to which those agents have been employed, which are known as ethers, or which may be used as substitutes for ethers, producing the same effect by means substantially the same with those described in the patent,—to that extent Dr. Morton claims that the government have made use of a discovery to which his patent has given him an exclusive right.

You will therefore, Sir, from the views here taken, be able, I trust, to appreciate the extent of the claim made in this patent. Notwithstanding the peculiar nature of the subject matter, the patent is so carefully drawn, and

the rules of law which determine the construction of a claim and the modes of infringement are so well settled, that it is presumed you can have little difficulty on this part of the case. The chief embarrassment arises in transferring the doctrines which have been enunciated by the Courts chiefly with a view of determining what constitutes an infringement in *machinery*, to a subject in which machinery is not employed. But the case of O'Reilly v. Morse, relieves us of this embarrassment ; for, although the question of infringement in that case related to machinery, the doctrine applied by the Court is equally applicable to every patent claiming a new and useful result by certain described means. That part of Professor Morse's patent which was sustained by the Court, covered the effect of marking or recording the signs at the local offices scattered along the line of the Telegraph, at the same time that they are recorded at the farther end of the line, by one current of the electric fluid. The question was, whether the means made use of by the defendant to accomplish the same effect, were substantially the same with the means described and claimed in the patent. In reference to this question, the Chief Justice observes, " It is a well settled principle of law, that the mere change in the form of the machinery (unless a particular form is specified as the means by which the effect described is produced) or an alteration in some of its unessential parts ; or *in the use of known equivalent powers, not varying essentially* the machine, or its mode of operation or organization, will not make the new machine a new invention. It may be an improvement upon the former ; but that will not justify its use without the consent of the first patent."

So, in the case before you, the claim of the patentee covers the new effect or result of a state of insensibility to pain in surgical operations, produced by the application of etheric vapor to the lungs; and that vapor is directed to be obtained from a substance known as ether, which is a class, comprehending several varieties. Now it will not be by a mere change of the technical name of the substance employed, or by the use of what the Chief Justice calls "*a known equivalent power,*" which does not essentially vary the mode of operation, that the charge of infringement can be escaped. If by the inhalation of etheric vapor, or a "*known equivalent power,*" as the means of producing insensibility to pain in surgical operations, such operations have been performed without pain, the new effect or result covered by the patent, has been produced by what the law regards as the same, or substantially the same, means.

I remain,

Mr. Attorney-General,

Very respectfully,

Your obedient servant,

GEO. T. CURTIS.

Boston, May 1, 1855.

his
at 11-11-55