subject to the duty imposed on such cloths. If action were necessary by the Secretary of the Treasury to put this act into force, which was not as we think, such action was taken by the circular letter of May 13, 1890, from the Treasury Department to all customs officers, publishing the act for the information and guidance of the public.

Our conclusion, therefore, is that the act was legally passed; and that by its own terms, and irrespective of any action by the Secretary of the Treasury, the duties on worsted cloths were to be such as were placed by the act of 1883 on woollen cloths.

The judgment of the Circuit Court will be reversed, and the case remanded for further proceedings, in accordance with this opinion.

ANSONIA BRASS AND COPPER COMPANY *v.* ELECTRICAL SUPPLY COMPANY.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE DISTRICT OF CONNECTICUT.

No. 165. Argued January 19, 1892. — Decided March 14, 1892.

Letters patent No. 272,660, issued February 20, 1883, to Alfred A. Cowles for an "insulated electric conductor," are void for want of patentable novelty in the alleged invention covered by them.

The cases reviewed which establish (1) that the application of an old process or machine to a similar or analogous subject, with no change in the manner of application and no result substantially distinct in its nature, will not sustain a patent, even if the new form of result had not before been contemplated; and (2) that on the other hand, if an old device or process be put to a new use which is not analogous to the old one, and the adaptation of such process to the new use is of such a character as to require the exercise of inventive skill to produce it, such new use will not be denied the merit of patentability.

THE court stated the case as follows:

This was a bill in equity for the infringement of letters

patent number 272,660, issued February 20, 1883, to Alfred A. Cowles for an "insulated electric conductor."

In his specification, the patentee stated that "before my invention copper wires had been covered with one or two braidings of cord, and paraffine, tar, asphalt and various substances had been employed for rendering the covering waterproof and furnishing a proper insulation. With conductors of this character several accidents occurred in consequence of the conductor becoming heated and setting fire to the insulation. For this reason objections were made to insuring buildings against loss by fire where electric lamp wires were introduced. To render the conductor fire-proof without interfering with the insulation led me to invent and manufacture the insulated electric conductors to which the present invention relates, which conductors have gone extensively into use during about a year and a half before the date of this specification."

His method of preparing the wire was stated substantially as follows: The wire was first passed through a braiding machine, and a layer of cotton or other threads braided about it; the covered wire was then passed through a vessel containing paint, preferably white lead or white zinc ground in oil and mixed with a suitable drier. A second braiding was then applied directly upon the fresh paint; the threads thus braided upon the paint force the paint into the first braided covering and at the same time the paint oozes through between the threads. In this way the paint was incorporated throughout the braided covering and filled up the pores; and the wire was thus perfectly insulated, and there was no possibility of inflaming the covering. "With intense heat the threads may char, but they will not burn."

"If desired," said he, "a coat of paint may be applied outside of the outer layer of fibrous material, and this may be colored, so as to be used in distinguishing the wires. It is always preferable to braid the second or subsequent coats upon the paint when fresh; but I do not limit myself in this particular, as the paint may be dried, or partially so, before the next layer of braiding is applied. Paint might be applied to the wire before the first braiding."

"I am aware that wire has been covered with braided threads; also that india-rubber, asphaltum and similar materials have been applied upon the covering, either hot or cold; but one coating of such material was allowed to set or harden before the next layer of braided material was applied. Hence the asphaltum or similar material was not forced into the interstices, and besides this all these substances ignite by the wire becoming heated, or fire will follow along upon such covering.

"I have discovered that ordinary paint composed of lead or zinc with linseed oil is practically non-combustible, and it prevents the covering being ignited by the wire becoming hot if there is a resistance to the electric current; besides this, fire will not burn along the conductor, as is the case where the fibrous covering is saturated with asphaltum, india-rubber, or similar material.

"I claim as my invention —

"1. The method herein specified of insulating electric conductors and rendering the coating substantially non-combustible, consisting in applying a layer of fibrous material, a layer of paint, and a second layer of fibrous material upon the paint before it dries or sets, substantially as set forth.

"2. An insulated and non-combustible covering for electric conductors, composed of two or more layers of cotton or similar threads, with paint that intervenes between the layers and fills the interstices of the covering, substantially as set forth."

Upon a hearing upon pleadings and proofs in the Circuit Court plaintiff's bill was dismissed, (32 Fed. Rep. 81, and 35 Fed. Rep. 68,) and an appeal taken to this court.

Mr. Charles E. Mitchell and *Mr. Joshua Pusey* for appellant.

Mr. Charles R. Ingersoll and *Mr. Morris W. Seymour* for appellee.

Mr. Justice Brown delivered the opinion of the court.

The stress of this case is upon the question of patentable

novelty. The art of insulating electric wires has been known almost as long as that of conducting electricity for practical purposes by means of wires. Prior to the use of electricity for lighting, however, the feeble character of the currents conveyed upon these wires did not require that the insulating material should be non-combustible, and the skill of the inventor was directed toward a method of insulation which should protect the wire from moisture and other external injury. For this purpose the wires were covered with braid which had been saturated or covered with tar, paraffine, india-rubber, gutta-percha, asphaltum and various substances of like nature, to exclude the action of the water and afford a proper insulation.

Upon the introduction of electric lighting it was found that this method of insulation, while efficient to protect the wire from external influences, was unable to withstand the intense heat frequently generated in the wire itself by the powerful currents of electricity necessary for illuminating purposes. At first these wires were covered with cotton which had been saturated in paraffine and other similar substances; the result was that the insulating material was melted or set on fire, and dropped off the wire while still burning, and became so frequently the cause of conflagrations that the insurance companies declined to issue policies upon buildings in which this method of insulating wires was employed. A new substance was needed which would not only operate as a non-conductor of electricity, and as a protection against moisture, but which should also be non-combustible.

This material was discovered in ordinary paint. Mr. Cowles was not the first, however, to discover that paint was useful for the purpose of insulating electric wires. In several English patents put in evidence, paint is suggested as a proper covering for protective as well as for insulating purposes, in lieu of gutta-percha, india-rubber, resin, pitch or other similar substances, but as a non-combustible insulator was never required for telegraphing purposes, there is no intimation in any of them that it possessed this quality. It had, however, been a matter of common knowledge for many years that paint was

practically non-combustible. While the linseed oil in paint is to a certain extent combustible, the carbonate of lead is a material both non-combustible and a non-conductor.

It is clear that none of these English patents can be claimed as anticipations, since they all relate to the protection of land or submarine telegraph cables, and the use of paint, so far as it was used at all, was simply as a water-proof covering for a braided wire. There is nothing to indicate that the paint, as used by them, was applied in the manner indicated by the patent, or that it made the covering non-combustible, or was intended at all for that purpose.

The most satisfactory evidence of the use of a non-combustible covering for electric wires is found in the testimony of Edwin Holmes, manufacturer of an electric burglar alarm, who states that when he first commenced using electric conductors "the wire was insulated by winding a thread, larger or smaller as the case might be, around the wire, and that thread was covered with paint," and that all his wires were "insulated in that way until paraffine was substituted for the paint." The paint was applied by drawing the wire through a vessel containing the paint, and then through a piece of thick rubber or gutta-percha, which removed the surplus paint and left a smooth surface on the thread which covered the wire. He began to cover his wires in this way as early as 1860, and says that he accomplished his insulation "sometimes by covering the wire with a thicker thread and two coats or more of paint; sometimes by a thread covering and a coat of paint, then another thread covering and a coat of paint on that." And upon being asked to describe the condition of the first coating of paint when the second coating of fibrous material and paint was put on, he said: "The first coat was partially dried, so as to keep its place, but would admit of an impression from the next covering of thread." On being called upon subsequently for an affidavit to be used on an application for a rehearing, he stated that his object was not to produce a non-inflammable wire, and that the wire used by him was not non-combustible or non-inflammable, and was no better adapted for electric light conduction than the paraffine-coated wire. He

further stated that when the second layer of braid was laid on, the condition of the first layer was not such as to cause the threads of the second layer to force the paint into the interstices, and so load the wire with an abnormal quantity of paint, as is done in the process described in the Cowles patent. The substance of his testimony in this particular was, that the coating of paint upon his first layer was allowed to harden before the second layer was applied, so that the application of the second layer would not cause the paint upon the first layer to be forced into the interstices of that layer or to ooze through the braiding of the second layer.

Thomas L. Reed, another witness, gave a somewhat similar experiment of the method of insulating wires by passing the naked wire through a tub containing paint, then braiding it, and then immersing it in a second tub containing paint, and finally passing it through jaws to scrape off the surplus paint and compress it. As this method of insulation, however, does not resemble so closely the Cowles patent as that employed by Mr. Holmes, it is unnecessary to notice it further.

Practically the only difference between the Holmes and Cowles insulators is in the fact that the coat of paint applied to the first braid in the Holmes process was allowed to dry before the second coat of braid was applied, and thereby the braid was not so thoroughly permeated with the paint as is the case in the Cowles patent. That the idea of applying the second coat of braiding upon the interposed insulating material, while such material was wet or unset, is not in itself a novel one is evident from the English patents to Brown and Williams, to Duncan and to Henley, all of which describe a method for insulating conductors by applying a layer of fibrous material, a layer of insulating material, and a second layer of fibrous material upon the former, before the insulating material is set or hardened. Indeed, it is doubtful whether Cowles considered this feature of his process as of any great importance at the time he made his application, since he speaks of it only as a *preferable* method, and says that he does not limit himself in this particular, "as the paint may be dried, or partially so, before the next layer of braiding is applied." But however

this may be, the method described by Cowles differs only in degree and not in kind from that described by Holmes. In other words, it is a more thorough doing of that which Holmes had already done, and, therefore, involving no novelty within the meaning of the patent law. Indeed, we are not satisfied that the method employed by Holmes did not, for all practical purposes, saturate the first layer of braid as completely as if the second coat had been applied while the first was still wet. The process and the results in both cases are practically the same, viz.: protection, insulation and incombustibility. There were certain affidavits introduced which tended to show that the Holmes insulator was not incombustible; but in view of the experiments made by Mr. Earle, the defendant's expert, by applying the same current of electricity to wires insulated by these different methods, we incline to the opinion that the method practised by Mr. Holmes was nearly, if not quite, as efficient in this particular as the other. If his testimony be true, and no attempt is made to show that it is not, it is difficult to see, even if his insulator were not incombustible, that Mr. Cowles did more than make use of his process in a somewhat more efficient manner.

In the case of *Gandy* v. *Main Belting Company*, recently decided, 143 U. S. 587, the patentee found that the canvas theretofore manufactured was unfit for use as belting by reason of its tendency to stretch, and to obviate this he changed the constitution of the canvas itself by making the warp threads heavier and stronger than the weft; in short, he made a new canvas constructed upon new principles, and accomplishing a wholly new result. That case is not a precedent for this.

It is true that the insulator used by Holmes was not intended to be, and perhaps was not known to be, incombustible, since this feature of its incombustibility added nothing to its value for protecting a burglar-alarm wire, which carries a current of comparatively low tension; but, as already observed, the testimony indicates that the insulator employed by him was in fact nearly, if not quite, as incombustible as that made by the plaintiff under the Cowles patent. If this be so, and

the two insulators are practically the same in their method of construction, it is clear that Cowles has no right to claim the feature of incombustibility as his invention, since nothing is better settled in this court than that the application of an old process to a new and analogous purpose does not involve invention, even if the new result had not before been contemplated. It was said by Chief Justice Waite in *Roberts* v. *Ryer*, 91 U. S. 150, 157, that "it is no new invention to use an old machine for a new purpose. The inventor of a machine is entitled to all the uses to which it can be put, no matter whether he had conceived the idea of the use or not."

In *Pennsylvania Railway* v. *Locomotive Truck Co.*, 110 U. S. 490, 494, the adoption of a truck for locomotives which allowed a lateral motion was held not to be patentable, in view of the fact that similar trucks had been used for passenger cars. All the prior cases are cited, and many of them reviewed, and the conclusion reached that "the application of an old process or machine to a similar or analogous subject, with no change in the manner of application and no result substantially distinct in its nature, will not sustain a patent, even if the new form of result had not before been contemplated." The principle of this case was expressly approved and adopted in that of *Miller* v. *Foree*, 116 U. S. 22, and has been frequently applied in the administration of patent law by the Circuit Courts. *Crandall* v. *Watters*, 20 Blatchford, 97; *Ex parte Arkell*, 15 Blatchford, 437; *Blake* v. *San Francisco*, 113 U. S. 679; *Smith* v. *Elliott*, 9 Blatchford, 400; *Western Electric Company* v. *Ansonia Co.*, 114 U. S. 447; *Spill* v. *Celluloid Manufacturing Co.*, 22 Blatchford, 441; *Sewall* v. *Jones*, 91 U. S. 171.

On the other hand, if an old device or process be put to a new use which is not analogous to the old one, and the adaptation of such process to the new use is of such a character as to require the exercise of inventive skill to produce it, such new use will not be denied the merit of patentability. That, however, is not the case here, since the Cowles process had been substantially used by Holmes for the same purpose of insulating an electric wire, and the discovery of its incom-

bustible feature involved nothing that was new in its use or method of application.

The utmost that can be said for Cowles is that he produced a somewhat more perfect article than Holmes, but as was said by this court in *Smith* v. *Nichols*, 21 Wall. 112, 119, "a mere carrying forward, or new or more extended application of the original thought, a change only in form, proportions or degree, the substitution of equivalents, doing substantially the same thing in the same way by substantially the same means with better results, is not such invention as will sustain a patent." It was held in this case that where a textile fabric, having a certain substantial construction, and possessing essential properties, had been long known and in use, a patent was void when all that distinguished the new fabric was higher finish, greater beauty of surface, the result of greater tightness of weaving, and due to the observation or skill of the workman, or to the perfection of the machinery employed. See also *Morris* v. *McMillin*, 112 U. S. 244; *Busell Trimmer Co.* v. *Stevens*, 137 U. S. 423, and cases cited.

The decree of the Circuit Court is, therefore,

Affirmed.

Mr. Justice Field dissented.

LARKIN *v.* UPTON.

ERROR TO THE SUPREME COURT OF THE TERRITORY OF MONTANA.

No. 175. Argued March 1, 1892. — Decided March 14, 1892.

Where special findings are irreconcilable with a general verdict, the former control the latter.

If the findings are fairly susceptible of two constructions, the one upholding and the other overthrowing the general verdict, the former will be accepted as the true construction.

The top or apex of a vein must be within the boundaries of the claim, in order to enable the locator to perfect his location and obtain title; but