

v.32F, no.1-6 ANSONIA BRASS & COPPER CO. v. ELECTRICAL SUPPLY CO.

*Circuit Court, D. Connecticut.*

September 3, 1887.

1. PATENTS FOR INVENTIONS—ELECTRIC INSULATOR—PRIOR STATE OF THE ART.

In letters patent No, 272,660, granted to Alfred A. Cowles, February 20, 1883, for an improvement in insulated electric conductors, the alleged invention was a fire-proof insulator. The wire, having been covered with a layer of fibrous material, was passed through a vessel of metallic paint, and a second layer of fibrous material was added while the paint was fresh, thus forcing the saturation of both layers. The non-combustibility is the result of filling the pores and interstices of the fibrous layers with the metallic paint. In previous English patents, paint had been applied to insulators in connection with inflammable materials, and solely for the purpose of protecting the insulators. It was not shown that, previous to the Cowles invention, paint had been knowingly used, except experimentally, to make a non-combustible insulator. *Held*, that the defenses failed, so far as based upon the previous English patents, and the known use of paint as a fire-proof covering for electric wires.

2, SAME—WANT OF INVENTION.

But it having been shown that, for the purpose of procuring perfect insulation, insulators had been previously composed of a double layer of fibrous material, each being separately painted, and the second layer being applied, before the first was dry, *held*, that the Cowles patent was void for want of invention.

ANSONIA BRASS & COPPER CO. v. ELECTRICAL SUPPLY CO.

*Joshua Pusey and Charles E. Mitchell*, for plaintiff.

*M. W. Seymour and Benj. F. Thurston*, for defendant.

SHIPMAN, J. This is a bill in equity based upon the admitted infringement of letters patent No. 272,660, granted to Alfred A. Cowles, February 20, 1883, for an improvement in insulated electric conductors. The patentee's view of the state of the art at the date of the invention, and of the character and scope of the patented improvement, is given in the: specification of the patent, which I quote at length, as follows:

"Before my invention, copper wires had been covered with one or two braidings of cords, and paraffine tar, asphalt, and various substances had been employed for rendering the covering water-proof 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 fireproof, 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.

"I manufacture the said fire-proof insulation of the conductor in the following manner, reference being had to the annexed drawing, which illustrates the devices employed: The wire, *a*, is passed up through the head of a braiding-machine, and a layer of cotton or other threads is placed upon the wire in the ordinary manner. The braiding head, with spools, is, indicated at *b*. The covered wire now passes in at the bottom of the vessel, *c*, through a suitable packing, *d*. This vessel, *c*, contains paint; preferably white lead or white zinc, ground in oil, and mixed with a suitable drier. The paint saturates the braided covering, and the surplus runs down the same back into the vessel, *c*, as the braiding progresses. I next apply a second braiding directly upon the paint. For this purpose a second braiding-machine head is employed, the same being shown at *f*. The threads that are braided upon the paint force the paint into the first braided covering, and at the same time the paint oozes through between the threads. Hence the paint is incorporated throughout the braided covering and fills up the pores. The braided covering is rendered even and consolidated by suitable means; such as one or two pairs of grooved rollers, *k, k*. In practical use it is found that the covering is of the most reliable character. It is compact and hard, the wire is perfectly insulated, and there is no possibility of inflaming the covering. With intense heat the threads may char, but they will not burn. For these reasons this insulated conductor is preferred to those before made.

"I remark that in the manufacture of this conductor it is preferable to reel the covered wire as it passes from the braiding and painting machine, and then remove the reel from the coil, and hang top such coil in a heated room until it is thoroughly hardened. More

than two layers of braiding may be employed, the paint intervening between the layers. Winding with threads or cords may take the place of braiding. If desired, a coat of paint may be applied outside 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, of partially so, before the next layer of braiding is applied. Paint may 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.”

The claims of the patent are as follows:

“(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.”

The patentee’s statement that after one coating of heated material, like India rubber or asphaltum, had been applied upon the first layer of braided covering of the wire, such coating was allowed to set or harden before the next layer of braided material was applied, is true, but it is not true that it was always so allowed to harden. The second layer of braided covering was often added to the wire while the first coating of water-proof material was in a wet or plastic condition.

Prior to the introduction of electric lamp lights into buildings, a principal object in the insulation of electric wires was their thorough protection against the effect of water or wet air, and therefore such substances, as paraffine, gutta-percha, and India rubber were abundantly used to saturate the fibrous covering of the wire. The expert of the plaintiff sums up the state of the art at this date by saying: “It was old to make use of a fibrous covering to the metallic wire, and it was old to saturate that covering with water-proof materials,—such, for instance, as paraffine, pitch, tar, resin in a melted condition, and also gutta-percha and India rubber in a solution, and in some instances even paint has been made use of. These substances had been used to insulate the conductor electrically, so that the current passing along the wire might not escape by contact of the covering with the support or with any conducting substances.” He further truly says, in relation to the numerous English patents which are in the record, that paint had been used “in connection with electric conductors as a protection for an interior waterproofing coating of combustible material, in which case the paint formed or became part of an armor for the electric insulating material. I do not find any instance where the electric conductor itself

was insulated, and the coating of fibrous material rendered substantially non-combustible, by paint laid in between the two layers of fibrous material, so that the particles of oxides or carbonates are pressed and bound into the fibers so as to fill the interstices thereof, as set forth in complainant's patent, and secured by the claims thereof."

These patents were generally for land or submarine telegraph cables. The wires which were generally introduced into dwellings or buildings were small wires for conducting an electric current of low tension, such as were necessary for annunciators, or for burglar alarms, and after the discovery of the useful properties of paraffine that article was almost universally used in this country to saturate the fibrous coverings of inside electric wires. When buildings began to be lighted by means of electric lamps, and it became necessary that wires for inside use should convey currents of high tension, the use of wires covered with inflammable non-conductors became dangerous. If, from any cause, the passage of the current was checked, and the wires became overheated, the inflammable covering melted or took fire, and endangered the safety of the building. The use of paraffine-covered wires inside buildings was forbidden by the board of fire underwriters in the city of New York. To guard against this danger, the patentee produced his patented conductor. The covering was not merely an insulator, but was a non-combustible insulator. It is a success, has superseded the use of paraffine-covered wire, and is universally used for inside wiring for electric lamps.

The English patents, a large number of which were introduced, are not an anticipation. They are all simply for electrical insulation, and are expedients to guard against the dangers from water, and not from fire. Where any of them use paint, such use is in connection with inflammable materials, and is simply as a protection for the water-proof covering. Neither was it shown that, before the date of the invention, which was in the spring of 1881, paint had been knowingly used, except experimentally, to make a non-combustible insulator. The defense based upon the English patents, and upon the known use of paint as a non-combustible material for covering electric wires, must fail.

The most important testimony which was offered by the defendant was that of Edwin Holmes, the president of the Holmes Burglar Alarm Telegraph Company, who had been engaged in that business for 25 years, and had there by become familiar with the methods of the manufacture of electric wires. He testified as follows:

*“Interrogatory 2.* In your business has it been necessary for you to use insulated electric conductors? and, if so, please describe the manner in which those conductors were insulated, beginning back as early as you can remember. *Answer.* It has. When I first commenced using them, 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. All of my wire was insulated in that way until paraffine was substituted for the paint. *Int. 3.* How was the paint applied? *A.* I think at first it was applied with a brush. I applied it by drawing it through a vessel containing 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. \* \* \* *Int. 9.* In your business did it ever become necessary to secure as perfect insulation of wire as possible, and, if so, what method did you take of accom-

plishing that result? In answering this question, please confine your answer to the use of fibrous material and paint. *A.* I did. I accomplished it 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 on that. *Int.* 10.

Was that second fibrous covering and second coat of paint placed upon the first covering and paint while it, the first covering of paint, was in an 'undry' or 'unset' condition? (Complainant's counsel objects because the question is leading and suggestive. Question withdrawn, and the following interrogatory substituted therefor:) *Int.* 10. Please describe the condition of the first coating of paint when the second coating of fibrous material and paint was put upon it. *A.* The first coat was partially dried, so as to keep its place, but would admit of an impression from the next covering of thread. *Int.* 11. Please state a date anterior to which you are willing to swear positively you placed, as you have described in answer to *Int.* No. 9, the second covering of thread and the second coat of paint upon the wire, in order to perfect the insulation. *A.* I did it as early as 1860, to the best of my remembrance."

I cannot doubt that Mr. Holmes used wire covered with a double coat of thread; each layer being painted, and the second layer being applied before the first painted layer had become dry. It will be observed that the method of painting was not the method of the patent, and that the object was not to make the insulation fire-proof, because he abandoned the painted wire for paraffine: wire. The object of the double coat was to produce perfect insulation.

In the spring of 1881, when the necessity had arrived for a non-combustible insulator, Mr. Cowles used first a double coated, outside painted wire, but, finding that the insulation was not perfect, next employed the process of recoating a coated and painted wire while the paint was still fresh. The question is whether the process was patentable; whether, when it was old to cover an electric wire with a double layer of thread, each layer painted, the second layer being placed upon an undried first layer, for the purpose of thoroughly insulating the wire, it was patentable to braid or wind the second layer upon a freshly painted layer, for the purpose of filling the interstices of the layers with a mass of paint, and thereby making the covering a non-combustible insulator.

At the date of the invention, the public had had an electric wire insulated by means of a double covering of painted thread, but the public did not know that such a covering was also non-combustible. Although it did not know it, it had had a non-combustible insulator; for I cannot doubt that Holmes' double covering was non-combustible in the same sense in which Cowles used the term. The thread covering of the Holmes' wire was loaded with paint. It may be said that two facts are assumed, without adequate proof,—one, that Holmes used the double covered and painted wire at all; and, next, that it was non-combustible. In reply to such a suggestion, it is manifest that the Holmes wire, either single or double covered, was one that would naturally be used in a business which required single wires, and that, in the multiform methods of insulation, his method was an obvious and simple one, as shown by the manner in which covering composed of braided and saturated thread was subsequently made. A less amount of evidence is



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required to satisfy the mind of so probable a fact than would be required in regard to a fact in its nature quite improbable. It is also true that Mr. Holmes' means of knowledge in regard to the manner of constructing his wires

were exceptionally good. In regard to the non-combustibility of the Holmes wire, I have no idea that the Cowles process is the only one which can make, by means of paint, a braided or wound thread covering non-combustible. The only requisite is to fill the interstices and pores of the thread with metallic paint. That the Holmes process upon the wires which he used was adequate for the purpose seems to me quite evident.

If Cowles had made his insulated covering in precisely the same manner that Holmes did, it could not have been successfully claimed that the fact that Cowles had discovered what neither Holmes nor the public knew, viz., that the Holmes covering was non-combustible, made the Cowles covering; patentable. The public already had the article in use as a covering of an electric wire for purposes of insulation, and also had, in the article, the additional benefit of non-combustibility. The case is not that of *Colgate v. Telegraph Co.*, 15 Blatchf. 365, in which the patentee first applied to practical use his discovery that gutta-percha was a non-conductor of electricity. It was not shown that gutta-percha had ever been used to cover an electric wire; though metallic wires which were used for other purposes had been covered with it. The case rested upon the fact that the inventor first used gutta-percha as an insulator of electric wire.

The question then arises, was the change in the method or process a patentable one? Holmes wound the wire, then painted, then wound again, and repainted. Cowles wound, subjected the wound wire to a bath of paint, then wound upon the freshly painted coat. Any one of the various old methods by which the covering is compelled to absorb a quantity of paint could be selected. The one which Cowles adopted is one which had been known in the analogous process of insulating telegraphic cables and electric wires, and was familiar to the skilled mechanic in the art of manufacturing electric cables. I see, in the adoption of this method, only a skillful selection of one of a number of methods at the hand of the patentee, and neither the creation of a new method, nor the exercise of any inventive genius in the selection.

The conclusion is that Mr. Cowles met the need of the public by furnishing to it a safe and economical non-combustible covering for electric wires, but that the history of the article is such that he cannot be called an inventor, within the meaning of the statutes upon the subject of patents. The bill is dismissed.