

wholly different from these relating to the defendant's. In the latter, there is no guide, nor need of any, as the line of force proceeds continuously from the pattern chain to the needle bar through substantially a common axis of motion.

This case and the complainant's suit against the Knowles Loom Works have compelled much attention from the court, in which it has been very greatly assisted by the counsel on each side; but, as the questions involved are wholly of fact, nothing would be gained by further elaboration of them. On the whole, we think the complainant must rely for his market, as against the defendant, on the simplicity of his mechanical device, and not on his patent. Let there be a decree under rule 21 (21 C. C. A. civ., and 78 Fed. civ.), dismissing the bill, with costs.

ELECTRIC CAR CO. OF AMERICA et al. v. HARTFORD & W. H. R. CO.
et al.

(Circuit Court, D. Connecticut. May 19, 1898.)

1. PATENTS—INVENTION—CONTROLLING SWITCH FOR ELECTRIC MOTORS.

The Condict patent, No. 393,323, for a controlling switch for electric motors, the chief feature of which is that in passing from no current, or a very low one, to a higher current, the switch is so arranged as to momentarily introduce dead resistance coils into the circuit, and then cut them out again, so that in passing from one running point to another there is a reduction of energy, by means of which the motors are protected, and sparking, shocks, and other evils resulting from excess of current, prevented, covers a broad invention, and entitles the inventor to the uses thereof as developed in the subsequent development of the art.

2. SAME—INFRINGEMENT.

Claims 27, 28, 29, and 31 of this patent, which cover the broad invention above described, *held* infringed by one who, instead of placing the resistances in a certain definite series, as described in the patent, inserts the series in the place of one of the motors, and then shunts the motors. Claims 20, 21, and 22, which cover certain minor features, also *held* infringed, and other claims *held* not infringed.

This was a suit in equity by the Electric Car Company of America and the Thomson-Houston Electric Company against the Hartford & West Hartford Railroad Company and others for alleged infringement of a patent for a controlling switch, adapted to be applied to electric motors.

Betts, Betts, Sheffield & Betts, for complainants.

Chas. E. Mitchell and Wm. F. Henney, for defendants.

TOWNSEND, District Judge. The patent in suit (No. 393,323, granted to complainants as assignees of George H. Condict) is for a controlling switch, adapted to be applied to electric motors. The issues herein relate to its use in connection with electrically propelled cars on ordinary trolley lines. The particular apparatus under consideration is the cylinder shaped switch or controller located on the ends of such cars. The current of electricity supplied from the generator and delivered to the motor is necessarily of unvarying potential; that is, it must always have a capacity to supply the full

amount of current required at any time. In the practical operation of such cars, however, it is generally unnecessary to use more than a small quantity of such current. Various constructions have been devised to regulate the supply of current according to the requirements of the motor. Originally the supply was regulated by coils of wire, known as "rheostatic" or "resistance" coils. In the first or series arrangement, the total resistance was the sum of the number of coils. In the second or parallel arrangement, the total resistance was decreased in proportion to the number of parallel paths. This method, known as the "rheostatic" or "dead resistance" method, was defective, because of its waste of energy, inasmuch as the potential thus obstructed, and not expended in propelling the car, was converted into heat, and lost. A second method of controlling the current, called the "series parallel control method," consisted in substituting for the rheostatic coils the coils of the motor itself. Inasmuch as the passage of the current through these coils develops energy in the motor, they are called "live resistance coils," as distinguished from the rheostatic or dead resistance coils. By utilizing the motor coils, the objectionable element of loss of energy was almost entirely obviated. These coils were either switched in series into a single-wire circuit carrying the current from generator to motor, or into parallel or multiple wire paths or circuits. This second or series parallel method, while theoretically of great value, for various reasons, not necessary to be here considered, proved to be impracticable, and was abandoned. In the patent in suit the inventor, George H. Condict, describes his invention as follows:

"This invention is particularly useful where the supply of electricity is great,—such, for instance, as when storage batteries or electric accumulators are used on cars, and in which the motors are regulated by varying their internal resistance, which may be done by connecting their coils in different ways. In practice, I have found that switches for regulating the power and speed of electric motors under these conditions were easily burned out, not only causing great annoyance in the operation of the cars or machine, but rendering the operator liable to injury. The trouble is mainly due to the fact that at the time of changing the motor connections the resistance of the motors is more or less cut out, and in making the new connections there is a great danger from sparking, which often short-circuits the connections, with danger of completely destroying the switch and burning out the motors. To overcome these objections, I have constructed my switch so that at the time of changing the connections I insert resistances more or less great according as to the resistance of the motor connections; that is to say, if the motor resistance is great, the auxiliary resistances would be small, and vice versa. I also so arrange the switch that the resistances are all cut out of circuit as soon as the new motor connection is made. Their function is to reduce the current flowing, so that at the time of making the change in the motor connections the current is small compared with what it would be if these resistances were not inserted; and, furthermore, these resistances are gradually cut in and out, so as not to suddenly change the resistance to the current beyond a given amount. Another portion of my invention is the reversing switch, which is arranged in the same frame or case with the controlling switch, and combined with a locking device which is operated by the controlling switch, so that when current is flowing through the motors the reversing switch cannot be moved, but when the controlling switch is turned so that all, or substantially all, of the current is cut out from the motors, then the reversing switch may be moved to reverse the motors."

It appears from the foregoing statement that in changing from no current at all, or a very low current, to a higher current, the inventor so arranged the switch as to momentarily or temporarily introduce dead resistance coils into the circuit, and then cut them out again, so that in passing from one running point, where the current was at a given rate, to another running point, there should be a reduction of energy or current, by means of which the switch and motors were protected, and sparking, shocks, and all evils which would result from an excess of current, were prevented. This is the chief feature of the Condict invention. Three other features thereof will be considered later. Complainants' and defendants' devices cannot be satisfactorily described or compared without the aid of drawings or models. The exhibits introduced upon the hearing clearly show their construction and operation, and the distinctions by reason of which noninfringement is claimed. For these reasons this opinion will not attempt to state mechanical details.

Condict so combined the two opposing systems of resistance already considered as to increase or reduce the amount of current with a saving of waste, and without sparking. In the original statement of his invention, he emphasized, as its chief object, the prevention of sparking, which, in the then state of the art, was perhaps the chief objection to existing methods. Subsequent development of the art necessitated the introduction of other means to prevent sparking in connection with his original device, and modifications thereof to adapt it to greater voltage and other conditions. Neither the complainants nor the defendants now use this patented device to prevent sparking, but both use it to regulate the current. Complainants generate the spark and extinguish it by means of a magnetic blowout. Defendants generate the spark and dissipate it by an arc-spanning appliance. The defendants use complainants' idea, and the elements of its combination, with certain changes borrowed from the existing art, and other improvements covered by Von Zweigbergk's patent. In view of all the facts proved, I find and hold that the invention of Condict is a broad one, that he is entitled to the beneficial uses of his invention as developed in the development of the art, and that defendants, in thus using his combination, infringe the patent. Condict showed in his patent four ways of coupling the coils of the motors, commencing with the first position, in which the circuit is broken, and there is no current on. In the second position the current from the generator passes in series, successively, through two coils of each of two motors, and through the armature of the second motor. In changing from the first position of broken circuit to the second position, which represents the circuit of greatest resistance, and consequently least amount of current, a single dead resistance coil is automatically switched into circuit; and, as soon as the circuit is made, it is cut out again. In the next succeeding position the field coils of each motor are coupled in parallel, instead of series, circuits. In the next the motors, as a whole, are arranged with their circuits in parallel paths. As these successive changes successively cut down the motor circuit resistances, a proportionately greater amount of dead coil or rheostatic resistance is switched in, and then

cut out, in order to obviate the various objections involved in too sudden changes of current. The defendants' apparatus is constructed under patent No. 545,884, granted September 3, 1895, for a controller, to T. Von Zweigbergk. The Von Zweigbergk patent describes a development of an improvement upon the Condict patent. The defendants unquestionably use the elements of complainants' combination, but they use them in connection with a dissipator which does not infringe. Furthermore, between Condict's four positions they interpose notches showing intermediate points where the handle of the controller may be stopped when resistances only have been introduced or cut out without circuit changes. The defendants do not seriously deny patentability, but do deny infringement, and claim that while the Condict device involved invention, and was useful for the purpose for which it was devised, namely, to prevent sparking where there was a low potential, it is utterly impracticable for use in the ordinary trolley of to-day, and is obsolete, and has been discarded both by complainants and defendants. The claim that the original Condict controller is now a useless contrivance is not so far sustained by proof as to be material. The claim that complainants have attempted, by advertising circulars, to crush defendants by unearthing an obsolete patent, was satisfactorily answered at the hearing. The modified form of controllers now used by complainants were constructed by them before the defendant corporation commenced the manufacture of their controllers. Complainants always asserted that they were constructed under the Condict patent, with modifications. The advertising circulars which complainants introduced were not issued until after this suit was brought, and appear to raise merely the question as to the comparative merits of complainants' patent magnetic blowout and defendants' patent dissipator in taking care of the surplus voltage. The Von Zweigbergk patent covers the latter improvement, which comprises an arc-spanning system consisting of strips and contact fingers connected in series before every circuit change, but useful only when the current is reduced. These fingers so engage with said strips, and are so connected with the resistances and motors, that in alternating positions of the switch they may be utilized, after one connection is broken, by the introduction of a resistance, in order to regulate the speed or power of the motor, without shifting the motor connections.

This case was exhaustively argued by eminent counsel, and elaborately illustrated by models and drawings. Some months after the oral argument, further briefs were filed by counsel. Immediately after the close of the hearing, the case was thoroughly examined, and it has now been considered again in the light of the later briefs submitted. These investigations have so confirmed the impression produced at the hearing that the defendants' apparatus is a mere modification of the Condict idea, patterned in part thereon, and in part upon the later improvements introduced by the complainants, and that in defendants' use of a multiple break they have merely improved upon the Condict apparatus, that it has seemed unnecessary to discuss all the details of the case. The statement of complainants' expert Bentley, when read in connection with the exhibits, clearly

shows the difference in construction and operation between the two devices. Condict was the first inventor of a practical embodiment of this system of co-operating resistances. His invention has been modified and developed to meet the exigencies of greater voltage, and other inventions in the railway trolley art. Defendants strenuously contend that inasmuch as they use successive resistances, and do not use any resistances at running notches, they do not infringe Condict's system, which includes simultaneous resistances, and ad interim resistances to cut down the current in going from one position to the other. But Condict, in his specification, distinctly pointed out the feature of his invention which defendants have appropriated, in the following language:

"It is evident that, while only four ways of coupling up the coils of the motor are shown, a large variety of connections might be made, embodying the same general principles. It is also evident that, while the motors are coupled in a given manner, a slight movement of the switch will have the effect of cutting in or out one or more of the resistances, Y, and thereby provide an additional means of regulation where slight variations in the speed or power of the motors is required."

It cannot be said that this is an afterthought of the scrivener, in view of the admissions of defendants' experts that said language described the application to his invention of a well-known means of secondary rheostatic regulation, such as defendants now use, and that the insertion of notches to indicate such running points was merely a matter of mechanical skill. The position may fairly be stated as follows: Condict described a device calculated to obviate the evils of sparking. In his specification he emphasized the advantages of the use of such great interposed resistances as would cut the current down to a condition in which there should be no sparking whatever. But, when he comes to describe his apparatus, the description and claims cover devices capable not only of cutting down the current so as to prevent all sparking, but also of regulating it, without entirely cutting it off, by merely reducing by his combination of resistances the flow of current so as to produce variations of resistance. Thus, he states that he does not limit himself to the "particular details of construction, as they are of secondary importance," and "may be modified in various ways without departing from my invention," and, as to the resistances, that "their function is to reduce the current flowing, so that at the time of making the change in the motor connections the current is small, compared with what it would be if these resistances were not inserted." He describes the automatic insertion of these resistances in making the four principal changes already considered, showing how the amount of resistance introduced is to be proportioned to the varying changes in the motor resistances, stating the purpose of such object "to avoid throwing too strong a current," and "to soften the shock involved," and then concludes with language above quoted. Defendants use a noninfringing dissipator, but, in order to utilize it at the time when it shunts from one running point to another (that is, during the time when the circuit is broken and rearranged), they use the resistances of the complainants' patent, in order to reduce the current. By a practical

demonstration in court, counsel for complainants showed that while, in certain positions, the defendants did not use the complainants' invention in the manner contemplated by the inventor for reducing resistances to nonsparking conditions, yet that their controller was capable, in practical operation, of being so used (provided the motor-man saw fit to jump over certain intermediate positions), and in such a way that it would infringe the complainants' patent, upon defendants' own theory as to the operation of their controller. Defendants attempt to meet this contention by saying that such operation is not intended, and would cause waste of energy. I do not think, in view of the capacity of the machine in its ordinary operation for such an infringing operation, that this is a sufficient defense. But, irrespective of this consideration, it clearly appears from the patent itself that Condict contemplated such intermediate resistances as are admittedly availed of by defendants, and some of the claims are sufficiently broad to cover this operation. Claim 31, for example, is for a mechanical combination of parts, including "a switch to insert the resistance when the motor switch is being shifted"; that is, which exercises the function of vitalizing that part with reference to its operation in said combination. Inasmuch as defendants do insert resistances at the time of shifting circuits, by substantially the same means, they infringe this claim, and the extent or degree of appropriation is immaterial. The Von Zweigbergk specification repeatedly says that the current must be reduced in order to break and rearrange the circuit, and that then, and then only,—when the Condict invention has necessarily been availed of,—can the arc-spanning device be used.

The defendants further contend that, even if they should be held to use the elements of complainants' combination, yet they do not infringe, because they use them in connection with another element, namely, the noninfringing patented dissipator, in such a way that the co-operative law of defendants' machine differs from that of complainants. This contention is not proved. The broad principle of mixed controllers, as applied to electric motors, was invented, or at least practically developed, by Condict. Whether he be limited, as claimed by defendants, to ad interim resistances (that is, resistances interposed between running points), or whether he be permitted to avail himself of the broad principle of combined resistance and series parallel controllers, the defendants use the same resistance in the same way; the difference being that, while Condict described such resistances as being in a certain definite series, defendants have inserted the series in the place of one of his motors, and shunted the arc motors. Defendants do not cut the resistance out, nor do they arrange the motors and coils in exactly the same relative positions; but they do use and must use the combination upon the same theory, and for the same purposes, in order to avail themselves of the independent, noninfringing, patented arc-spanning dissipator.

Claims 23 and 30 cover the main invention, with an independent switch to cut one of the circuits. This switch is not co-operatively combined with the patented controller, but is an entirely independent device added to it. The defendants do not use the cut-out switch de-

scribed by Condict. Claim 24 covers a reversing switch; and claims 1, 2, 7, and 10, a locking device therefor,—both in combination with the main controller. Claim 10 (the broadest of these claims) is as follows:

“(10) The combination of a movable controlling switch for varying the power of the motors, having a cam surface, a reversing switch having holes or openings, and a bolt actuated by the cam surface of the controlling switch, and adapted to be projected through the holes or openings in the reversing switch to lock it against movement when said controlling switch is moved.”

The defendants do not use this Condict combination, but use a different combination of the same elements, or their equivalents. In view of the prior art shown in the Field, Curtis & Crocker and Reckenzaun patents, I think the complainants are limited to the details of construction stated in the specification of the patent in suit, as to these minor features of the main invention, and that defendants do not infringe said claims, as thus limited.

Claims 27, 28, 29, and 31 are as follows:

“(27) The combination of an electric motor, a source of electric power, a motor circuit, a motor switch to vary the power of the motor, two or more resistances, a resistance switch to cut said resistances gradually into or out of the motor circuit, and a connection between the said switches, whereby a movement of the motor switch will first cut in one or more of the resistances, and, after changing the power of the motor, automatically cut the resistances out of circuit again. (28) The combination of a motor having separate coils, a motor circuit, a motor switch for coupling up said coils so as to vary the internal resistance of the motor, a resistance, and a resistance switch to cut in and out the said resistance, upon shifting the motor switch, to vary the coupling of the motor coils. (29) The combination of a motor having separate coils, a motor circuit, a motor switch for coupling up said coils so as to vary the internal resistance of the motor, a resistance, a resistance switch to cut in and out the said resistance upon shifting the motor switch to vary the coupling of the motor coils, and means controlled by the motor switch for operating the resistance switch.” “(31) The combination of two motors, a source of electric power, a motor circuit, a switch for coupling the coils of the motors in series or multiple to vary their internal resistance, a resistance, a switch to insert the resistance when the motor switch is being shifted, and a connection between said switches to operate both simultaneously.”

These broad claims cover the main combination of the patent, and are infringed by defendants.

Claims 20, 21, and 22 are as follows:

“(20) The combination of a source of electric energy, the coils of one or more electric motors, a switch for connecting said coils in different ways to vary the motor resistance, one or more resistances, and a switch to put said resistances into or out of the motor circuit, without changing the motor connections, to vary the power of the current flowing through the motors. (21) The combination of a source of electric energy, the coils of one or more electric motors, a switch for connecting said coils in different ways to vary the motor resistance, and one or more resistances; said switch being adapted to put said resistances in succession into or out of the motor circuit, without changing the motor connections, to vary the power of the current flowing through the motors. (22) The combination of a source of electric supply, a switch for coupling up the coils of a motor or motors in a predetermined order, a series of resistances, a contact block on said switch in circuit with the motor and resistances, and having contact edges for cutting in or out the resistances one at a time, contact brushes from said resistances, and connected to the source of electric supply, and resting on the contact block,

and adapted to be brought into or out of contact with it in succession, whereby the resistances may be cut into or out of the motor circuit without varying the connection of the motor coils."

The minor feature of the invention covered by these claims has been unquestionably appropriated by defendants. It is the feature of temporary use of supplementary resistances, not necessarily during circuit changes, already fully discussed. Claims 15 and 16 are not infringed. Let a decree be entered for an injunction and an accounting as to claims 20, 21, 22, 27, 28, 29, and 31.

EARLE et al. v. WANAMAKER et al.

(Circuit Court, E. D. Pennsylvania. May 23, 1898.)

1. PATENTS—PRESUMPTION FROM ISSUANCE.

While ordinarily the presumption of validity from the issuance of a patent is entitled to some weight, yet very little, if any, effect should be given to it where the application was repeatedly rejected as exhibiting nothing new, and was finally obtained apparently by mere persistence of the applicant, and without any reason given for a change of views by the patent office.

2. SAME—IMPROVEMENTS IN CUFFS.

The Earle patent, No. 533,408, for improvements in cuffs, consisting in overlapping the band by the body portion along its connecting edge, whereby the band is alleged to stiffen the body portion, and hold the ends in firm and even relation to each other, is void for want of novelty and invention.

This was a suit in equity for alleged infringement of a patent for an improvement in cuffs.

Dickerson & Brown, for complainants.
Strawbridge & Taylor, for respondents.

BUTLER, District Judge. The suit is for infringement of letters patent No. 533,408, for improvement in cuffs, dated January 29, 1895. The invention and claim are stated as follows:

My invention relates to cuffs, and has for its object to improve the construction thereof, and especially that class of cuffs which are adapted to be used in connection with link buttons, and it consists in a cuff having the features of construction hereinafter set forth.

I have ascertained by experiment that the ends of the cuff (especially where they are joined together by link buttons) will lose a portion of the support of the band, when the contact between the connecting edges of the band and body portion of the cuff is thus broken, and to remedy this fault I overlap the band by the body portion, along its connecting edge where such contact is broken. In this way the overlapped edges abutting against the band prevent the ends from bending inward, while the band acts to stiffen that portion of the body portion and to hold the ends in firm, even relation to each other. It is also evident in all cases that the width of the band will not encroach upon the width of the body portion at its ends. Therefore without narrowing the body portion at its ends, a wide band may be used, which is a very desirable feature, as it aids in holding firmly the cuff on the wrist-band. The cuff will also present a more attractive appearance than when there is a space between the band and the body portion of the cuff, as must occur where the body portion does not overlap the band.

In the accompanying drawings, Figure 1 is a front view of the cuff em-