references to statutes and decisions which are almost identical with references to be found in former compilations. As contrasted with the extent of the new compilation, the instances cited in the brief of the appellant are not so numerous, and of such character, as to justify the interference of a court of equity. The legislature having determined that the public interests required a new compilation of the laws of the state, and the work having been completed, the court should not interfere by injunction, unless the right to the relief asked is clearly manifest from the evidence. In our judgment, the plaintiff has not made such a case as would justify the interposition of a court of equity by injunction. The order denying the injunction is affirmed.

ELECTRIC CAR CO. OF AMERICA et al. v. NASSAU ELECTRIC R. CO.

(Circuit Court of Appeals, Second Circuit. December 7, 1898.)

No. 98.

PATENTS—INFRINGEMENT—CONTROLLING SWITCH FOR ELECTRIC MOTORS.

The Condict patent, No. 393,323, for a controlling switch for electric motors, was not anticipated nor affected in its scope by the Paine patent, No. 321,749, for a method of regulating electric lights, and is infringed by a device in which, when a change is made from series to multiple, instead of the resistances being cut in preparatory to the time of changing the connections, they are cut in during the transitional positions which result in a change from series to multiple.

Appeal from the Circuit Court of the United States for the Eastern District of New York.

On final hearing of the bill in equity of the present complainants against the Hartford & West Hartford Railway Company in the circuit court of the United States for the district of Connecticut a decree was entered by Judge Townsend which declared that claims 20, 21, 22, 27, 28, 29, and 31 of letters patent No. 393,323, dated November 20, 1888, issued to George Herbert Condict for an improvement in switches for electric motors, had been infringed by the defendant's use of electric car controllers manufactured by the Walker Company, and known in the case as types B^1 and B^2, and directed an injunction. 87 Fed. 733. In a bill in equity which was thereafter brought by the same complainants against the present defendant in the circuit court of the United States for the Eastern district of New York, an order was entered by Judge Lacombe which directed a preliminary injunction upon the same claims against the use of four forms of electric car controllers used by the defendant. 89 Fed. 204. This appeal is from that order.

George J. Harding, for appellant.

Frederic H. Betts, for appellees.

Before WALLACE and SHIPMAN, Circuit Judges.

SHIPMAN, Circuit Judge. A "controller" is the easily recognized cylinder-shaped electric mechanism of an electric car at the left hand of the motorman, which is operated by a handle which is constantly being swung to and fro, and is the visible means by which the speed of the car is retarded or is promoted. The controller, as a whole, is a device for regulating or controlling the current delivered to an electric motor, and thereby regulating the speed of the car. Before the

date of the Condict patent, there were two different methods for regulating the supply of the current. "Originally," Judge Townsend says, "the supply was regulated by coils of wire known as rheostatic or resistance coils. 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. 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." The second method was that called "the series parallel control" method, which substituted for these resistance coils the coils of the motor, and changed from time to time the connections of its circuits. This method of control was impracticable for two reasons, which are clearly stated by Mr. Jenks, one of the complainants' experts, as follows:

"First. If changes of circuit connections involving large changes of internal resistance were made, the electrical and magnetic disturbances incident to such circuit changes were too severe to be borne by the apparatus, and were often dangerous to the motorman and passengers on the car. Second. If the possible circuit changes were so numerous as to involve only slight and very gradual changes of internal resistance, the apparatus became too complicated for practical uses, and the numerous and various magnetic changes involved in a system of this kind were too serious to be borne by the apparatus, as a matter of constant practice."

Condict combined these two methods, and says in his specification that, in order to overcome the dangers incident to a change of motor connections, "I have constructed my switch so that at the time of changing the connection 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." His controller therefore utilizes each system by the movement of one handle, so that the shock which would be caused by a sudden change of motor connections is prevented by the introduction of dead resistance before or at the time of such change. The switch can also be used for slight changes in the resistances "when slight variations in the speed or power of the motors is required." The specification thus describes a main and a minor invention, and contains two groups of claims, one of which comprises claims 27, 28, 29, and 31, wherein the main invention was described. The minor invention of the second group, comprising claims 20, 21, and 22, consists in the use of resistances for slight variations in speed which are cut in and out, as formerly, but "in a switch combination which embodies the main invention." These claims 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 the 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 for 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."

"(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."

The ultimate question upon this appeal is whether the four varieties of the defendant's mode of regulating the current are within the patent as the record enables us to construe it. The defendant's contention is that the danger which Condict wanted to avoid was that from sparking, which arose from the fact that at the time of changing the motor connections the resistance of the motors was more or less cut out, and that to overcome this danger his invention was an insertion of resistances, so that, before the motor switch had effectively moved, there were in place dead resistances in the circuit. It is asserted that this method is the one literally stated in claim 27, "whereby a movement of the motor switch will first cut in one or more of the resistances," and that the language in the other claims of the same group, "before shifting the motor switch," or "when the motor switch is being shifted," means an insertion preparatory to circuit changes, or before the switch has moved sufficiently to disturb the motor connections. There is no doubt that the danger from sparking was the great one present in the

patentee's mind, and that the insertion of a resistance prior to a change of connection is probably the best way in which to use the mixed system.

The question of construction upon this appeal from the order of Judge Lacombe is whether, as construed by Judge Townsend, or—the record in the Hartford Case not being before us—whether, in view of any additional light which is presented in this record, the claims tie up the invention to a particular order of time, and exclude an insertion during the brief period of time while the handle is being continuously moved to effect the rearrangement of the motor circuits. The language of Judge Townsend's opinion does not speak with precision upon this exact question. We think that it was one of the questions before him upon the subject of the extent of the invention and of infringement. He, however, enjoined the use of type B^1, in which a resistance was not introduced anterior to any rearrangement. There was no break in the current. One motor was cut out, whereby the entire current was thrown upon the other. The first motor was then reconnected in parallel, and in the act of shifting connections resistance was introduced, so that too much current should not be thrown upon the single motor. Judge Townsend defined his construction of the patent by the conclusion that the defendant's B^1 was the mixed controller of the claims in controversy. Does the record upon this appeal indicate that Judge Townsend's construction was either erroneous or of doubtful validity? It cannot be denied that Condict's combination of two existing systems for regulating the supply of current to an electric car motor was previously unknown, and that the invention was of much importance. It is also true that in his specification and drawings he shows four progressive ways or positions in which the coils of the motor are coupled, and that in changing from the first position of broken circuit to the second position of open circuit, a resistance coil is switched into circuit. The patentee also said in his specification: "It is evident that, while only four ways of coupling up the coils of the motor are known, a large variety of connections might be made involving the same general principles." It is also obvious that the mixed controller system is in use, whether the insertion is preparatory to or accompanies the shifting of the motor switch, and that in all the forms used either by the defendant in this case or by the defendant in the Hartford Case auxiliary resistance was brought in at the time of making the change to parallel, by which we mean during the series of transitional movements which are made without stopping for an appreciable time and which effect the change in the connections of the motor. This is true, notwithstanding the fact upon which the defendant relies that the counter electro motive force which is developed by the motors in action sets the current back, and creates a resistance; but the character of that kind of force is variable, and dead resistance is in fact needed to be somewhere used to protect the motor from too sudden shock. There is, and there must be, a substantial use and an enjoyment, more or less partial, of the benefits of the Condict idea and system, although the insertion of the dead resistance takes place during the transitional positions which result in a change from series to multiple. If, however, the specification requires, or the claims demand, a limitation of the

patent to a preparatory insertion of dead resistance, the claims must be construed accordingly. Claim 31, which perhaps describes the principal invention with as much precision as any one of its group, calls for 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. The invention of the resistance is not required in this claim to anticipate, or to be preparatory to, or to be previous to the change of the circuit connections, but can be made when the change is in progress. Claims 28 and 29 call for a resistance switch to cut in and out the resistance upon shifting the motor switch to vary the coupling of its coils, and, so far as the time when the insertion of a dead resistance is to be made is concerned, do not differ from claim 31. The defendant uses four methods of coupling for the purpose of regulating the current. In form 3 a resistance is introduced before the motor connections have been disturbed, and half of the resistance remains in the circuit after the change, and the form is conceded to infringe claim 27 under the present record. It also infringes the other and broader claims. In form No. 1 the motors are in series in the fourth position, are reorganized and are in multiple in the eighth position. In the fifth position one motor was cut out of circuit, dead resistance was interposed in positions 5 and 6, was cut out and the motors thrown into multiple. In form No. 2 the motors are at series in the fourth position, and are at multiple in the eighth position. Positions 4, 5, 6, and 7 are the same as in form No. 1, and resistances are used in positions 8 and 9, in which the motors are in multiple. The resistances are not removed at position 8, but are withdrawn during changes 9 and 10. The positions from 5 to 9, inclusive, are transitional positions. In form No. 4 there is no resistance at position 4 where the motors were in series, the circuit was opened in position 5, and in position 6 the external resistance appears with the motors in multiple. During the reorganization, and simultaneously with the change from series to parallel, the resistance was introduced. Forms 1, 2, and 4 are an infringement of claims 28, 29, and 31.

One assignment of error is that the Nassau controllers Nos. 1 and 2 employ substantially the method of control described in the patent of W. & J. & S. B. Paine, No. 321,749, dated July 7, 1885, for a method of regulating electric lights, a patent which was not considered by Judge Townsend in the Hartford suit. The object of the Paine patent is said by the appellant to gradually vary the illuminating effects of a number of incandescent electric lamps and to be especially applicable to the control of lights in the border of a theater, and it is said to show a group of lamps first placed in series and then in multiple, a resistance inserted in series successively, and a switch which changes the lamps from series to multiple, and inserts and cuts out resistances. If the assertions of the appellant's witnesses are all accurate, the patentability or the scope of the Condict patent is not altered. There is a manifest difference between the necessities of a system for varying the illuminating effects of incandescent lamps in a room and the needs of electric mechanism for regulating the current to be conveyed to electric

motors, and thus regulating the speed of a car. The Paine patent, with its groups of incandescent lamps, told nothing to the inventor who was trying to protect an electric car motor in action from the inflow of a current dangerous both to machinery and to passengers. It follows that claims 20, 21, and 22 were also infringed. The order of the circuit court is affirmed, with costs.

AMERICAN BOX-MACH. CO. v. HUGHES et al.

(Circuit Court of Appeals, Second Circuit. December 7, 1898.)

No. 26.

PATENTS—INFRINGEMENT—BOX-COVERING MACHINES.

The Munro patent No. 298,879, for an improvement in box covering and trimming machines, construed, and *held* not infringed.

Appeal from the Circuit Court of the United States for the Southern District of New York.

This is an appeal from an interlocutory order of the circuit court of the United States for the Southern district of New York, which granted an injunction pendente lite against the infringement of claims 2 and 3 of letters patent No. 298,879, dated May 20, 1884, to Gordon Munro, for an improvement in box covering and trimming machines. Munro had received letters patent, dated July 26, 1881, and numbered 244,919, for a machine for applying a single external covering of paper upon boxes, which patent was sustained by Judge Blodgett in the Seventh circuit. Box Co. v. Wilson, 50 Fed. 425. Patent No. 298,879 was for a machine of the same general character, but which applied two or more external coverings simultaneously upon boxes, was called the double-strip patent, and was sustained by Judge Butler in the Third circuit (Machine Co. v. Day, 32 Fed. 585), and by Judge Coxe in this circuit, who delivered an oral decision. The question upon this appeal was that of infringement.

Lysander Hill, for appellant.
Edmund Wetmore, for appellees.

Before WALLACE and SHIPMAN, Circuit Judges.

SHIPMAN, Circuit Judge. The machine of the patent in suit had a reel containing a roll of covering paper, which was adjustable laterally on its shaft, in either direction, by being clamped between two disks or washers. The patentee says in his specification that he was thus enabled to put any number of reels or rolls upon one shaft, and confine each roll by clamping disks, "whereby the material will be properly fed to the paste roller, and be kept in right lines with the guides and the trimming material." A second reel, upon which was wound the second or trimming material, was also supported upon a separate shaft at a different level, and contained the appliances and reel-locating disks of the first reel. After the strips of material have been pasted, they pass through guides, which are metallic rods, in which are formed bends or recesses, "which are made of such size as will conform, respectively, to the width of the covering and the trimming material being used; and these guides should have as many such recesses as there are separate strips of the covering or the