THOMSON-HOUSTON ELECTRIC CO. v. WINCHESTER AVE. RY. CO. et al.

(Circuit Court, D. Connecticut. December 7, 1895.)

1. PATENTS—ANTICIPATION—IMPRACTICABLE PAPER PATENTS—INCOMPLETE DESCRIPTIONS.
An invention is not anticipated by impracticable paper patents which it would require more than mechanical skill to adapt to the purpose of the invention, nor by patents in which the description is so vague, general, and incomplete as not to enable persons skilled in the art to perceive their adaptability to the practical apparatus of the invention in question, and to construct the same.

2. SAME—ANTICIPATION AND INVENTION—ELECTRIC RAILWAY TROLLEYS.
The fact that numerous skilled inventors, when first confronted by the problem of overhead contact for electric railway cars, did not adopt, adapt, and develop the devices of the electric railway signaling art, but started out on the new and independent lines of the overrunning trolley, is presumptive evidence that invention was required in the selection and adaptation from that art which resulted in the successful underrunning trolley.

3. SAME—CREDIBILITY AND WEIGHT OF EVIDENCE—TESTIMONY OF FORMER EMPLOYE.
Testimony of a former employé of a patentee, after nine years of silence, that he himself made the invention, should not be believed as against the patentee's oath, especially when other evidence on behalf of the patentee is not accessible.

4. SAME—GENERIC AND SUBSIDIARY PATENTS—PRIOR ISSUANCE OF SUBSIDIARY PATENT.
Where an inventor, after applying for a patent for a broad and generic invention, afterwards applies for an improvement thereon, and a patent for the improvement is first issued, because the earlier application, without fault of the inventor, was delayed by interference proceedings, the fact of the prior issuance of the subsidiary patent does not affect the validity of the patent for the broad invention. Electrical Accumulator Co. v. Brush Electric Co., 2 C. C. A. 682, 52 Fed. 130, followed, and Miller v. Manufacturing Co., 14 Sup. Ct. 310, 151 U. S. 201, distinguished.

5. SAME—ELECTRIC RAILWAY TROLLEYS.
The Van Depoele patent, No. 495,443, for an improvement in traveling contacts for electric railroads, embracing a long, swinging, pivoted, hinged, and upwardly spring-pressed arm, extending from a support on top of the car, and equipped with an underrunning contact device, *held* not anticipated, valid, and infringed, as to claims 6, 7, 8, 12, and 16.

6. SAME.
The Van Depoele patent, No. 495,383, for an overhead electric railway contact device and switch, *held* void for want of patentable invention as to claims 11, 12, and 13.

7. EVIDENCE IN PATENT CASES—IRRELEVANT MATTER—PADDING OF RECORD.
The growing abuse of introducing into the record in patent cases an inordinate mass of testimony, much of which is often irrelevant and immaterial, and also of inserting a confusing number of exhibits, commented upon and condemned by the court.

This was a bill in equity by the Thomson-Houston Electric Company against the Winchester Avenue Railway Company and others for alleged infringement of certain patents relating to electric railway contact devices.

Betts, Hyde & Betts, for complainant.

Kerr & Curtis, Wetmore & Jenner, and Chas. A. Terry, for defendants.

TOWNSEND, District Judge. Complainant, by this bill, asks for a perpetual injunction and an accounting, by reason of the infringement of patents No. 495,443 and No. 495,383, granted April 11, 1893, to the administrators of Charles J. Van Depoele, assignor to complainant. Both of said patents cover useful improvements in traveling contacts for electric railroads which are in general use in the trolley railway systems in this country, and both have been infringed by defendants. They will be designated hereafter as the "first" and "second" patents, respectively; No. 495,443, the main patent, and the earlier in date of application, being called the "first patent." The defense is conducted by the Westinghouse Electric & Manufacturing Company, one of the parties defendant.

The defenses to said first patent are that the alleged invention was made by an employé of the Van Depoele Company; lack of patentable novelty, in view of the prior state of the art; and that the same invention had been previously disclosed by and patented to Van Depoele. The record is padded unnecessarily with irrelevant matter. Complainant's record covers 3,142 pages; that of defendant, 2,237 pages. The issues directly involved do not warrant the taking of such an inordinate mass of testimony, nor the introduction of such a confusing number of exhibits. This rapidly growing abuse in patent suits, if persisted in, must seriously interfere with the present practice of presenting, in an opinion, the results of a full consideration of all the important issues in such cases. If admonition will not answer, the next step must be the punishment of the offending party by the imposition of costs.

The alleged invention relates to improvements in the devices whereby contact is maintained between the trolley car and the overhead wire conductor. It embraces the long, swinging, pivoted, hinged, and upwardly spring-pressed arm, extending from a support on the top of the car, and equipped with an underrunning contact device.

The claims of the main patent, No. 495,443, infringed by defendant, are as follows:

"(6) In an electric railway, the combination with a suitable track and a supply conductor suspended above the track, of a car provided with a swinging arm carrying a contact device in its outer extremity and means for imparting upward pressure to the outer portion of the arm and contact, to hold the latter in continuous working relation with the underside of the supply conductor, substantially as described.

"(7) In an electric railway, the combination of a car, a conductor suspended above the line of travel of the car, a swinging arm supported on top of the car, a contact device carried by one extremity of the arm, and held thereby in contact with the underside of the electric conductor, and a tension device at or near the other end of the swinging arm for maintaining said upward contact, substantially as described.

"(8) In an electric railway, the combination of a car, a conductor suspended above the line of travel of the car, an arm pivotally supported on top of the car, and provided at its outer end with a contact engaging the underside of

the suspended conductor, and a tension spring at or near the inner end of the arm for maintaining said upward pressure contact, substantially as described."

"(12) In an electric railway, the combination with a car, of a post extending upward therefrom, and carrying a suitable bearing, an arm or lever carrying at its outer end a suitable contact roller and pivotally supported in said bearing, and provided at its inner end with a tension spring for pressing the outer end of the lever carrying the contact wheel upward against a suitable suspended conductor, substantially as described."

"(16) In an electric railway the combination of a car, a conductor suspended above the line of travel of the car, an arm pivotally supported on the top of the car, and provided at its outer end with a grooved contact wheel engaging the under side of the suspended conductor, and a tension spring for maintaining an upward-pressure contact with the conductor, substantially as described."

It will be unnecessary to consider them separately, as it is agreed that, while some are broader than others, they all cover substantially the same combination, so far as the issues herein are concerned. The vital questions at issue will be best understood by a statement of the facts which are admitted and proved, and of the claims made by each party as to the facts which are in dispute.

The combination of devices described in patent No. 495,443 is of great utility in the art of electric railroading, and has superseded every other known apparatus. The experts for defendant admit that they do not know that any one other than Van Depoele, prior to September, 1885, when he put said apparatus into practical operation, had proposed to equip the car of an electrically propelled road with a contact device mounted on the end of a long pole upwardly pressed by means of a spring, and to hinge the pole to the car, and make it turn on a pivot; nor that any one, prior to March 12, 1887, the date of the application for the first patent, had described, in an electric railway, the combinations specified in the infringed claims. The earlier electric railways, when equipped with wire conductors above the car, maintained contact therewith by means of "overrunning" trolleys connected by a cord or wire with the car, and towed along above the surface of the conductor. These devices were impracticable for general use, because of uncertainty of connection, lack of adaptability to various forms of switches, varying tension, liability to derailment, and for other reasons. The patented invention No. 495,443, as stated by complainant's expert, "consists generally in an electric railway having an overhead conductor, and a car for said railway provided with a contact device carried by the car so as to form a unitary structure therewith, and consisting of a trailing arm hinged and pivoted to the car so as to bridge the space between it and the conductor, and move freely both laterally and vertically, and said arm carrying at its outer end a contact device capable of being pressed upward by a suitable tension device into engagement with the underside of the conductor." The advantageous features of construction which give the system these capacities are (a) the location of the supply conductor above the track and line of travel of the car, and contact with its underside; (b) the arrangement of the contact device on a trailing arm; (c) the maintenance of a constant upward pressure by means of a

tension device operating upon a hinged arm. By the use of this system, numerous difficulties are overcome, and corresponding advantages obtained.

The defendant, in support of its denial of patentable novelty, in view of the prior state of the art, shows generally that electric railways, suspended conductors, and contact devices were old, and that the utility of such devices for conducting the current from such conductors to the instrument on the car was well known and variously applied. These systems, so far as the present consideration is concerned, were chiefly used either for electrically lighting a car, or for signaling to or from it. But defendant claims that, as in each case the object to be accomplished was to get a current from a conductor to a motor in the car, the difference in the ultimate result is immaterial. Counsel for complainant, on the other hand, claims, relying upon the long-settled rule of law as recently fully discussed and stated in Potts & Co. v. Creager, 155 U. S. 597, 15 Sup. Ct. 194, that said devices, as a matter of law, do not anticipate the patented device, because they relate to a remotely allied art, and did not suggest in their construction the particular problems which were presented by the conditions of trolley systems, and solved only by the inventions of the patent in suit. He further relies upon the fact that material alterations were required to adapt these devices to said new use, and that the effect of said transfer has been to supersede other methods of accomplishing said results.

For the determination of this question, it will be necessary to examine some of these earlier patents. Several of them refer generally to the use of a contact device for conducting a current from a main conductor located above, at the side, or below the line of travel of the car, to the motor or signaling or illuminating instrument on the car. For securing contact some use brushes; others, trolleys dragged by the car; others show a grooved wheel or a wheel running between two conductors. It is not necessary to determine the effect of these patents upon the prior state of the art further than as showing that, under the comprehensive art of the distribution of electricity, devices for taking electricity from a stationary conductor, and conducting it to a translating device, were old, and that the utility of a grooved wheel, as distinguished from one not grooved, of a rigid arm, as distinguished from a flexible cable, of spring pressure, as distinguished from gravity, of an overhead conductor, as distinguished from conductors otherwise located, of an underneath contact, as distinguished from an overrunning contact, and of a wheel or roller, as distinguished from a brush, were all well known, the principles on which they operated, respectively, were well ascertained, and the relative advantages and disadvantages of each well understood. The earlier patents were also suggestive of the fact that various devices were used, according to the differing requirements of various situations. It is not to be overlooked in this connection, however, that these devices referred to were, without exception, mere paper machines, which do not appear to have been capable of successful practical operation.

The proximate object or purpose to be accomplished by these inventions was the conveyance of a current from the conductor to a translating device on a moving vehicle. The question to be determined by comparison of these inventions with that of the patent in suit is whether, in their adaptation to the purposes of electrical propulsion, some material change in the manner of application, or some substantially distinct result, was accomplished. This brings us to a consideration of the changes which the patentee is alleged to have made in order to adapt these old inventions to the art of electrical propulsion. Each of the elements in the combination of the hinged and pivoted trailing arm and the upwardly pressed contact device had been variously described in the earlier patents, and various devices had been used as equivalents for each other.

By way of further examination of the art, certain patents will be considered in detail. This consideration will include patents for systems of propulsion, as well as signaling and lighting. The Bolton British patent will not be considered, because its publication was subsequent to the construction of the device which is the subject of the first patent in suit.

Patent No. 91,732, granted to Daniel Fitzgerald June 22, 1869, shows an apparatus for signaling to or from a train of cars. It appears from the description, and duplicate of the patent office model, that the inventor contemplated the use of adjustable spring-pressed contact arms, so arranged as either to come in contact at fixed intervals with wires stretched across and above the track, or to maintain continuous connection by means of friction rollers with wires stretched alongside the track. If the Fitzgerald drawings, description, and patent-office model be examined by means of the light shed upon the art by the Van Depoele invention, a vivid imagination might discover the undeveloped possibilities of a practicable electric railway in this impracticable signaling apparatus patented in 1869. The experts for defendant thus found such a disclosure of trailing upwardly spring-pressed contact arm, provided with a grooved contact device, designed to make contact with the adjacent side of the conductor, as, according to counsel for defendant, is "sufficient to enable any one skilled in the art of electric railways to instantly grasp the whole subject of underrunning upwardly spring-pressed contact devices, such as are used in the modern electric railway." But they are forced to admit that the specification fails to show whether the conducting arms are fastened or swing freely or how they are to be turned, fails to describe any of the contact devices in detail, and fails to state that they are either reversible or spring pressed; and although they claim that these functions and characteristics are shown or may be inferred from the drawings and model, coupled with knowledge of the general conditions of practical operation of a railway, they admit that the drawing only shows a side-bearing contact device. In these circumstances, while this apparatus suggests certain crude forms of the elements of the Van Depoele invention, I think it fails to invalidate the patent in suit for two reasons: First, because it is a mere paper patent, and the removal of the objections

to its practical operation, and its adaptation to the new purpose, required something more than mere mechanical skill; second, because such vague, general, and incomplete description is insufficient to enable a person skilled in the art to perceive its adaptability to the practical apparatus of the patent in suit, and to construct the same. Pickering v. McCullough, 104 U. S. 310; Eames v. Andrews, 122 U. S. 40, 66, 7 Sup. Ct. 1073.

Patent No. 141,604, granted August 5, 1873, to J. G. Smith, for a telegraphic apparatus on moving trains, shows a swinging arm attached to the side of a car, having the branches fitted with brushes and rollers to make contact with three telegraphic wires strung near the side of the track, and parallel thereto, near the level of the wheels of the cars. There is a suggestion in the drawings of springs on each side of said fingers, giving a capacity for horizontal variations. If this device should be transferred to the top of a car, it could be so adapted as to maintain contact with an overhead wire, and might, by a modification of the springs, suggested but not described, be so arranged as to give an upward pressure, and to follow vertical sinuosities of the overhead wires. A provision in the patent for the contraction or expansion of the arms further shows a capacity for vertical movement which might be utilized on top of the car for a horizontal movement. But I do not find in said patent, even with such modifications and adaptations, any such capacity for universal movement as would be required for the exigencies of electric railway switches and curves, nor, when said arm is locked in an operative position, is there any provision for continuous upward pressure. Nor do I find in either the Fitzgerald or Smith patent any suggestion of means to overcome the problem of continuous connection at such great and varying overhead distances from the car as are encountered in the operation of the trolley system. The importance of this element will appear later.

In Brunius patent, No. 189,999, the arm swings only in a vertical plane. Wesson patent, No. 16,665, does not suggest the possibilities of the patented device, nor meet the exigencies it met.

In the art of electrical railway propulsion, it will be unnecessary to consider the contact devices connected by third rails laid between the tracks. Their capacity for vertical or horizontal movement was very limited. Nor need we consider in detail the earlier forms of overrunning towed trolleys. The peculiarity of their construction was that the contact device was carried on top of the overhead conductor, and was towed by a wire. They were impracticable, and were discarded. But, as is forcibly urged by counsel for complainant, the fact that numerous skilled inventors, when first confronted by the problem of overhead contact, did not adopt, adapt, and develop the electric railway signal art, already considered, but started out on the new and independent lines of the overrunning trolley, is most significant upon the question of invention in the patent in suit. That they, working with a single object in view, rejected said existing allied or analogous art as impracticable, and invented improvements upon other lines, which have since been discarded for the improvements afterwards made upon the existing art, is presumptive evidence that

invention was required in the selection from and adaptation of the existing art.

Sherman patent, No. 302,596, shows a car suspended from elevated rails, and contact wheels rigidly mounted on short posts, so as to maintain contact with a conductor loosely suspended above the car. There is, however, nothing having any of the essential elements of the trolley arm, and the device is inferior to the earlier wheel contact device of Van Depoele, to be hereafter considered.

On October 8, 1889, Leo Daft obtained patent No. 412,605 for a device substantially the same in construction as that of the patent in suit, except that it does not appear that it had any capacity for swinging laterally. The application for this patent was filed June 11, 1888. The apparatus described therein was put in practical operation in June, 1886. Originally, and prior to Van Depoele's invention, Daft had constructed a somewhat similar device, consisting of a trailing arm pressing downward on an underneath third rail conductor, and which it is claimed had capacity for both vertical and lateral movement. Defendant urges, therefore, that, as it was only necessary to turn this device over in order to obtain the patented invention, the earlier Daft device is an anticipation. There are several answers to this claim. When Daft did turn it over, and patent it, he did not claim or show capacity for lateral movement of the arm, and therefore did not disclose a device capable of use for switches and curves. Again, when he undertook afterwards to construct other roads, he abandoned this construction, and went back to the overrunning towed trolley. Furthermore, in his Baltimore railway, which it is claimed anticipated Van Depoele's, he admits that he was obliged to discard the contact wheel because it "was constantly jumping from the conductor; and, as it seemed impossible to mount it with sufficient resilience to obviate this difficulty," he substituted a wide laminated brush, "which could see-saw at will across the conductor without breaking the circuit." Inasmuch as in providing for capacity for universal movement, which is the vital feature of the adaptability of the Van Depoele invention, he failed, as all others had done, I do not think the device of 1885, even if it had anticipated Van Depoele, is material, except upon the question of the primary character of the invention. These suggestions generally apply also to patent No. 263,132, granted August 22, 1882, to Thomas A. Edison. The defense that one Sprague anticipated Van Depoele does not require any consideration.

Certain patents introduced by defendant showing a staging erected on top of the car, in order to bring the contact device close to the elevated conductor, strikingly illustrate one of the problems solved by the Van Depoele invention. They show that, when the problem was presented of furnishing a device capable of maintaining contact at great and varying distances above the car, other inventors solved it in the obvious way of providing an elevated framework or stage on which they mounted the contact device. That such structures would be impracticable, by reason of their weight and rigidity, is manifest from inspection.

It remains to inquire, assuming that the Van Depoele device possesses patentable novelty, whether he was the original inventor thereof. The evidence bearing on this question shows that, for some time prior to 1885, he had had in mind an electric railway similar in principle to that constructed at Toronto. In his application for the patent, he swore that he was the original and true inventor, and it does not appear that during his life any other person claimed the credit of said invention. But after his death, and upon the taking of the evidence in this case, one Verstraete, a witness introduced by complainant, and a former employé of the complainant, testified that the trolley originally designed by Van Depoele for the Toronto Exhibition was impracticable; that he went down to a shop in the city, and himself made a crude form of the patented device, and attached it to the car, and that Van Depoele said he was glad he had fixed it in that way. While there is some evidence tending to show that Van Depoele had charge of the construction of said trolley arm, and that Verstraete worked under his directions, I am not inclined to rest my decision thereon. It seems to me that, in these circumstances, such evidence from a former employé, after nine years of silence, should not be believed as against the oath of the patentee, especially when other evidence on behalf of the patentee is not accessible. Furthermore, Van Depoele, in an affidavit made in the course of the proceedings in the patent office on the application for the patent in suit, and introduced in evidence by the defendant herein, swore that "he completed the invention, shown, described, and claimed, prior to the year 1885," and "that during the year 1885 he reduced the invention to actual practice by constructing and operating a full-size electric railway, which was successfully used for the conveyance of passengers, as represented by a photograph taken during that year, a copy of which is hereto attached." Said photograph represented the Toronto road, and a car equipped with the device of the patent in suit. The burden of proof is on the defendant to overcome the oath of the inventor, and this it has failed to do. Alden v. Dewey, 1 Story, 336, Fed. Cas. No. 153; Woodworth v. Sherman, 3 Story, 171, Fed. Cas. No. 18,019; Spill v. Celluloid Co., 2 Fed. 707, 711; Worswick Manuf'g Co. v. Buffalo, 20 Fed. 126, 128.

No one can read this record without being impressed by the fact that Van Depoele was more than a skilled mechanic in the art of electrical railway propulsion. The patent office has raised a presumption in his favor as an inventor by the grant of numerous patents to him. Some 30 have been introduced by defendant, several of which cover highly meritorious inventions, which have largely contributed to the successful practical operation of the trolley roads throughout this country. In fact, the construction covered by his earlier patent for an overhead underrunnng trolley shows that he appreciated the problems involved in varying lines and curves, and to a limited extent, by said device, ingeniously provided for their solution. This device consisted of a grooved roller, so mounted on a spring on the roof of the car as to have a limited range of vertical and lateral motion. In its depar-

ture from the constructions of the prior art, and its approach towards the idea of the invention of the patent in suit, it affords striking evidence of that capacity to comprehend practical difficulties in operation, detect defects in existing structures, and devise means for obviating such defects, which constitutes the faculty of invention. As new difficulties arose, he invented new means adapted to the exigencies of the new situations. He disclosed the invention of the patent in suit at Toronto in September, 1885. He developed and improved it at New Orleans in December of that year. He put it into practical operation at Montgomery in 1886–87. He applied for a patent in 1887. It is doubtful whether he at first appreciated the importance or the undeveloped possibilities of his invention, but this circumstance does not necessarily detract from his merit as an inventor, nor does it operate to deprive him of the fruits of the invention first disclosed and claimed by him. The new problem presented was how to make practicable the electrical propulsion of an electric railway by a continuous contact under all the conditions presented by crowded streets, sharp curves, complicated switches, rough roads, reversed lines of travel, and the necessity of a continuous upward pressure of from 8 to 15 pounds. The solution was accomplished by a long rigid arm, upwardly pressed, and capable of universal movement. "This arm," says the inventor, "possesses substantial practical advantages over any other means yet proposed for establishing moving contact between a vehicle and a stationary supply conductor, in that, by the use of a hinged flexible arm, much greater freedom of movement is compatible with the maintenance of a positive mechanical connection and electrical contact between the vehicle and supply conductors." Prior inventors in the same art had shown a similar contact with a rail under the car, but they failed to indicate or claim capacity for lateral motion. Prior inventors in an allied art had shown by paper patents the principle of continuous or interrupted contact with such limited provisions for lateral and vertical motion as to be impracticable. Prior inventors, in a remote art, had shown, in tethers for animals and in office chairs, spring pressure and universal movement. But the inventors in the art of electrical propulsion, signals, or telegraphs, had failed to provide for an operative contact device at the distance from the car required for the operation of the underrunning trolley road, except by unwieldy and impracticable structures on the roof of the car. They had failed to adequately provide for considerable variations from practically straight lines of travel. In their later attempts to do so, they had constructed or adopted contrivances which departed from the earlier devices now claimed to show lack of patentable novelty, and thereby furnished strong proof that the changes made by Van Depoele were not obvious ones. Defendant's expert is forced to admit that the advantages of an underrunning trolley were not obvious, and that the earlier constructors must have been in doubt as to the efficiency of such a system, and that the prior underrunning overhead devices would have led a person away from rather than towards an upwardly pressed hinged conductor. In

these circumstances, the new use of old principles does not fall within the rule of a double use. The old use was not intended for nor adapted to the conditions of the new use. It produced, in part only, the results of the new use.

When Van Depoele discarded the elevated wheel and springs of his earlier patent, and broke away from his own towed trolley, and those of Siemens, Finney, Henry, and others, and reversed the underneath trolley of Daft and Edison, and added lateral motion thereto, and went back to the overlooked art of the animal tether, or the limited and impracticable art of railway signals, and, selecting and combining certain elements of these various contrivances, modified and adapted them to a new purpose, and thereby disclosed to the public a practically operative means, such as the whole world of electrical railway inventors had theretofore sought in vain, and which has gone into universal use throughout the country, he made an invention within all the rules applicable to this question. I have been unable, therefore, to adopt the view of counsel for defendant that the art of conducting electricity from a conductor to a translating device on a moving vehicle was sufficient to enable the skilled mechanic to construct the device of said first patent. This well-known art had been already applied in the best forms which Van Depoele and others could devise, before he made his invention. But, when the new problems were presented, it was shown that these devices and the underrunning rails and overhead towed trolleys were all impracticable, and it then became necessary to abandon the old forms, and to so reconstruct and combine the earlier devices as to furnish new possibilities of operation, and to produce new, nonanalogous, and unexpected results. The character and extent of these modifications may be further illustrated by a review of the chief advantages resulting therefrom.

The Van Depoele invention provided for the collection of the current from a conductor suspended so high above the ground as to be out of the way of travel across the road. While bridging this distance, it permitted a firm and uniform electrical connection with said conductor. It could be elevated to a great height without the use of a permanent high support on top of the car, and could be depressed to a level with the car. By its universal movement, it was capable, not only of following the ordinary lateral variations in the overhead conductor, but it would automatically maintain contact at sharp curves, and at points where branch switches were used. In this latter respect it is far superior to every other form of device. The substitution of the long arm for other contact devices mounted upon high supports obviated the necessity of permanently and accurately fixing the overhead conductor in position with relation to the track. The upwardly pressed underrunning wheel permits the automatic transfer of the contact device from one branch to another,—a result which was impossible when contact was at the side, and impracticable with an overrunning wheel. The upwardly pressed device further dispenses with the strain upon the conductor of the former overrunning devices; and, the two

being independent of each other, the derailment of one does not damage the other, as was frequently the case with former devices. Finally, a further advantage of the Van Depoele device, shown by diagrams in the brief of counsel for complainant, consists in the capacity of the projecting or trailing swinging arm to follow the necessarily curved line of the conducting wire at street corners, while the car body is necessarily turning at an angle.

I have not thought it necessary to discuss the well-settled principle of invention involved in the adoption of contrivances from another art. This doctrine is fully stated in Potts & Co. v. Creager, 155 U. S. 597, 15 Sup. Ct. 194, and seems alone decisive, in view of the facts presented herein.

In respect of the underlying fundamental object and result of the paper patents for signaling devices, and the Van Depoele device, the transfer was "to a branch of industry but remotely allied to the other, and the effect of such transfer has been to supersede other methods of doing the same work." Potts & Co. v. Creager, supra. Clearly, this construction required "as acute a perception of the relation between cause and effect," and as forcibly illustrates the "peculiar intuitive genius, which is a characteristic of great inventors, to grasp the idea that a device used in one art may be made available in another, as would be necessary to create the device de novo."

It is further significant upon the question of invention that prior to Van De Poele's application, in 1887, only 11 patents altogether had been granted for underrunning trolleys; while immediately thereafter the number of such applications was greatly increased, the total number in 1890 reaching 155.

The attempt to break the force of the evidence that Van Depoele planned or constructed the plant at the New Orleans Exhibition has not succeeded. Various witnesses testify to his active connection therewith. That he was present during a period of several days, working on said plant, is proved. Two witnesses swear that they put in said plant, or made changes and improvements in said road, under his instructions. The claims of defendant, based upon cross-examination, are largely argumentative, and are not sufficient to overthrow the positive testimony of the witnesses, or to overcome the presumptions raised by the oath of Van Depoele himself.

In the specification of the patent in suit the patentee says:

"The arm F, is hinged and should in most instances be also pivoted to the top of its post f, although a reasonable amount of looseness in the hinged joint will answer the purpose of the pivot and prevent binding or straining at that point due to the swaying of the vehicle."

The defendant strenuously claims that there is no wonderful invention in a lateral motion thus obtained, especially where a non-pivoted arm would quickly wear into infringement in actual use. But other language in the specification, and the drawings, not only show that the patentee contemplates, describes, illustrates, and claims an arm both hinged and pivoted, but also show that what is meant by said expression is that the great length of the arm, permitting it to

"swing laterally through a distance of several feet," may permit such an amount of lateral motion as will be sufficient "to follow deflections or bends in the conductors."

Counsel for defendant further claims that the invention embraced in the patent in suit was previously disclosed in prior patents to Van Depoele, and patented by him, and that, even "if the broadest form of the invention was not patented therein, nevertheless that the form claimed in the patent in suit was so inseparably involved in the patenting of the invention in the forms described and claimed in prior patents that the right to the patent was exhausted upon the issue of the prior patents, and the broad form was waived, and became abandoned to the public." In support of this contention, counsel for defendant chiefly relies upon the Van Depoele patent, No. 424,695, dated April 1, 1890, for "suspended switches and traveling contact for electric railways." The main invention therein claimed relates to an improvement in the arrangement of contact switches. In this connection the patentee also claims an improved contact device for use in connection with such switches. The patent states that it is a division of the application which forms the basis of the application of the patent in suit, and that the patentee herein only claims certain details of such invention, especially valuable in connection with switching devices, but not otherwise essential to the operation of the contact device. The drawings and much of the description in the two patents are practically identical. The description in No. 424,695, however, states, as one of the subjects of this invention, the following:

"And while the arm, F, is movable laterally with respect to the vehicle, the spring and weight will constantly tend to restore the arm to its normal central position, and to assist in causing the contact arm to partake of the lateral movement of the vehicle."

The special characteristic of this construction, which it is claimed is the same as that of the patent in suit, is the weighted spring, which is said to exercise a centralizing tendency on the trolley arm. In the patent in suit certain claims were retained inadvertently, it is said, which cover the weighted spring. This, however, is immaterial, as said claims are not in issue herein. Electrical Accumulator Co. v. Brush Electric Co., 2 C. C. A. 682, 52 Fed. 130, 139. In this device it is not the spring which exerts the tension which maintains the continuous contact of the swinging arm with the overhead conductor. The arm would be held with equal firmness by weight without the spring. The elasticity of the spring serves to modify the jerks or strains to which the arm would otherwise be subjected in case of sudden changes of level or position. The spring of patent No. 424,695 is not a tension spring, except in so far as such tension may incidentally assist in imparting a centralizing tendency to the arm. The original application, filed March 12, 1887, claimed a spring and tension device, so arranged as to impart upward pressure. The improved device showed a spring and weight so arranged as to permit lateral motion to the arm, and to "constantly tend to restore the arm to its normal central position, and assist it to partake of the lateral movement of the car," to give it a greater range of action, and to

make it more convenient in operation. This patent, for this specific combination, adapted and claimed only for this specific purpose, applied for October 22, 1888, after the original application had been allowed, but before the patent thereon was granted, was earlier in the date of issue. The original application was delayed by interference proceedings in the patent office. Whatever may be the rule as to cases where the application for the generic patent was filed subsequent to the application for the specific patent, I do not think the patentee should be deprived of his broad patent where the application for such patent was made first, and was delayed in the patent office through no fault of the inventor. Such a ruling would be a reproach to the law.

This precise question came up before Commissioner Mitchell, and was decided by him November 27, 1889, in Ex parte Edison, 49 O. G. 1691, 1693. The situation is there stated as follows:

"The examiner rejected this application on the ground that the applicant had applied for and taken out specific patents for improvements upon the invention described in such application, it being admitted that the present application was filed before and was pending contemporaneously with the applications forming the bases of the patents which are treated as a bar, and that there had been no abandonment."

Commissioner Mitchell said:

"The difficulty seems to be owing to the fact that, at least in some cases, such delays attend the efforts of inventors to patent their primary inventions that when conflicting interests are settled, and the patents are ready to issue, they seem to threaten an extension of the term of the exclusive use to be enjoyed by the inventor, under patents of earlier date; and the charge is easily made that the so-called 'monopoly' is unlawfully prolonged. For this result the inventor is not responsible. * * * Especially is this so in view of the fact that, if the inventor attempts to delay his improvement patents to await the action of the office upon his basic application, he will encounter laws and regulations providing for the forfeiture of applications which are not duly prosecuted. I therefore reach the conclusion that the view entertained by the examiner is not warranted by law. I conclude that when an applicant is detained in the office to contest priority, or for any other reason not involving his own laches, and meanwhile applies for and takes out patents for improvements upon the invention first applied for, the improvement patents referring to the earlier application, and reserving the right to obtain a patent thereon, such intermediate patents do not debar the right to a patent upon the subject-matter of the earlier application, whenever the office is ready to grant the name."

I concur in this decision so far as its application is necessary in this case. There is no occasion to decide what the result would be if the application for the primary patent were filed after the application for the specific patent.

The mere fact that the patentee in good faith thus sought to protect an improved form of his invention, while the application for the broad invention was delayed by interference in the patent office, does not justify the claim that he thereby surrendered to the public the original underlying invention. Holmes Electric Protective Co. v. Metropolitan Burglar Alarm Co., 33 Fed. 254.

I have examined with great care the exhaustive argument of counsel for defendant based upon the decision in Miller v. Manufacturing

Co., 151 U. S. 201, 14 Sup. Ct. 310. Whatever question may arise as to the interpretation to be put upon certain statements in said opinion, the questions at issue and the decision thereon do not cover the issues in this case. In that case the original application included one claim for the depressing and lifting action of the spring, and another for the increase in the lifting power of the spring as the beam was elevated. As in the case at bar, the application was divided so as to present these claims separately, the drawings and descriptions of the two applications being alike, and separate patents were granted thereon. The court decided that certain functions of the first and second patents were identical, and that the invention which the first patent covered—the lifting and depressing spring—included the invention covered by the second patent, which was simply the increased lifting effect. In this sense the court held that the matter in the second patent was inseparably involved in the first patent. The question whether the issuing of a subsidiary patent before a primary patent, without the fault of the inventor, when the primary patent was first applied for, was not before the court, and was not passed upon. The contention of counsel for complainant is chiefly directed to the point that the prior patents to Van Depoele are not for the same invention as that covered by the claims in suit. He shows that the prior patents covered specific forms of improvements upon the generic invention, but contends that they do not cover the generic invention which underlies, not only the specific improvement patented, but other forms. The defendant, while denying patentable novelty, and urging that, even if there be an invention, it is substantially the same as that covered by the former patents, chiefly relies upon the claim that within the meaning of Miller v. Manufacturing Co., supra, the invention of the later patent "is inseparably involved" in the invention of the earlier one. In the case at bar, the special combinations described and claimed in the earlier patents were distinct and separate from that of the later generic invention. They stated the new problem presented to the inventor in the practical development of his invention, the construction of an improved switching plate device, and the means for its application, which the patentee had a right to protect. While they were dependent for their operation upon the original broad invention of the earlier application, but later patent, they were not otherwise inseparably involved. In Miller v. Manufacturing Co., supra, the function of increasing lifting effect, claimed in the second patent, was inseparably involved in the structure of the first patent, in the sense of identity of structural combination and action. The patentee attempted by a later patent to extend the monopoly of an effect essentially brought into operation in the practical use of the combination specified in the earlier patent. He did not change the elements of said combination, but having originally described and claimed certain mechanical instrumentalities, so combined as to constitute an operative means to accomplish a certain result, he afterwards attempted to claim one of the operations of one of the essential means, which operation was necessarily included in the operation of the earlier combination, and

could have been claimed in the earlier patent. In Suffolk Co. v. Hayden, 3 Wall. 315, cited in Miller v. Manufacturing Co., supra, a case closely resembling the one at bar was presented. The supreme court there held that, where an inventor first applied for a patent for a more generic invention, and, in a subsequent application, described this invention, but only therein claimed it in combination with other improvements, there was no presumption of abandonment, and the patent for the invention covered by the earlier application would be valid, even though later in date of issue than the patent for the subordinate combination. In The Barbed-Wire Patent, 143 U. S. 280, 12 Sup. Ct. 443, 450, the patent first applied for did not issue until after an improvement thereon had been applied for and granted; but the court held that this earlier patent was not for the same invention, because it was for an improvement which described the invention of the later patent without claiming it, except in combination with the improvement. Finally, the decision of the circuit court of appeals for the second circuit, in Electrical Accumulator Co. v. Brush Electric Co., 2 C. C. A. 682, 52 Fed. 130, affirming the decision of Judge Coxe in Brush Electric Co. v. Electrical Accumulator Co., 47 Fed. 48, is directly in point, and seems to be controlling upon the questions presented herein. There, the patentee, Brush, first applied for a patent for the broad invention of a secondary battery. While this application was delayed by interferences in the patent office, he filed a subordinate application for a certain improved form of shelves to hold the product of the generic invention. He stated that this application was a division of the broad invention. He subsequently obtained patents for both inventions, the subordinate one being earlier in date of issue. In a suit brought for infringement of the later patent, the defendant contended that the main invention was included in the subordinate patent. But Judge Coxe, and the court of appeals, affirming his decision, held that, although the subordinate application necessarily described the broad invention, its language showed that it was restricted to the subordinate invention, so that the public were not misled into supposing that the broad invention was abandoned. The circuit court of appeals further said that letters patent were not to be construed for the purpose of their destruction, nor to be treated in such a hostile or critical spirit as to allow them to be defeated by such a technical claim, and that the construction contended for by defendant was not demanded by the decided cases or known principles of law. The decision in Miller v. Manufacturing Co., supra, merely affirmed the well-settled law that two patents for the same invention could not issue to the same patentee. There is nothing involved therein which affects the claims in suit herein. If any departure from the settled rules of construction is justifiable in any case, it should not be allowed for the purpose of destroying a meritorious invention, embodying a construction which first made practicable the operation of the trolley railway under all conditions, and which is now employed on more than 500 electric railways in this country, representing an invested capital of about $500,000,000.

Patent No. 495,383, herein known as the "second patent," is for

an overhead contact device and switch. Complainant claims that defendant has infringed claims 11, 12, and 13 thereof, which are as follows:

"(11) In an electric railway, the combination of a car, an overhead conductor, a standard on the car, a rotating support thereon, an inclined contact carrying arm hinged upon said support, and a tension spring secured so as to rotate with the support, and acting upon the said arm for holding the contact device in position.

"(12) In an electric railway, the combination with a car of a standard on the car, a rotating support thereon, an arm hinged upon said support, and provided with a grooved or flanged contact device for engaging with a suspended conductor, and a tension spring secured so as to rotate with the support, and acting upon the said arm for holding the contact device in position.

"(13) A reversible contact device for an electric railway vehicle, consisting of a standard, a rotating support thereon, a contact carrying arm hinged upon said support, and a tension spring secured so as to rotate with the support, and acting upon the contact carrying arm for holding the contact device in position."

Each claim covers practically the same construction, namely, a rotating support for the post upon which the contact arm swings. The defenses are practically the same as those considered with reference to the first patent. The patent comprises "an improved apparatus whereby the upward-pressing contact is maintained against the conductor," and "means for reversing the position of the contact arm upon the car." In the first patent in suit, No. 495,443, the spring which maintained the upward pressure of the underrunning wheel was so fastened to the car, or otherwise arranged, as to interfere with the lateral movements of the swinging arm. By the substitution of this rotatable support and the attachment of said spring thereto, such movements are unrestricted, because the spring rotates with the support. Furthermore, it is unnecessary to turn the car about in order to run it in an opposite direction, because, the apparatus being reversible, the arm may be so adjusted as to trail rearwardly from the supporting post. Utility is conceded. Infringement is proved.

The application for this second patent was filed long after the application for the first patent in suit and other applications had disclosed everything covered by these claims, except the single feature of attaching the lower end of the spring to a rotating support, so as to move therewith. But because this improvement is useful in permitting unrestricted lateral movement of the swinging arm, and in enabling the apparatus to be reversed without turning the car about, the arguments as to patentable novelty deserve careful consideration. This construction is not directly anticipated in the art of electric railway propulsion. In the art of electric railway signaling, several devices show or forcibly suggest the same idea of reversibility.

Patent No. 297,438, granted April 22, 1884, to Parish and Munn, shows a rotating support for a post upon which the hinged contact arm swings, and a tension spring so secured as to rotate with said support, and acting upon said arm for holding the end thereof

in position. The arm is downwardly, not upwardly, pressed; but, even if this form of upward pressure had not been already disclosed, any skilled mechanic would see that, to effect this change, it was only necessary to shift the position of the spring. Provision is made in said patent for locking the arm in operative position. When so locked, there is no rotating movement of the support or spring.

Patents No. 197,195, granted November 13, 1877, to Wolf, for an improved tilting chair, and No. 221,651, granted November 11, 1879, to E. Wright, for an animal tether, show that rotary spring devices attached to reversible supports were old.

As Mr. Brevoort, one of defendant's experts, says:

"Now, it was clearly old to use trailing trolley arms. Parish and Munn showed how to make any one of these reversible, and the chair patent and the animal tether patent show mechanisms which any mechanic could utilize had he wished to, and had he desired to obtain that class of reversibility to which Parish and Munn referred, or that class of reversibility which is found in complainant's structure, where in one case, to wit, in Fig. 5, the springs are always attached to the support, and moved therewith, this being the class of mechanisms of the Parish and Munn earlier patent, the chair patent, and the cow tether patent."

He adds that the office chair construction was so universally known and understood, and reversibility of a structure such as a trolley pole was so fully described and shown in the Parish and Munn patent, that "after this it became merely a matter of selection on the part of a mechanic as to what mechanism he would employ to obtain the old and well-known result."

I am constrained, with some hesitation, to adopt this view.

In Potts & Co. v. Creager, supra, Mr. Justice Brown says:

"As a result of the authorities upon this subject, it may be said that, if the new use be so nearly analogous to the former one that the applicability of the device to its new use would occur to a person of ordinary mechanical skill, it is only a case of double use."

Bearing in mind that the means herein claimed merely consisted in so attaching the lower end of the spring to the rotating support that they would revolve together there was no solution of a problem in electrical railway propulsion, and no electrical effect. The prior devices were designed, adapted, and actually used for the performance of the same function. Topliff v. Topliff, 145 U. S. 156, 12 Sup. Ct. 825. The transfer was not to a branch of industry, but remotely allied (Potts & Co. v. Creager, supra); for the art of transmission of electricity showed the practical application of the principle in reversible springs. It did not require any peculiar inventive genius to perceive the relations between cause and effect, and to grasp the idea that the device might be adapted to a new art (Potts & Co. v. Creager, supra); for the same mechanical construction and effect shown in the ordinary office chair was substantially common to the field of practical arts as a whole (Consolidated Electric Manuf'g Co. v. Holtzer, 15 C. C. A. 63, 67 Fed. 910).

But it is urged in support of the argument in favor of patentable novelty that "it is also difficult to believe that Siemens, Edison,