

ADAMS ELECTRIC RY. CO. v. LINDELL RY. CO.

(Circuit Court, E. D. Missouri, E. D. September 17, 1894.)

1. PATENTS—INVENTION—ELECTRIC STREET CAR MOTORS.

Making changes in the method of communicating power from the armature of an electric motor to a street-car axle, as between well-known devices, such as friction bearings, cog gearing, and pulleys, involves no invention.

2. SAME—CHANGES IN FORM, ETC.

Changing the form, proportion, and size of an electric motor, so as to admit of putting it under an ordinary street car, in conjunction with the axle thereof, involves no invention.

3. SAME.

There is no invention in so mounting an electric motor upon a street-car truck that it has a positive connection with the driven axle only, and merely a spring connection, through the truck frame, with the other axle, thus permitting a torque movement of the motor in starting and stopping the car, and allowing the wheels to pass over curves and inequalities with greater facility.

4. SAME.

The Adams patent, No. 300,828, relating to improvements in electric street car motors and trucks, is void for anticipation and want of invention.

This was a suit in equity by the Adams Electric Railway Company against the Lindell Railway Company for infringement of a patent relating to improvements in electric street car motors and trucks.

Given Campbell and Upton M. Young (Robert H. Parkinson and A. C. Fowler, of counsel), for complainant.

Eaton, Lewis, Boyle & Adams (Frederic H. Betts and Samuel R. Betts, of counsel), for defendant.

HALLETT, District Judge. Complainant's patent, No. 300,828, was issued June 24, 1884, upon an application filed December 15, 1883. The claims of the patent, three in number, are as follows:

"(1) The combination, with the axle which carries the driven wheels, the axle boxes or bearings, and a frame secured to, or formed in one with, said boxes or bearings, of an electric motor, whose armature is mounted to revolve on said axle, and whose field is attached to and carried by said frame, substantially as and for the purposes hereinbefore set forth. (2) The combination, with the driven wheels, their axle and axle boxes or bearings, and a field-supporting frame secured to, or formed in one with, said boxes or bearings, of an electric motor, whose armature and field are carried by said axle and frame, respectively, and intermediate motion-transmitting gearing, also carried by said frame, and meshing on the one hand with a gear on the driven wheels, and on the other with a gear on the armature hub. (3) The driven wheels, their axle and axle boxes or bearings, and the supporting frame secured to, or formed in one with, said boxes or bearings, in combination with the armature mounted to revolve on said axle, and the field magnets, commutator brushes, and intermediate motion-transmitting gearing mounted in and carried by said supporting frame, under the arrangement and for operation as hereinbefore set forth."

None of the elements of the combination described in the claims was new at the date of the application. The motor and its several parts, the car axle, the axle boxes, the field-supporting frame, and all

other things mentioned in the claims, were in use at and before that time. The form of some of the elements was changed in the Adams combination, as we shall have occasion to point out in the course of this opinion, but it is clear that none of them were new at that time. And the arrangement of the several parts with reference each to the other is not regarded as of substance in the invention. For illustration: In complainant's patent the armature was made to revolve on the driven axle, as stated in the first and third claims, and there were two fields in perspective, one on each side of the axle and armature. In respondent's patent (the Sprague motor) there is but one field in perspective, and the armature is put in front of the field, and the whole is journaled on the driven axle. It is conceded that such differences in the conjunction of parts does not affect the quality of the machine. Its essential feature is stated by the inventor, at page 450, vol. 2, of complainant's testimony, in the following language:

"The device shown and described in complainant's patent embodies an electric motor rigidly mounted on a single railway car axle, which it is intended to drive, by means of axle boxes or bearings upon such driven axle, the whole forming a supplemental structure separate and distinct from the car frame or truck frame, with which it is only flexibly or nonrigidly connected."

In another place (page 355) the inventor says:

"It should also be observed that it is nowhere stated in this patent that the object of the invention is to provide a suitable type of electric motor for an electric railway, or to provide a suitable form of gearing for an electric railway, or to provide a special and particular way of mounting an electric motor upon the single driven car axle, but that the object is, broadly, the provision of an arrangement by which the field and rotating armature (that is, both elements, the moving part and the stationary part) of an electric motor, and the gearing or transmitting devices (which includes all methods of mechanically transmitting motion from the driving shaft or armature spindle to the driven car axle), through which motion is communicated from the armature to the wheels of the car or vehicle, can be supported in such manner as to be independent of the body of the car or truck, with a view to permitting the latter to move freely without disturbing the relations of the motor and transmitting devices to the driven wheel or wheels, whereby the field and all other parts carried by the frame always occupy the same relative position to the wheels and armature, and are not affected or disturbed by the spring connection between the body of the car, or between the truck and the wheels, while at the same time the field is held from revolving with the axle by elastic restraint."

Accepting this explanation of the plan and purpose of the invention, there is little to distinguish it from other devices of earlier date. In the year 1880, at Menlo Park, N. J., Mr. Edison built and used, in an experimental way, a locomotive which was operated by electricity, and which embraced all the elements of complainant's patent. It was a locomotive, in the sense of a traction engine, distinguishable from a passenger car, which may be moved by power within or under it; but, in essential features, it was much the same as complainant's device. There was an electric motor geared to the driven axle, and resting on a frame attached to the axle boxes. All kinds of gearing for transmitting the power of the armature to the driven axle were successively adopted, but the change from

one to another of such well-known appliances was not in the way of modern invention. Given the power of a revolving shaft, whether produced by water, steam, or electricity, to center it upon another place of usefulness, by friction, cog gearing, or pulleys, is entirely within the range of ordinary skill. This device was the subject of British patent No. 3,894, of date September 25, 1880. Some changes in the form of the motor and the carrying frame were desirable, and probably necessary, to admit of mounting the body of a passenger car on the Edison locomotive, and thus to change that vehicle to the car of the present time, which carries its own motor. But it is doubtful whether there was anything like invention in making such changes. A motor consisting of many coils of wire combined in a form suitable for an armature to revolve rapidly in a frame, and of other coils of wire combined in a form suitable for a fixed magnet in another part of the same frame, may be built in any desired shape and size. The matter of reducing the Edison apparatus of 1880 to a size and shape which would admit of putting it under an ordinary passenger car in conjunction with the car axle was no great achievement. If, however, it was something more, and of the highest art, the result was produced long before the date of complainant's invention. Carl Heinrich Siemens, under date February 10, 1880, obtained British patent No. 583, in which the motor was carried under the car in the manner now practiced. He says, on page 4 of the specifications:

"Vehicles provided with dynamo-electric machines operating according to the above-described invention may either serve only as locomotive engines for hauling along other carriages, or they may themselves constitute passenger carriages, as shown at Figs. 1 and 2 of the drawings. The before-described system of electric railways may also be employed as auxiliary traction power for ordinary railways at inclines, the arrangement indicated at Figs. 5 and 6 being assumed to be so applied; the rails being the ordinary ones of the railway, and the vehicle an ordinary railway van."

The same result was produced by Joseph R. Finney in the year 1882, as shown by letters patent No. 285,353, issued September 18, 1883, upon application filed February 15, 1882. He also put the electric motor under the car, and had positive gearing to connect with the driven axle. There is therefore nothing new in complainant's patent, in respect to getting the motor under the car body, so as to make the locomotive a carriage for passengers.

It is contended, however, that in the earlier devices, of which only two have been mentioned, the motor was rigidly attached,—one end to the driven axle, and the other end to the frame, or to the body of the car,—in a manner to forbid the torque movement of the motor in stopping and starting the car. It seems that the motor, unrestrained, under an electric current would revolve on the car axle, and this movement, to a very limited extent, aids in starting the car. To enable the motor to respond to the turning movement, the outer end—that which is not connected with the car axle—must be, in some measure, free. To meet this condition, complainant's patent calls for a frame supported on the axle boxes of the driven axle, which shall carry the motor and the power-transmitting gear-

ing, and respond to all its movements. The language of the patent on that subject is as follows:

"It is my object to provide an arrangement by which the field and rotating armature of an electric motor, and the gearing or transmitting devices through which motion is communicated from the armature to the wheels of the car or vehicle, can be supported in such manner as to be independent of the body of the car, with a view to permitting the latter to move freely without disturbing the relations of the motor and transmitting devices to the driven wheel or wheels. To this end I mount the armature upon the axle of the driven wheel or wheels, and I support the field in a frame, which is rigidly secured to, or found in one with, the axle boxes or journal boxes of said wheels, said frame also carrying the intermediate gearing through which the armature is connected to the wheel or wheels to be driven. In this way the field and all other parts carried by the frame always occupy the same relative position to the wheels and armature, and are not affected or disturbed by the spring connection between the body of the car or truck and the wheels."

Complainant's motor, having fields on both sides, and the armature centered on the driven axle, would probably be well balanced on the axle; but the oscillating motion of the ends would be very strong, and it would be necessary to restrain it in some way; otherwise, the frame and the motor would be destroyed by contact with the track and with the car body. It is said that this condition was recognized, and the proper remedy applied, in the following suggestion found in the specifications:

"With a view to preventing injurious thrusts of or upon the field-supporting frame, I prefer to interpose between its ends and the body, A, springs, 1."

This, however, cannot be regarded as part of the invention, for several reasons, and principally because it is not claimed as such. Articulate connection between the motor and the body of the car or the truck frame is not demanded or suggested in any of the claims, and the language quoted is in recommendation of spiral springs; that is to say, an instrument of connection, and not a statement of the kind of connection to be made, as flexible or yielding or positive. Clearly enough, the inventor intended to separate the motor from the car body, as shown in the next paragraph taken from the specifications:

"Under the arrangement described, it will be seen that the field of the motor, although it does not revolve, is, in effect, carried directly by the wheels and their bearings, and retains the same relative position at all times with respect to the same, so that motions of the body of the car on its springs will not complicate or interfere with the transmission of power from the motor to the wheels."

But I do not see that he was impressed with the idea of giving play to the free end of the motor in order to avail of some part of the torque movement in stopping or starting the car.

Aside from this, and looking to the office of the field-supporting frame of complainant's patent, we see that it is a necessary part of that device. But when the form of the motor came to be changed, as in the Sprague and other plans, one end of the motor was journaled on the driven axle, and the other end was supported by a spiral spring which rested on a crossbar of the truck frame. Thus, the problem

of allowing torque motion at the free end of the motor was entirely separated from the field-supporting frame, and that frame became useless. The motor has a frame of itself, which holds all parts in fixed relation, and is capable of carrying the gearing which transmits the power to the axle. The free end is supported or suspended on a spring which is attached to the truck frame, and the latter is carried on the axles in the usual way. I do not find anything of that kind in complainant's patent. As I understand it, the patent is silent on the subject. Furthermore, if we take the field-supporting frame to be an element of the Sprague plan, as adopted and used by respondent, there seems to be but one feature in which it differs substantially from the Edison and Finney devices. In the latter, the motor is carried on the truck frame, which is attached to both axles of the car, and in the former the connection with the driven axle is positive, and only a spring connection through the truck frame with the other axle. The change thus made, from a fixed and positive connection between the two axles of the vehicle in the Edison and Finney plans, to an articulate connection, as in complainant's plan, is not, in my judgment, a modern invention. Articulate connection between the axles has been used from the earliest times in the common lumber wagon, and in many other road vehicles of four wheels. Several patents in which an effort was made to apply steam power to ordinary wagons are in evidence, and they show this connection in one form or another. Whatever power may be used to drive four-wheel vehicles, a flexible connection between the axles, so that each may rise and fall independently of the other, has long been in common use. If, therefore, we accept the field-supporting frame of complainant's patent as a short truck frame adapted to oscillate upon one axle so as to yield to the torque motion of the motor, we have nothing more than a change in connection with the other axle, and an adaptation of an old device to new conditions. This is the point discussed at length at the hearing, and indeed the only point in the case worthy of serious consideration.

Upon full examination of the record, and the very able arguments of counsel, I am not convinced of the merits of the patent. Much was said at the hearing about the efficiency of complainant's construction, in allowing the car wheels to pass over curves and inequalities of track with greater facility than was theretofore possible, which I cannot go over at length. However the fact may be in relation to those matters, I do not find anything in the patent which can be recognized as an invention, and therefore I am constrained to dismiss the bill, with costs.

EBERHARD MANUF'G CO. v. ELBEL et al.

(Circuit Court, N. D. Ohio, E. D. August 8, 1893.)

No. 5,009.

PATENTS—ANTICIPATION—HARNESS TRIMMINGS.

The Zeller patent, No. 207,791, for an improvement in harness trimmings, is not anticipated by the Hinman patent of February 25, 1868, or the Zeller patent of September 15, 1874.

Suit by the Eberhard Manufacturing Company against Elbel & Co. Decree for complainant.

Thos. W. Bakewell and E. A. Angell, for complainant.
M. D. Leggett and Chas. R. Miller, for respondents.

RICKS, District Judge. The bill is filed for infringement of letters patent No. 207,791, granted on September 3, 1879, to Melancthon E. Zeller, for an improvement in harness trimmings. The complainant has given to the public a very simple device, which combines several elements that are all calculated to make it acceptable and useful. Though it presents no single element evincing great invention, it combines several new features, which, taken together, make it a successful device, which has rapidly won its place among articles of useful manufacture. It is easily and cheaply made, so designed and constructed as to be easily put together. Each part performs the function claimed for it, and when put into use it is superior to any other article made or designed for the same purpose. It can be made and sold separately, can be readily attached to any kind of harness, and it fulfills the uses for which it was designed. In it the patentee developed as to its leading features that "last step" which completes invention, and makes the device a success. This is particularly striking in comparing the device of the patent in suit with the device of the same patentee in the patent designated "the Zeller patent of 1874." That device was practically inoperative, both because of the expense and difficulties connected with its manufacture, and more particularly because the falling hook, which was designed to receive the check rein, had such a long vertical end projecting through the elevated plate or passage that when the strain on the check rein was lessened so as to permit the hook to slip back, or to force it back towards or over the crupper loop, the ring, instead of falling easily and surely, would catch and remain rigid. One of the principal features claimed for the hook so constructed was that it would readily fall and prevent its destruction in case the horse or mule should fall or roll with the harness on it; so that for the chief advantage claimed it was inoperative. The chief defense against this patent is that it was anticipated by the manufacture and sale of various articles of common use by nine prior United States patents. The two chiefly relied upon as showing an anticipation are those of J. W. Hinman, February 25, 1868, and of M. E. Zeller, of September 15, 1874, just referred to. The Hinman patent, while it involves the drop hook and drop ring in a device intended for an entirely different use, did not disclose those uses in a way to make them any more conspicuous