

UNION RY. CO. et al. v. SPRAGUE ELECTRIC RAILWAY & MOTOR CO.  
(Circuit Court of Appeals, Second Circuit. May 17, 1898.)

No. 108.

1. PATENTS—INFRINGEMENT—ELECTRIC RAILWAY MOTORS.

In a patent for an electric railway motor, a claim describing the field magnet of the motor as "sleeved upon an axle" of the vehicle at one end is infringed by a construction in which flexible extensions from the field magnet are journaled upon the axle.

2. SAME—CONSTRUCTION OF CLAIMS.

In a claim for the combination with a wheeled vehicle of an electro-dynamic motor flexibly supported from such vehicle, "and centered upon the driving axle thereof," the use of the word "centered" does not require a perfectly rigid union of axle and motor, but only that the center of movement of the motor shall always be the car axle.

3. SAME.

The Sprague patent, No. 324,892, for an improved electric railway motor, covers, not a pioneer or broad invention, but a clearly-defined one, the gist of which consists in the utilization of the frame of the motor itself with the necessary extension, and the centering of the motor on the driven axle by extension pieces from the field magnet at one end, and in its flexible suspension, at the other end, to the car track, the armature being carried rigidly by the field magnet. Claims 2 and 6 of this patent are infringed by a motor made in accordance with the Short patent, No. 546,560, and claim 9 is not infringed.

This appeal is from a decree of the circuit court for the Southern district of New York, which adjudged that the defendants had infringed claims 2, 6, and 9 of letters patent No. 324,892, dated August 25, 1885, and issued to Frank J. Sprague, for an improved electric railway motor. 84 Fed. 641. The defendants' motor is made in accordance with letters patent No. 546,560, dated September 17, 1895, and issued to Sidney H. Short.

The three claims which the circuit court found to have been infringed are as follows:

"(2) The combination of a wheeled vehicle and an electro-dynamic motor mounted upon and propelling the same, the field magnet of said motor being sleeved upon an axle of the vehicle at one end, and supported by flexible connections from the body of the vehicle at the other end, substantially as set forth."

"(6) The combination, with a wheeled vehicle, supported upon its axles by springs, of an electro-dynamic motor flexibly supported from such vehicle, and centered upon the driving axle thereof, substantially as set forth."

"(9) The combination, with a wheeled vehicle, of an electro-dynamic motor centered upon the driving axle thereof at one end, a spring support for that end of the motor from the truck or body of vehicle, and relieving axle wholly or partly of dead weight, and a spring support for the other end of motor from the truck or body of vehicle, substantially as set forth."

Chas. E. Mitchell and Wm. H. Kenyon, for appellants.  
Fredk. H. Betts, for appellee.

Before WALLACE, LACOMBE, and SHIPMAN, Circuit Judges.

SHIPMAN, Circuit Judge. As soon as the use of an electric motor for the propulsion of cars upon a street railway was thought to be attainable, divers methods were invented which were intended to enable the motor to act efficiently, economically, and certainly upon

the car axle. At first, the motor was supported by or on the car body, and afterwards it was upheld upon a separate platform. The state of the art upon the subject is so fully stated by Judge Sanborn in *Adams Electric Ry. Co. v. Lindell Ry. Co.*, 40 U. S. App. 482, 23 C. C. A. 223, and 77 Fed. 432, that it need not be restated here. Sprague hung the motor under the car body directly upon the axle of one of the pairs of wheels by an extension or solid bearing attached directly to the motor. He used a magnet having a yoke and pole pieces, and, by sleeving one end upon the axle, he caused the armature which was carried between the poles of the magnet to be held with firmness, and the armature shaft to be held in alignment with the car axle. The opposite end of the motor was upheld by springs extending to a crossbar on the truck frame. He also relieved the weight upon the axle by a spring support from the truck of the vehicle. The motor was thus hung below the car, one end being centered upon the axle, and the other end being flexibly attached by springs to the truck frame. The effect of the mode of construction is explained in the specification as follows:

"The armature being carried rigidly by the field magnet, these two parts must always maintain precisely the same relative position under every vertical or lateral movement of the wheels or of the car body; and, as the field magnet which carries the armature is itself centered by the axle of the wheels to which the armature shaft is geared, the engaging gears, also, must always maintain precisely the same relative position. At the same time the connection of the entire motor with the truck is through springs, so that its position is not affected by the movements of the truck on its springs."

The simplicity and comparative lightness of the general plan upon which this motor was constructed, and the adaptability of the means to the required result, made the motor successful, and other pre-existing methods of construction disappeared to a great extent.

The question of anticipation by a pre-existing electric railway motor may be laid out of the case, for it is not asserted that any patent prior to the date of the patent in suit described an electric motor geared to and propelling a vehicle, and supported at one end by sleeving extension pieces from the field magnet upon the driven axle, and at the other end by a flexible connection with the truck or body of the vehicle. Upon the question of nonpatentability, the defendants urge that substantially the same features of construction were shown in other than electric motors, and the patent to Charles W. Hermance, No. 111,644, dated February 7, 1871, for a steam road wagon, is relied upon as affording the closest analogy to the Sprague device. Upon the Hermance axle the rear end of a frame was hinged, the front end of which rested upon springs which were attached to beams which were also attached to the axle. The boiler, engine, and machinery were all attached to this frame, which was above the car frame, and which suspended the entire parts and permitted vertical motion. The Sprague device discarded frames, and hung the motor by extension pieces from the magnet directly to the car axle. Hermance and the electric motor patentees who followed the same line of construction hung the motor upon a frame which was hung upon the axle. An inspection of the Hermance wagon would not suggest an abandonment of independent frames and a construction which compelled the motor to be its own frame, and we see nothing in his wagon, or in

the other steam wagons in the record, which diminishes the patentable character of the Sprague method of construction.

The defendants' field magnet is cylindrical, and surrounds the armature. "The yoke or neutral part of the field magnet forms the exterior portion thereof, and is extended around and over the ends, so as to complete the casing within which the armature and the other portions of the field magnet are contained. The motor, therefore, appears like a small barrel or cylinder of iron, the surface of which is magnetically neutral." In their structure the extension from the field magnet towards the car axle is not rigid with the field magnet, but is jointed thereto, being for this purpose of a U shape, the base of the U being journaled on the car axle, and the two arms of the U being jointed to the opposite lateral sides of the motor, which is embraced between them. A form of the defendants' method of suspension is described in one of the advertisements of the Walker Company as follows:

"B is a U-shaped frame, the rounded end of the U being journaled on the car axle in the ordinary way. Swinging freely between the arms of this U is the motor, A, trunnioned by its bearing cases. The motor is then supported at the rear by spiral springs, C, between the lugs on the frame—which have a factor of safety in strength of twenty—and the arms of the U. This feature is also shown in figure 3. At the front end it is supported by a swinging arm from the ordinary spring truck bar, D."

The three points which the defendants' experts regard as patentably distinguishing their motor from the Sprague invention, as described in claims 2 and 6, are that their field magnet is not sleeved upon the axle, as required in claim 2, and that their motor is not centered upon the driving axle, as required in claim 6; and, as a part of the same proposition, that their field magnet is not so centered, and that their motor, being in the form of a drum, is not equipped with ends, as required in claim 2. The third point may be dismissed as trivial.

The Sprague invention was not a pioneer, and was not of a broad character, but it was a distinct and clearly-defined invention, in the method of hanging electric motors for vehicles, and its gist consisted in the utilization of the frame of the motor itself with the necessary extension, and the centering of the motor on the driven axle by extension pieces from the field magnet at one end, and in its flexible suspension at the other end to the car truck, the armature being carried rigidly by the field magnet.

The question of the infringement of claim 2 is of the most importance; for, if the defendants' jointed attachment of their motor to the axle of the vehicle is not the sleeving of claim 2, it would almost necessarily follow that the defendants' centering of the motor is accomplished in a substantially different way from that of the patent. Sprague bolted the extension piece from his motor to the axle, and hung his motor upon the axle by a connection which might be called rigid. Short hung his barrel-shaped motor to the axle by journaling the rounded end of the U-shaped extension to the car axle, and jointing the two arms of the U to the opposite lateral sides of the motor, and thus his extensions from the field magnet to the axle are flexible, and the motor can rock or tip towards and

from the axle, which is esteemed to be a noteworthy improvement. The defendants insist that, inasmuch as the motor is hung by extensions to trunnions upon its opposite sides, it is not sleeved to the axle, because sleeving, as described in the patent, is by a rigid attachment; and that if the magnet is sleeved upon the axle it has no capacity of up and down movement relatively to the axle, except at the unsleeved end. This construction presupposes that Sprague's invention consisted in the details by which he attached his motor or his magnet to the axle. If it did so consist, the defendants are right, but the invention was more than a matter of form or detail. The part of the invention now under consideration consisted, as has been said, in utilizing the frame of the motor, and hanging it by its necessary extensions from the field magnet at one end to the axle; and, while it is true that the patentee showed a rigid extension, his claim did not tie up that part of the invention to rigidity. A jointed and a flexible extension is not only within the invention, but within the claim.

The defendants also say, in this part of the case, that the field magnet is required by claim 2 to be sleeved upon the axle, and that their magnet is not so sleeved because the trunnions from which the side arms extend are not parts of the field magnet, and the side arms which extend from the trunnions to the axle are not extensions from the field magnet. In the Sprague motor, the field magnet, by means of extensions from the pole pieces, is sleeved upon the axle, whereas in the defendants' motor extensions from the exterior shell, which is mechanically integral with the yoke of the magnet, are journaled or sleeved upon the axle. This supposed difference, which mainly results from the use of a different shape of magnet and of motor, is of an unsubstantial character with regard to infringement.

The next point is in regard to the use of the word "centered" in claim 6. The defendants say that "centering" means fixing upon a central point, and that the motion of the patented extension must be limited to the motion of the axle, whereas the arms of their U are yielding, and their motor swings between them. By the use of the word "center," a perfectly rigid union of axle and motor was not demanded, but it was intended that the center of the movement of the motor was always to be the car axle, and the defendants' motor is thus centered. Its yielding movement is in an arc of which the driving axle is the center, and therefore its driving gears retain the same relative position, which is the effect of the centering of the Sprague magnet, as stated in the extract from the specification which has already been quoted. The specification of the Short patent describes the movement of its motor as follows:

"Any yielding movement of the motor in either direction, either upwardly or downwardly, being in the arc of a circle of which the driving axle is the center and the supporting frame the radius, it follows that the driving gears will always retain the same relative positions, and be kept in perfect mesh throughout all adjustments and positions of the motor."

The various discussions by the defendants in regard to infringement, except the one in regard to sleeving by a rigid extension, are discussions in regard to words, and not in regard to things. The

difference between a rigid attachment and a jointed and flexible attachment to the axle has a reality with relation to this invention which is lacking in the other alleged differences, but the difficulty with that part of the defendants' case is that the Short device is an improvement upon the Sprague invention, which was of a broader character than the defendants interpret it to have been.

Claim 9 requires a spring support for the axle end of the motor from the truck or body of the vehicle. The specification says that the springs, known as "springs M," extend to crossbars on the truck frame, or to the car body, in case no truck is used. The spring supports on the axle end of the defendants' motor are from the car axle. It is true that the car axle is held in the truck, but the claim made it imperative that the support for that end must be from the truck or body of the vehicle, and the specification describes the same method of construction. We think that claim 9 was not infringed.

The decree should be modified, with costs of this court to the appellants, by limiting the injunction and the accounting to claims 2 and 6; and the case is remanded to the circuit court, with directions to enter a modified decree in accordance with the foregoing opinion, with costs of that court.

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UNION GAS-ENGINE CO. et al. v. DOAK.

(Circuit Court, N. D. California. May 10, 1898.)

No. 11,947.

**1. PATENTS—SUBJECTS OF PATENT.**

It is not the result attained which is patentable, but the device or mechanical means by which that result is secured.

**2. SAME—ANALOGOUS USE.**

There is no invention in adapting the prior devices for igniting gaslights by an electric spark, by what is known as the wiping or reciprocating movement, to the ignition of gas in the explosion chambers of gas engines. The changes required involve mere mechanical adaptations, obvious to the skilled workman.

**3. SAME—GAS ENGINES.**

The Barrett & Daly patent, No. 430,505, for an improvement in gas engines, consisting in mechanism for igniting the gas by means of an electric spark, is void, because of anticipation and want of novelty.

This was a suit in equity by the Union Gas-Engine Company, Mora M. Barrett, and John F. Daly against John E. Doak for alleged infringement of a patent for an improvement in gas engines.

John H. Miller, for complainants.

John L. Boone, for defendant.

MORROW, Circuit Judge. This is a suit for the infringement of letters patent No. 430,505, issued on June 17, 1890, to Mora M. Barrett and John F. Daly. The Union Gas-Engine Company, one of the complainants, appears to be the successor in interest of all the rights, title, and interest of the Pacific Gas-Engine Company, to whom the patentees, Barrett and Daly, had assigned their patent. The patent was issued for a new and useful improvement in gas engines. The improvement consists in a device or mechanism for