(No Model.)

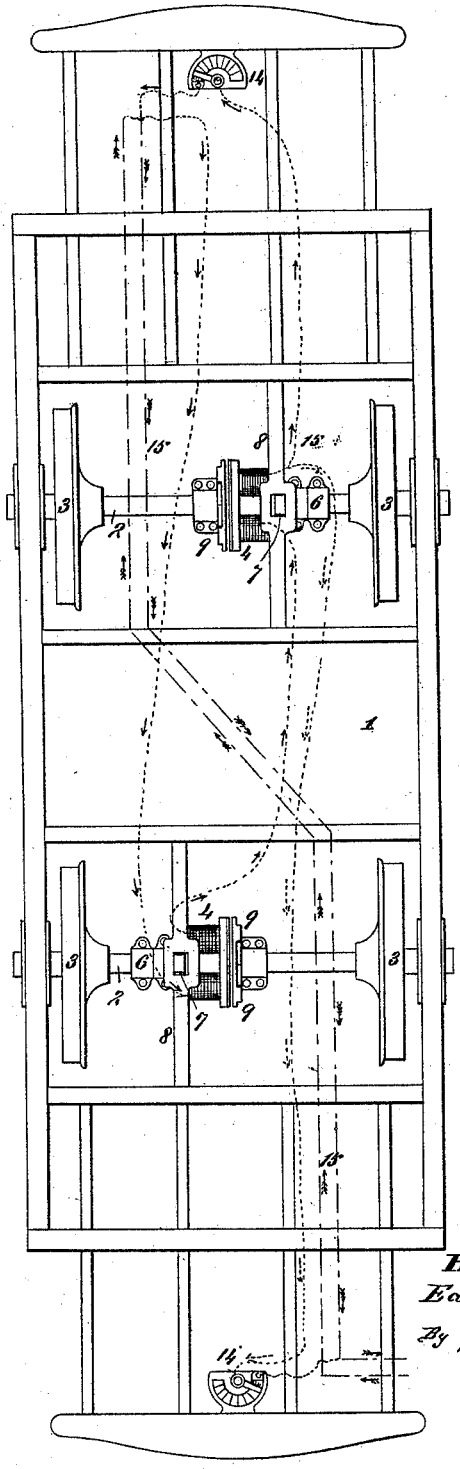
3 Sheets—Sheet 1.

E. VERSTRAETE.

ELECTRIC CAR BRAKE.

No. 457,016. Patented Aug. 4, 1891.

Fig. I.



Attest:
E. Arthur
E. L. Knight.

Inventor:
Edmond Verstraete.
By Wright Bros
Atty's

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E. VERSTRAETE.

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Fig. 2.

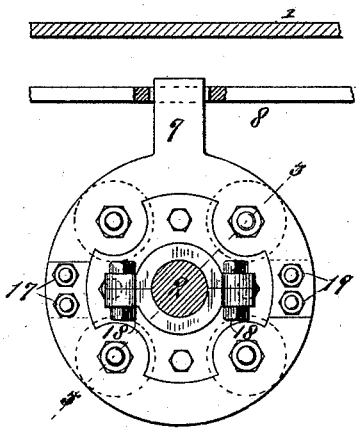


Fig. 5.

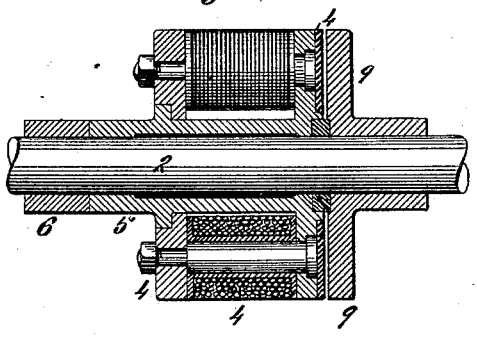


Fig. 3.

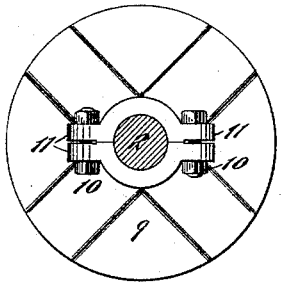


Fig. 6.

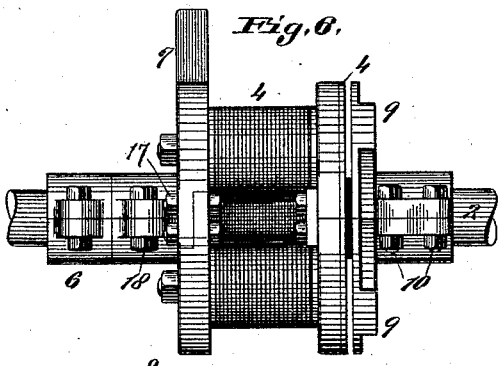


Fig. 4.

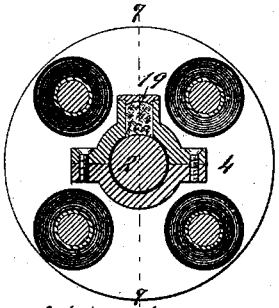
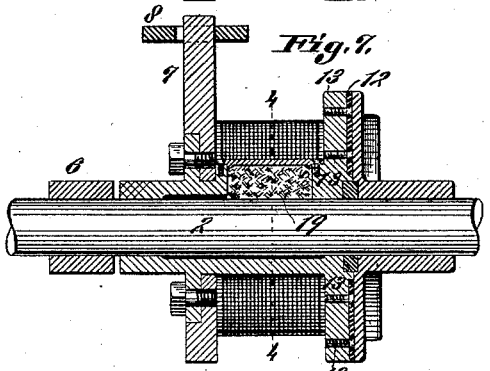


Fig. 7.



Attest,
E. Arthur
E. L. Knight.

Inventor,
Edmond Verstraete,
By Wright Bros
Atty's

(No Model.) 3 Sheets—Sheet 3.

E. VERSTRAETE.

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Fig. 8.

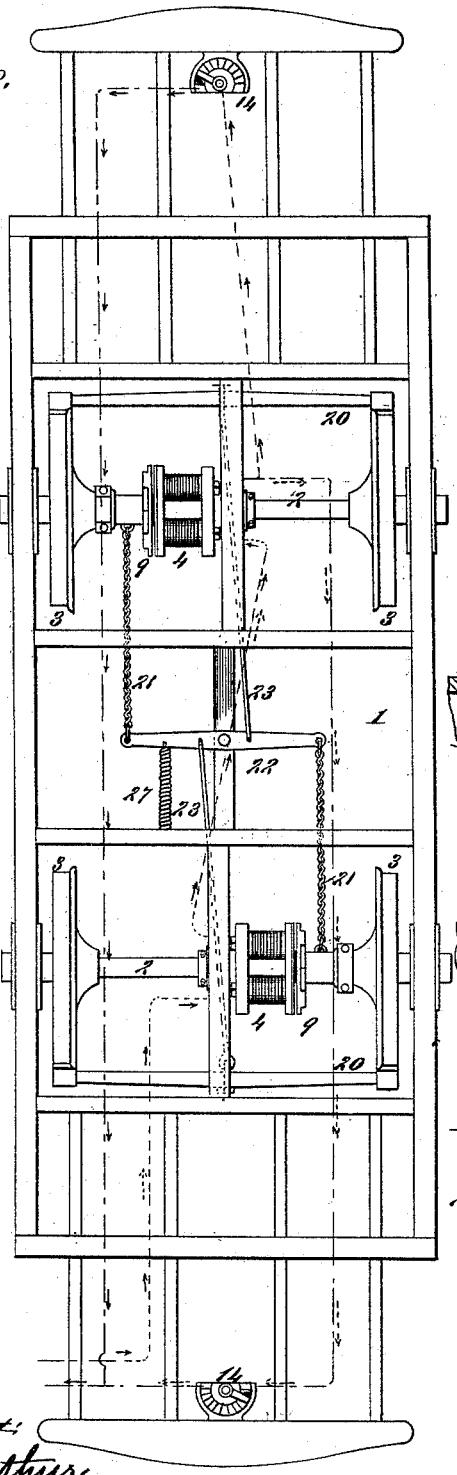


Fig. 9.

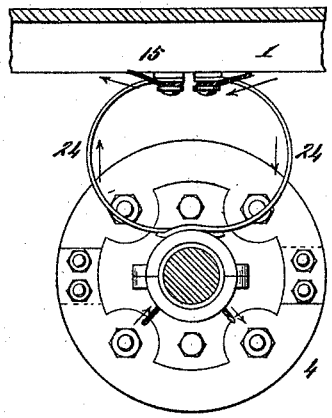


Fig. 10.

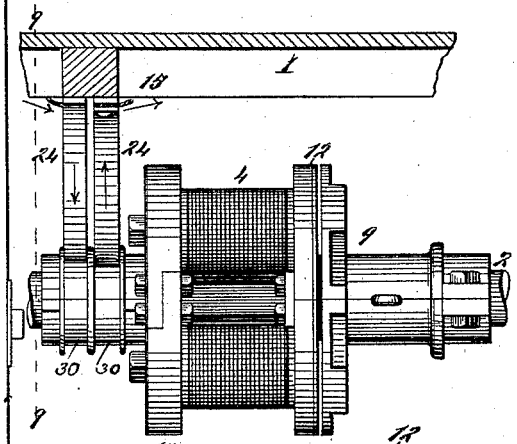
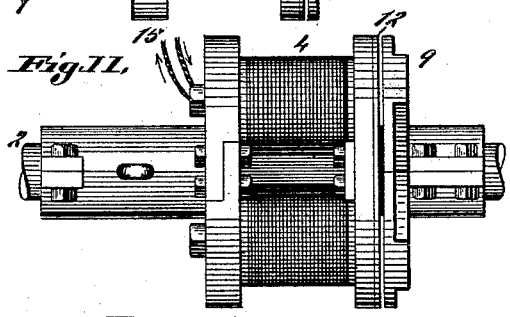


Fig. 11.



Attest:
E. Arthur.
E. L. Knight.

Inventor:
Edmond Verstraete
By Knight Bros
Atty's

UNITED STATES PATENT OFFICE.

EDMOND VERSTRAETE, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO PETER M. KLING, OF SAME PLACE.

ELECTRIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 457,016, dated August 4, 1891.

Application filed July 26, 1890. Serial No. 360,072. (No model.)

To all whom it may concern:

Be it known that I, EDMOND VERSTRAETE, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Electric Car-Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an electric car-brake, and it is more particularly intended for electric-railway cars; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure 1 is a bottom view of a car provided with my invention. Fig. 2 is an end view of the magnet, the axle being shown in section. Fig. 3 is a similar view with the armature. Fig. 4 is a transverse section through the magnet, taken on line 4 4, Fig. 7. Fig. 5 is a longitudinal section through the magnet, taken on line 5 5, Fig. 2, one of the bobbins being shown in elevation. Fig. 6 is a side elevation of the magnet and armature, showing the parts separated; and Fig. 7 is a longitudinal section through the magnet and armature, taken on line 7 7, Fig. 4, and showing the parts in contact. Figs. 8 to 11, inclusive, represent modifications, Fig. 8 being a bottom view, and Fig. 9 a section, taken on line 9 9, Fig. 10; Fig. 10, a side elevation, and Fig. 11 a side elevation, showing a slightly different form of the invention to that illustrated in the other figures.

Referring to the drawings, 1 represents the body of the car, 2 the axles, and 3 the track-wheels.

4 represents magnets, provided with hubs 5, fitting the axles 2 and held from end movement thereon away from the armatures by collars 6. The magnets are loosely mounted on the axles, so as to permit the axles to turn within them, while at the same time they are permitted to move a short distance lengthwise of the axle toward the armatures. They are held from turning with the axle by means of arms 7, extending upward therefrom and entering perforations in bars 8, secured to the body of the car. (See Figs. 1, 2, 6, and 7.) It will be seen that these arms or projections 7, fitting in the perforations of the bars 8, will prevent the turning of the magnets with the axles, while at the same time the body of the car can rise and fall without being interfered with by this connection, as the perforations in the bars 8 are sufficiently large to fit loosely over the projections 7.

9 represents the armatures. They are permanently connected to the axles and made to turn therewith. I have shown them clamped to the axles by means of bolts 10 passing through flanges 11. (See Fig. 3.) The faces of the armatures are in the form of disks, as shown clearly in Fig. 5, and the inner faces of the magnets are in the form of disks, as is also clearly shown in Fig. 5, also in some of the other figures. The face of one of each pair of disks is lined with leather or other suitable wearing-surfaces 12, which may be attached by screws 13.

14 represents switches, (I prefer to place one at each end of the car,) with which the wires 15, leading to and from the magnets, are connected. By having a switch at each end and wires extending from the magnets to each switch the brakes can be applied from either end of the car. To apply the brakes, one of the switches is adjusted and a current passes from any suitable or desirable source (say from the trolley of an electric car) through the wires to the magnets. The disks of the magnets are thus brought into frictional contact with the disks of the armatures, (the magnets moving toward the armatures along the axles,) and thus the brakes are applied, the magnets, as stated, being loose on the axles and held from turning thereon and the armatures being rigidly held on the axles.

I have shown both the magnets and the armatures split and joined together by bolts, so as to be readily applied to the axles, the joints of the armatures being united by the bolts 10, as stated, and the joints of the magnets being united by bolts 17 and 18, as clearly shown in Figs. 2 and 6. I have shown the hubs of the magnets provided with oil-boxes 19, which may be filled with waste to lubricate the bearings between the magnets and the axles.

While I have shown and described a mag-

net and armature on each axle, it is evident that but one of the axles may be provided with a magnet and armature.

In Figs. 8 to 10, inclusive, I have shown the magnets rigidly connected to the axles, so as to turn therewith, and the armatures loosely mounted on the axles, and in this form I have shown the ordinary brake beams and shoes 20, which are connected to the hubs of the armatures by chains 21, levers 22, and rods 23. With this construction it is necessary to use brushes or similar connections between the wires and the hubs of the magnets, for the reason that were the wires directly connected to the turning magnets they would be wound around the axles. I therefore show the wires connected to brushes 24, secured to the car-body and bearing by their free ends against contact-rings 30 on the hubs of the magnets, and which carry the current to and from the magnets. With this construction the application of the current attracts the armatures to the magnets, and the frictional contact causes the turning of the armatures, which winds the chains 21 on the hubs of the armatures and applies the brakes.

In Fig. 11 I have shown the armature permanently connected to the axle and the magnet loosely mounted on the axle, with a hub on the latter, to which one of the brake-chains 21 would be secured, and with this arrangement the chain is wound on the hub of the magnet to apply the brakes, the current-wires 15 being long enough to allow the magnet to turn, say, a quarter of a revolution to permit the winding of the chain on the hub of the magnet, and when the brakes are released the chain will be unwound, as in Fig. 8, by means of a suitable spring 27, which connects one end of the lever 22 to the body of the car.

I claim as my invention—

1. In an electric car-brake, the combination of the axle and the electro-magnet and armature adapted to be brought into frictional contact, one of said parts being fixed to rotate with the axle and the other being held against rotation by means of an arm secured thereto and a rod secured to the car-body and provided with a perforation through which said arm freely passes, as and for the purpose set forth.

2. In an electric car-brake, the combination, with the car-axle, of the armature and the electro-magnet, one of which parts is fixed against rotation and the other of which is secured to the axle, so as to rotate therewith, said rotating part being formed in two parts adapted to be fitted and secured together around the axle, as and for the purpose herein specified.

3. In an electro-magnetic car-brake, the combination, with the axle, of the armature and electro-magnet formed in halves and fitted and secured by bolts upon the axle, one of said parts being fitted securely to the axle, so as to rotate therewith, and the other being fitted loosely upon the axle and provided with means independent thereof for preventing its rotation, substantially as and for the purpose set forth.

EDMOND VERSTRAETE.

In presence of—
E. S. KNIGHT,
A. M. EBERSOLE.