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W. T. PEMBER.

ELECTROMAGNETIC BRAKE.

(Application filed Mar. 4, 1902.)

(No Model.)

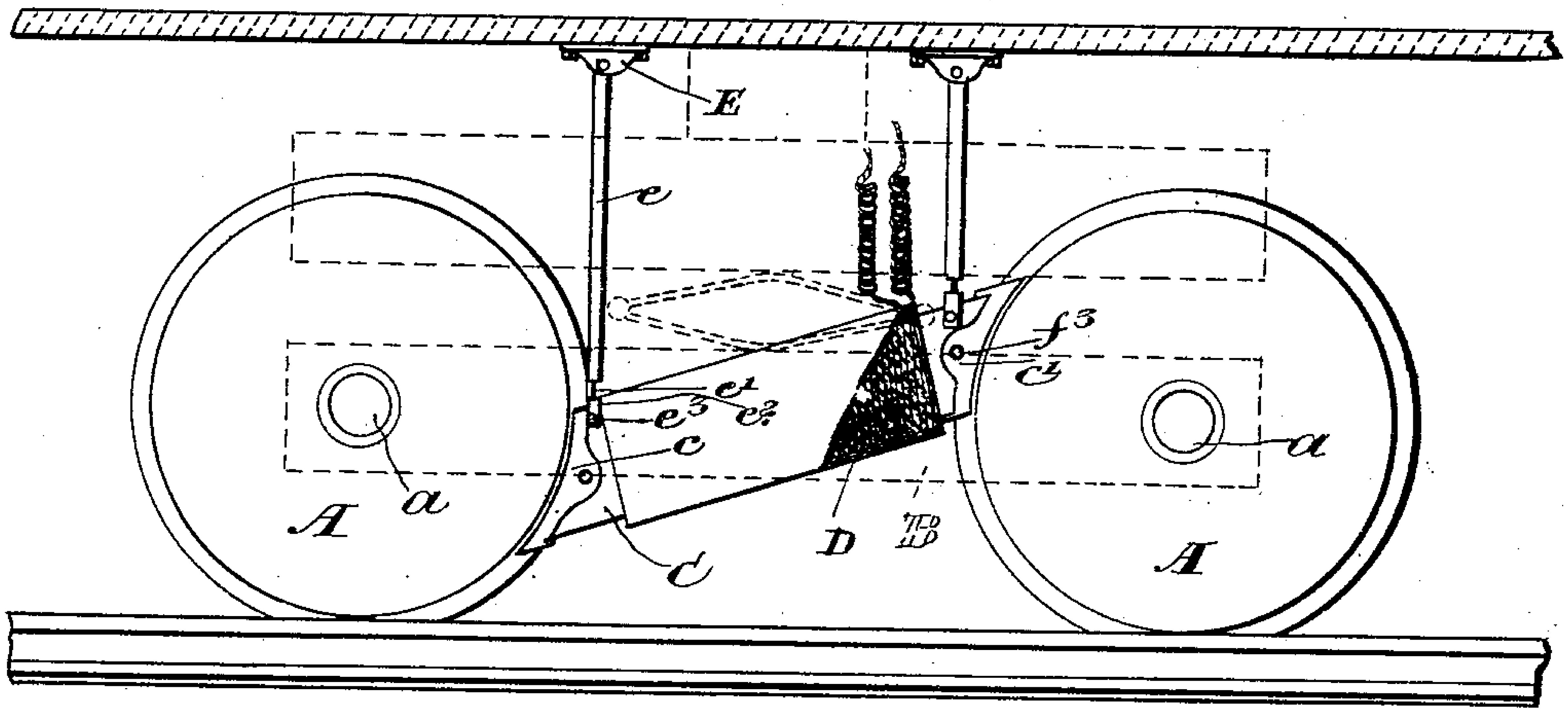

Fig. 1.

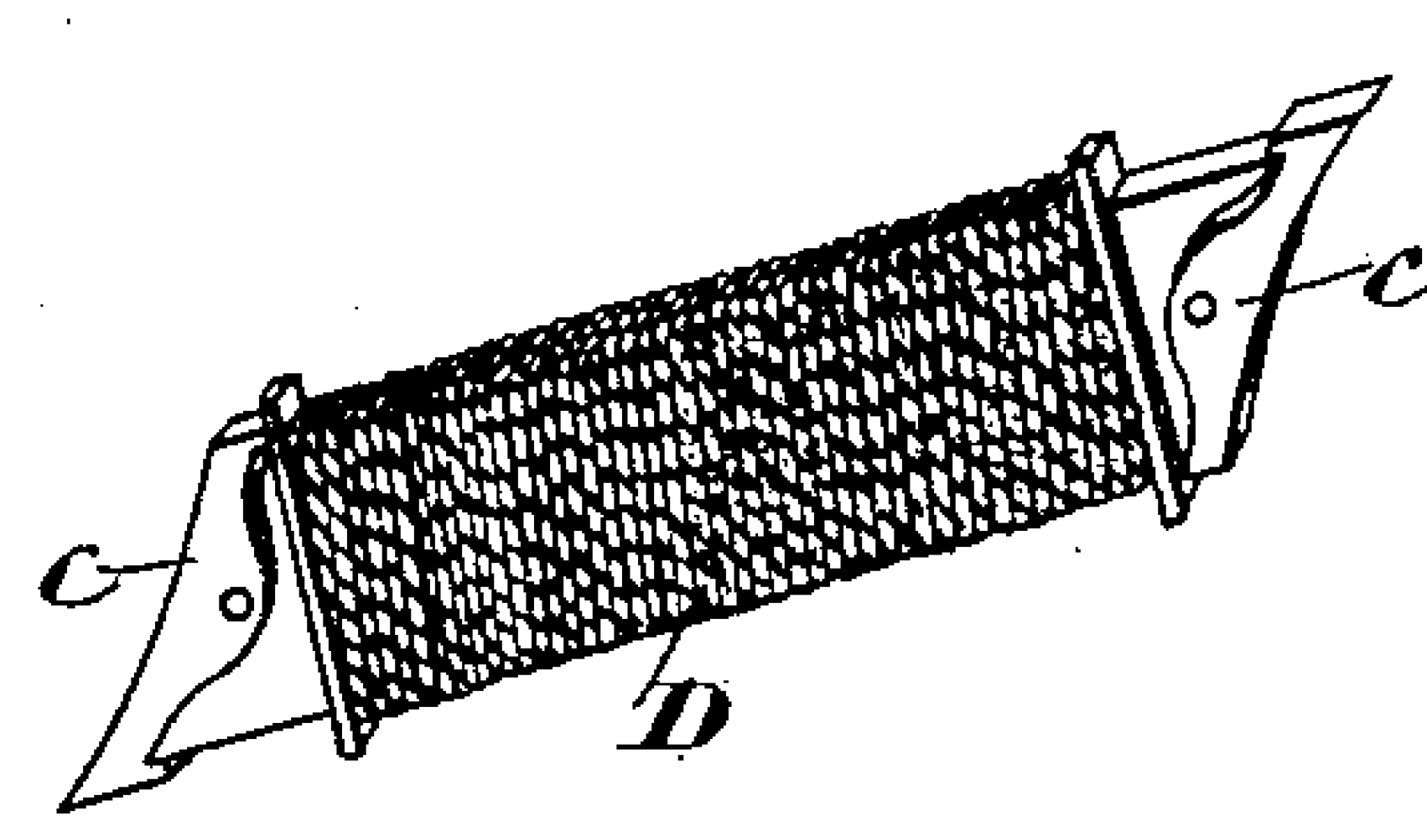

Fig. 2.

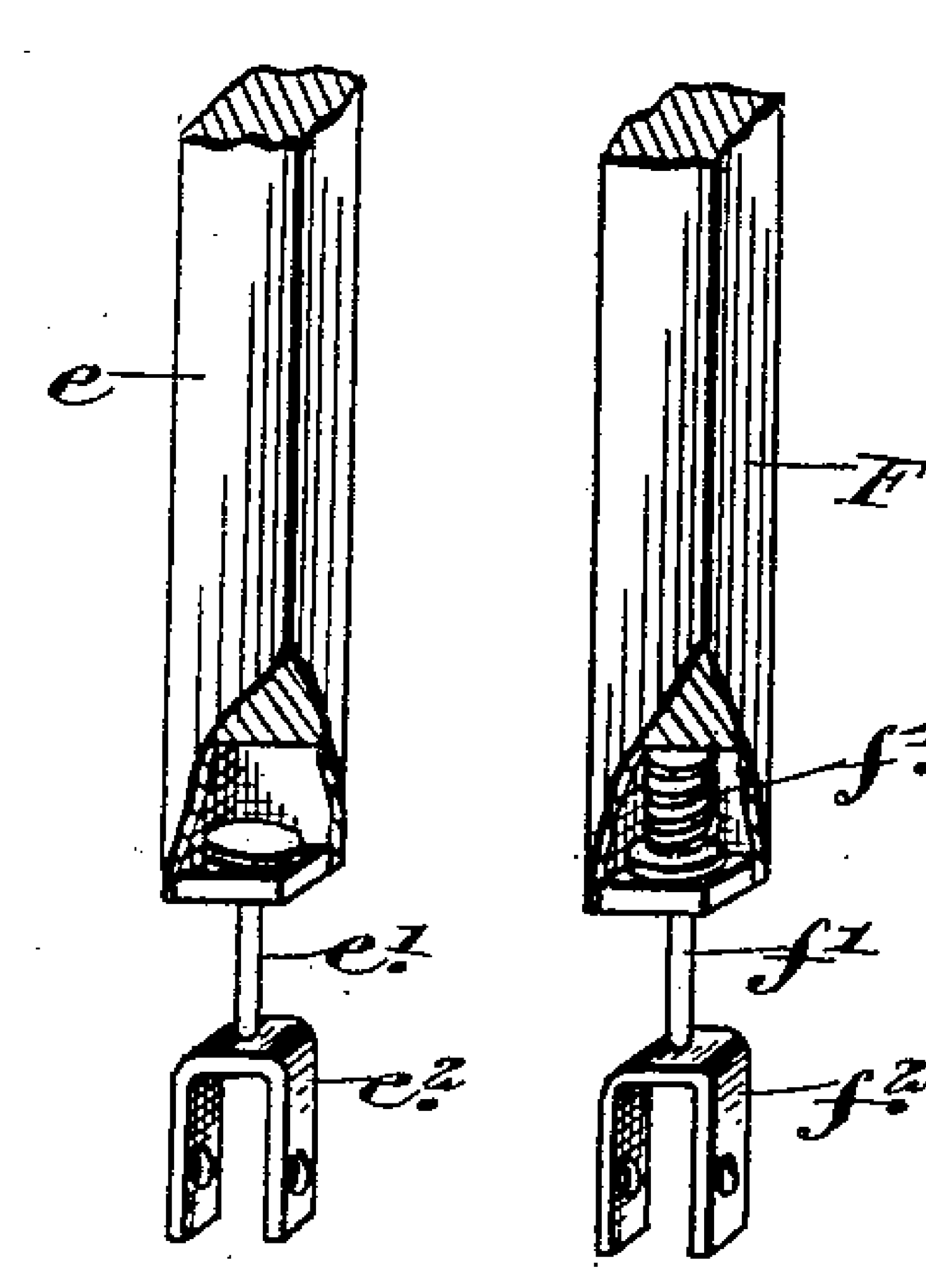

Fig. 3. Fig. 4.

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ELECTROMAGNETIC BRAKE.

SPECIFICATION forming part of Letters Patent No. 713,340, dated November 11, 1902.

Application filed March 4, 1902. Serial No. 96,684. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM THOMAS PEMBER, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Electromagnetic Brakes, of which the following is a specification.

My invention relates to improvements in electromagnetic brakes; and the object of the invention is to devise a simple, cheap, and positive and powerful electric brake in which the shoes may be put on and taken off quickly, in which there will be not only a magnetic and friction brake on the wheel, but also a magnetic pull or attraction of the wheels for the rails, and thereby prevent skidding of the wheels on the rails; and it consists, essentially, of a bar supported by suitable hangers and provided at each end with brake-shoes designed to be brought into contact with the periphery of the wheel, such bar being wound with a suitable coil of insulated wire, the ends of which are connected to a suitable circuit provided with a switch to throw in the current for magnetizing or demagnetizing the bar, the parts being constructed and arranged in detail, as hereinafter more particularly explained.

Figure 1 is a side elevation of a truck, showing my improved brake. Fig. 2 is a detail of the core or bar of the magnet. Figs. 3 and 4 are details of the hangers.

In the drawings like letters of reference indicate corresponding parts in each figure.

A A are the wheels of the truck. *a* are the axles. The wheels are journaled in bearings in the truck B in the usual manner, which it is not necessary here to describe.

C is a bar, preferably rectangular in section and extending preferably obliquely between the wheels, one end of the bar being for the most part below the center or axle of the wheel on that side, while the opposite end of the bar is preferably above the center or axle of the wheel on the opposite side.

c and *c'* are shoes which are pivotally held on the end of the bar, as indicated.

D is a coil of insulated copper wire which extends around the bar from one end to the opposite end. The ends of the wire are connected to a suitable controller, which is not here shown, as it is not necessary for the purpose of illustrating my invention, it being sufficient to state that such controller has to be thrown in to gradually complete the circuit and magnetize the bar and thrown out to demagnetize it. The current of the circuit may be derived or taken from any suitable source; but I preferably use the motor as the source.

E is a bracket secured to the bottom of the car, and *e* is a hanger which is hollow at the lower end and provided with a pin e', which is supported in the inclosed end of the bar and is connected at the bottom to a clevis e^2, through which and the bar or core a pivot-pin e^3 extends.

F is a hanger which is provided with a smaller pin f' and clevis f^2 and a connecting-pin f^3, by which such clevis f^2 is connected to the bar C.

f^4 is a spiral spring extending between the bottom of the bar F and the head of the pin f'. The object of the spring is to hold the bar up, so as to hold the shoe c' free from the wheel at this end. The shoe at the opposite end is necessarily held away from the wheel by its own gravity or the gravity of the bar.

To apply the brakes, the current is thrown into the coil D to magnetize the bar, thereby causing the shoes to become strongly magnetized and press toward and against the periphery of the wheels, thereby forming a brake. The magnetic current passing through the bar will also necessarily pass through the wheels, and thereby form a horseshoe-magnet, with the rail practically as an armature, thus forming a magnetic circuit or path for magnetic action and causing an attraction for all the parts acted on by the magnetism produced by the circuit.

It will be seen from the construction above described that the concurrent action produced by throwing in the circuit has the effect not only of applying a frictional shoe upon the periphery of the wheels, but also a magnetic action or lag on the periphery and a direct magnetic pull or holdfast upon the rails, thus applying a brake of the strongest possible character and such that will effectually bring the car to a standstill within but a short space and without any danger of skidding.

Although I show the bar C as hung obliquely between the wheels, it will of course be un-

derstood that it might be hung horizontally either above or below the plane of the axles.

What I claim as my invention is—

1. In a magnetic car-brake, a bar extending between the wheels on the same side of the car, shoes formed or attached to the ends of the bar, a coil encircling the bar and designed to magnetize and demagnetize the said bar and means for hanging bar, so as to normally retain the shoe from contact with the wheels as and for the purpose specified.

2. In a magnetic car-brake, a bar extending between the wheels on the same side of the car, shoes pivotally held on the ends of the bars, a coil encircling the bar and designed to magnetize and demagnetize the said bar, and means for hanging the bar, so as to normally retain the shoe from contact with the wheels as and for the purpose specified.

3. In a magnetic car-brake, a bar extending between the wheels on the same side of the car and provided with shoes at each end thereof, the bar and shoes being obliquely set and so arranged that the shoe at one end is below the center of the axle of the wheel at that end and the shoe at the opposite end is above the center of the axle of the wheel at the other end and means for supporting the shoes normally away from the peripheries of the wheels and a coil encircling said bar and designed to magnetize and demagnetize the same as and for the purpose specified.

4. In a magnetic car-brake, a bar extending between the wheels on the same side of the car and provided with shoes at each end thereof, the bar and shoes being obliquely set and so arranged that the shoe at one end is below the center of the axle of the wheel at that end and the shoe at the opposite end is above the center of the axle of the wheel at the other end and a hanger suitably connected to the bottom of the car and provided with a pin and clevis by which it is pivotally connected to the bar at the lower end and a hanger at the opposite end of the bar and provided with a clevis and pin at the bottom and a spring interposed between the bottom of the bar and the head of the pin as and for the purpose specified.

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Witnesses:
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