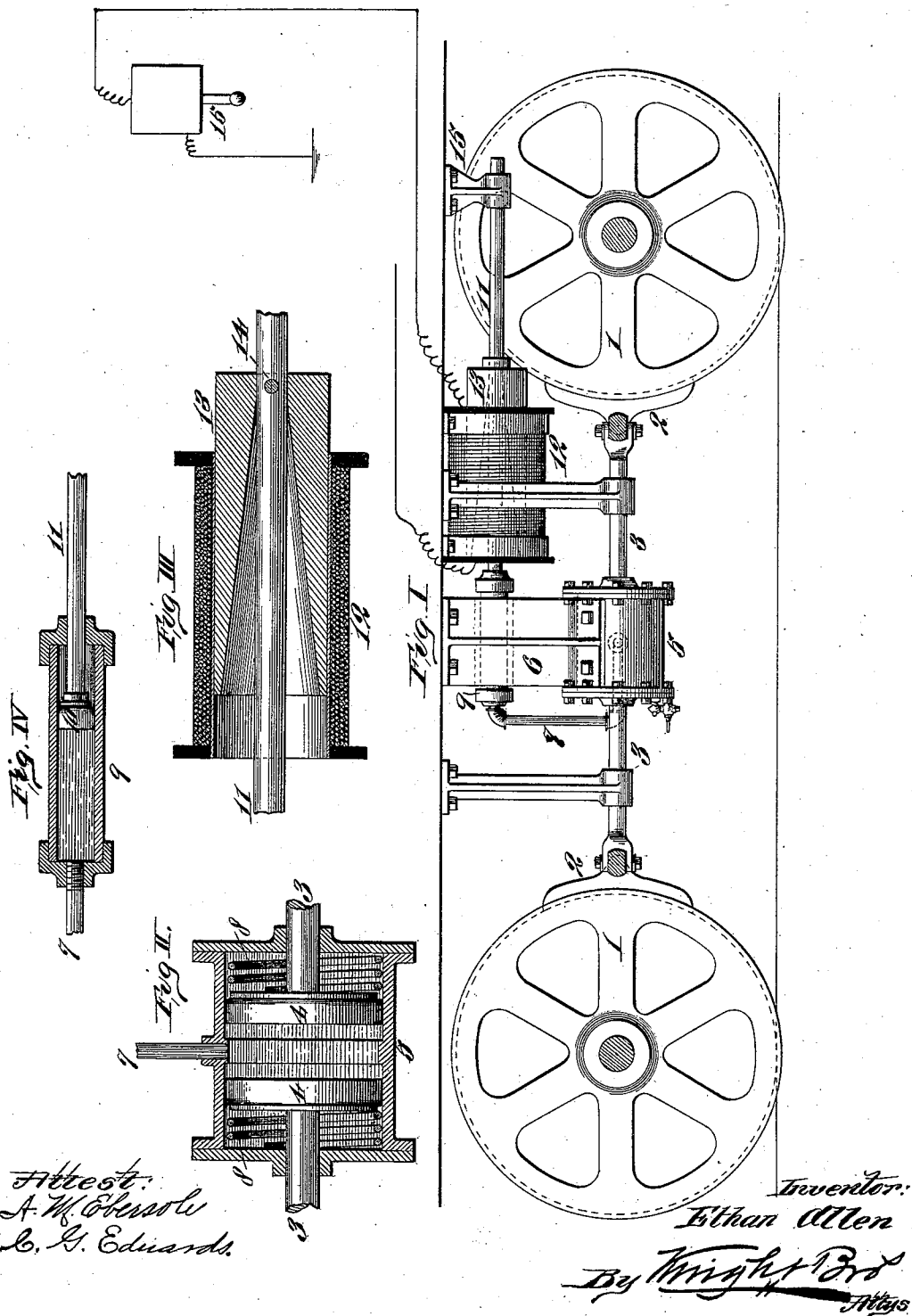


(No Model.)

E. ALLEN.
CAR BRAKE.

No. 531,287.

Patented Dec. 18, 1894.



UNITED STATES PATENT OFFICE.

ETHAN ALLEN, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO DAVID W. CASE, OF SAME PLACE.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 531,287, dated December 18, 1894.

Application filed December 26, 1893. Serial No. 494,640. (No model.)

To all whom it may concern:

Be it known that I, ETHAN ALLEN, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in 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 a combined hydraulic and electric brake; and my invention consists in features of novelty hereinafter fully described and pointed out in the claims.

Figure I is a side elevation, illustrative of my invention. Fig. II is an enlarged section through the brake cylinder, showing the pistons in elevation. Fig. III is an enlarged, longitudinal section, through the magnet and core. Fig. IV is an enlarged, longitudinal section through the hydraulic cylinder.

Referring to the drawings, 1 represents the wheels of a street or other railway car.

2 represents the shoes of the brake mechanism, and which may be supported in the usual way. The mechanism of each brake shoe is connected by a rod 3, to a piston 4 located in a brake cylinder 5, which is supported from the bottom of the car by means of a bracket 6, or it may be otherwise supported. Pressure is imparted to the pistons 4 to apply the brakes by means of liquid entering between the pistons through a pipe 7, and the pistons may be moved inwardly, after the fluid pressure is removed, by means of springs 8. See Fig. II. The pipe 7 communicates with a hydraulic cylinder 9, suitably supported from the car body, or the car truck. Within this cylinder is a piston 10, having a rod 11.

12 represents a magnet suitably supported from the bottom of the car, or upon the car truck and having a core 13. The piston rod 11 traverses the core 13, and is secured to the core by means of a pin 14, or otherwise. I have shown the rod extended, and supported and guided by a bracket 15, which would be secured to the under side of the car body or to the car truck.

The manner of supporting the magnet and the cylinders 5 and 9, as well as the manner of supporting the brake apparatus, forms no part of my invention; and these parts may be supported either upon the truck frame or upon the car body, as thought best.

15 represents a switch for controlling the current to the magnet 12.

The core 13 is hollowed out in the form of a cone, as shown in Fig. III, so that as it enters the magnet, the attraction will increase, as the greater amount of metal at this end of the core causes it to be attracted with greater force by the magnet, and thus the greatest pressure upon the brake shoes is obtained at the desired point. There will be a considerable movement of the core and the piston 10 in the small cylinder 9, as compared with the movement of the pistons 4 in the large cylinder 5. The pistons 4 do not have to travel far to apply the brakes, and the long movement of the piston 10, with the core 13, will produce a very powerful application of the brake shoes.

The device is simple and effective, and there is little to get out of order, or to require repairs.

It is evident that if one brake shoe only is to be operated, one piston 4 alone may be used in the cylinder 5.

I claim as my invention—

1. In a car brake, the combination of a brake cylinder, a brake shoe, a connection between the brake shoe and the piston of the cylinder, a hydraulic cylinder, a magnet and a core; the core of the magnet being connected to the piston of the hydraulic cylinder; substantially as and for the purpose set forth.

2. In a car brake, the combination of the brake shoes, a hydraulic cylinder, a piston working in said cylinder and connected with the brake shoes, and an electric device for imparting movement to the piston of the hydraulic cylinder, said device consisting of a magnet and a core, the said core having a tapering cavity, substantially as set forth.

3. In a car brake, the combination of the
brake shoes, a brake cylinder, a connection
between the brakeshoes and the pistons in the
brake cylinder, a hydraulic cylinder, a pipe
5 connecting the hydraulic cylinder to the
brake cylinder, a magnet, and a core con-
nected to the said piston rod of the hydraulic

cylinder; said core having a conical center;
substantially as and for the purpose set forth.

ETHAN ALLEN.

In presence of—

A. M. EBERSOLE,
C. G. EDWARDS.