

(No Model.)

LA MOTTE C. ATWOOD.
ELECTRIC BRAKE.

No. 464,002.

Patented Dec. 1, 1891.

Fig. I.

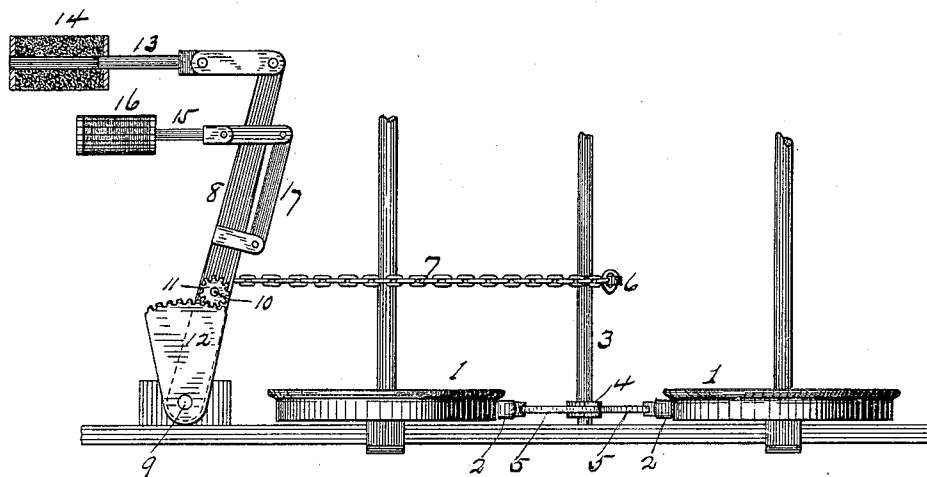
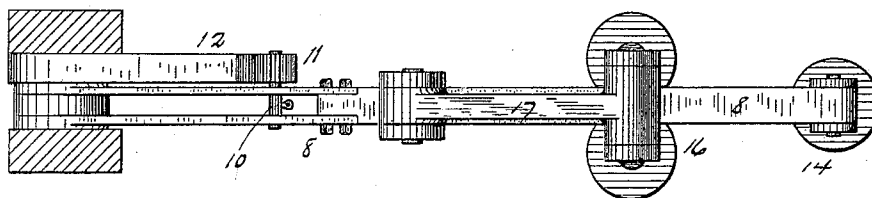


Fig. II.



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UNITED STATES PATENT OFFICE.

LA MOTTE C. ATWOOD, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE ATWOOD ELECTRIC COMPANY, OF SAME PLACE.

ELECTRIC BRAKE.

SPECIFICATION forming part of Letters Patent No. 464,002, dated December 1, 1891.

Application filed February 27, 1891. Serial No. 383,119. (No model.)

To all whom it may concern:

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

The object of my invention is to produce a simple and reliable brake intended more particularly for street-cars; and it consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a top or plan view illustrative of my invention, and Fig. II is an elevation of the operating parts.

Referring to the drawings, 1 represents two of the wheels of the truck of the car; 2, the brake-shoes; 3, the rock-shaft connected, as usual, to the shoes by means of a lever 4 and links 5; 6, a crank on the shaft, and 7, the brake-chain.

8 represents the main lever of the brake, pivoted at 9, and in which is journaled a short shaft 10, to which is connected one end of the chain 7. On one end of the shaft 10 is a pinion 11, which engages a fixed rack-segment 12. To the upper end of the lever 8 is connected the core 13 of the magnet 14, and lower down on the lever there is connected the core 15 of a magnet 16, this connection being made by means of a link 17. I have shown a double magnet 16 and a single magnet 14; but it is evident that the magnet 14 may be duplicated or increased to any desired number.

The operation is as follows: When the brake is to be applied, the first part of the movement of the lever 8 is caused by the magnet 16, and as the lever is moved the shaft 10 is turned, winding the chain 7 thereon, the turning of the shaft being caused by the pinion 10 meshing into the teeth of the fixed segment 12. By the time the greatest amount of pressure is desired the magnet 16 will have moved the core 13 well into the magnet 14, and the lever will then be moved by the magnet 14 to apply the final pressure of the shoes upon the wheel. In this way I get a rapid

primary movement to the parts by the use of the magnet 16 and a powerful final movement to the parts by the use of the magnet 14, the core of which is connected to the extreme end of the lever 8. It is evident that the chain 7 might be connected directly to the lever 8, and the shaft 10 with its pinion 11 and the segment 12 be dispensed with; but I prefer to use these parts, as a corresponding movement of the lever will cause a greater movement to the brake-shoes with than without these parts.

I claim as my invention—

1. In an electric brake, the combination of the shoes, a rock-shaft to which the shoes are connected, a pivoted lever connected to the rock-shaft, and two independent magnets located at different distances from the pivoted lever and operating successively for moving the lever at different stages, substantially as and for the purpose set forth.

2. In an electric brake, the combination of the shoes, a rock-shaft to which the shoes are connected, a lever connected to the rock-shaft, a magnet 14, having a core 13 secured to the end of the lever, and a magnet 16, having a core 15 secured to the lever between its end and its pivot by means of a link 17, substantially as set forth.

3. In an electric brake, the combination of the shoes, a rock-shaft to which the shoes are connected, a pivoted lever, a fixed rack-segment, a shaft provided with a pinion engaging said segment, a chain connecting said shafts, and a magnet for moving the lever, substantially as and for the purpose set forth.

4. In an electric brake, the combination of the shoes, the rock-shaft, and a pivoted lever, a fixed rack-segment, a shaft journaled in the lever, a chain connecting said shafts, a pinion on the lever-shaft engaging said segment, a magnet 16 and core 15, connected by a link 17 to said lever, and a magnet 14, having a core 13 connected to said lever, substantially as and for the purpose set forth.

LA MOTTE C. ATWOOD.

In presence of—

E. S. KNIGHT,

A. M. EBERSOLE.