(No Model.)

T. A. EDISON.

ELECTRO MAGNETIC BRAKE.

No. 248,430. Patented Oct. 18, 1881.

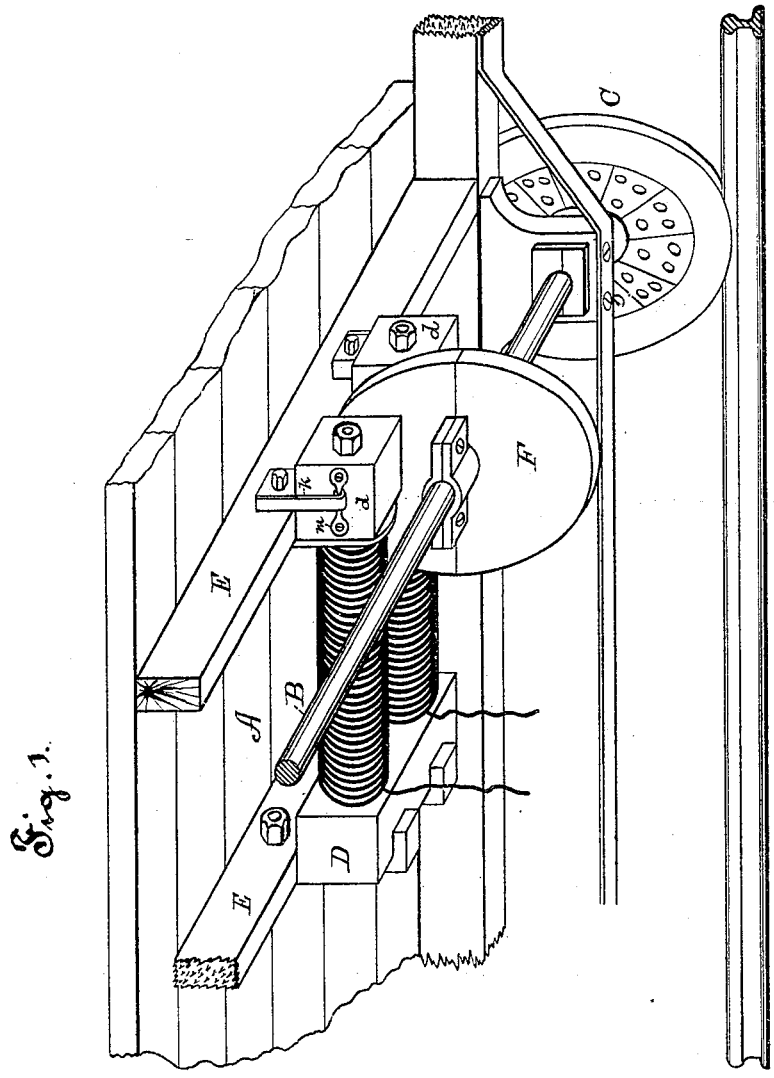

Fig. 1.

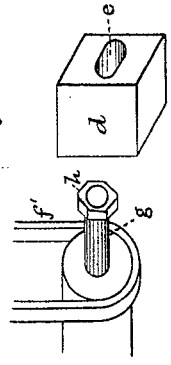

Fig. 2.

Attest:

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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

ELECTRO-MAGNETIC BRAKE.

SPECIFICATION forming part of Letters Patent No. 248,430, dated October 18, 1881.

Application filed July 22, 1880. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Electro-Magnetic Brake; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of this invention is to produce a simple and effective electro-magnetic brake, adapted for use on any style of railroad-vehicle, but more especially intended for use in connection with a system of electro-magnet railways, such as is shown and described in my prior application bearing the Patent Office serial number 11,243.

It consists in placing an electro-magnet in such relation to some rotating metallic portion of the running-gear of the vehicle to be stopped that the magnetic circuit shall be through such rotating metallic portion, the electro-magnet being furnished with mobile heads, which may move toward and clasp the rotating portion whenever the circuit of the magnet is closed. Upon the axle, and at or near its center, is rigidly fixed a disk of iron, which rotates with the axle and between the polar extremities of an electro-magnet suitably fastened to or supported from the bottom of the car. The cores of this electro-magnet are extended beyond the coils, forming a spindle, which is reduced in size when necessary, the ends being screw-threaded to receive nuts. Upon each spindle is placed a block of iron or other magnetic metal, forming a polar extension, secured in place by a nut. The orifices in the blocks, into which the spindles pass, are elongated, so that the blocks or polar extensions may have a movement to or from the fixed disk upon the axle rotating between them. The polar extensions are normally held away from the disk by suitable springs of low resilience. When it is desired to use the brake a circuit from any suitable source of electricity is closed through the coils of the electro-magnets, whereupon the polar extensions mutually attract the disk. It, however, being fixed, while they are movable, the attractive force causes them to move to the disk and grasp it between them, causing a retardation or stoppage in its rotation, and so acting, through it, as an effective brake upon the wheels. Upon breakage of the circuit the springs restore the polar extensions to their normal position. When desired, for the purpose of throwing the brakes off instantly, a momentary reverse current may be thrown into the circuit just after breaking, causing a momentary but instantaneous repulsion from the disk, and assisting the springs in removing the polar extensions. It is evident that instead of one several sets of such brakes may be applied to each axle when desired.

In the drawings, Figure 1 is a perspective view of a portion of the bottom of a car, showing a brake. Fig. 2 shows the polar extension and spindle of the core in detail.

A is the bottom of a car, resting upon the framing E E.

B is an axle, extending from wheel C to wheel on other side. (Not shown.) Upon this axle is rigidly secured the iron disk F, rotating between the polar extensions *d d* of electro-magnet D, suitably secured to the framing E E. Each of the cores of the magnet extends beyond the coils, forming a spindle, *g*, on each core, whose end is screw-threaded to receive a nut, *h*. Each polar extension *d* is formed with an elongated slot, *e*, so that it may be fitted upon the spindle and be free to move thereon in one direction—viz., to and from the disk F. A spring, *k*, which may be any of the well-known forms, is combined with each polar extension and serves normally to hold it away from the disk.

It is evident that the electro-magnet D may be mounted so that the flange or a portion of the web of the wheel C shall rotate between *d d*, and they operate directly thereon instead of upon a disk, the vital principle of the invention being that the magnetic circuit of the electro-magnet shall be closed through some moving portion.

What I claim is—

1. The combination, with an electro-magnet, of polar extensions mounted upon the ends of the limbs of the magnets, and having movement thereon to and from each other, and adapted to grasp between them an armature, substantially as set forth.

2. The combination of a disk, rigidly mounted upon an axle, and an electro-magnet, with movable polar extensions, between which the disk rotates, substantially as shown and described.

3. In an electro-magnetic railway-brake, the combination of a fixed or stationary electro-magnet, movable polar extensions mounted thereon, and a rotating armature, consisting of a portion of the running-gear, or of a metallic disk attached thereto, substantially as set forth.

This specification signed and witnessed this 2d day of July, 1880.

THOS. A. EDISON.

Witnesses:
FRANK MCLAUGHLIN,
SAMUEL EDISON.