(No Model.)

H. S. PARK.

ELECTRO MAGNETIC CAR BRAKE.

No. 274,023. Patented Mar. 13, 1883.

Fig 1.

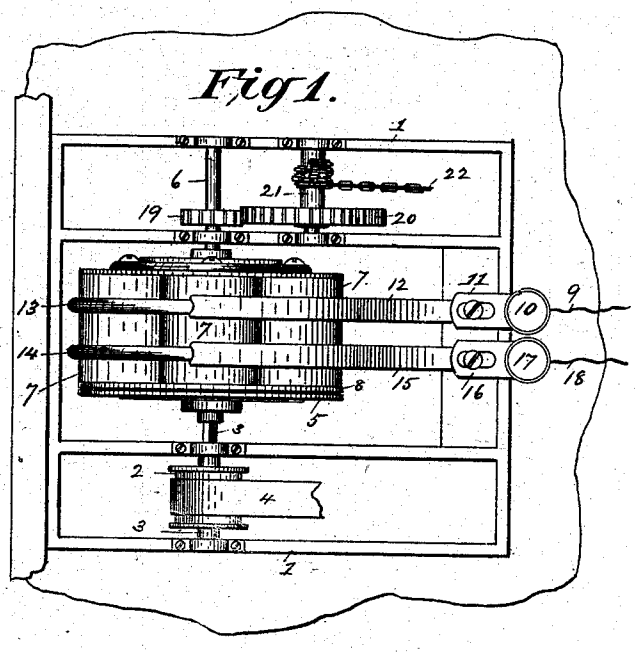


Fig 3.

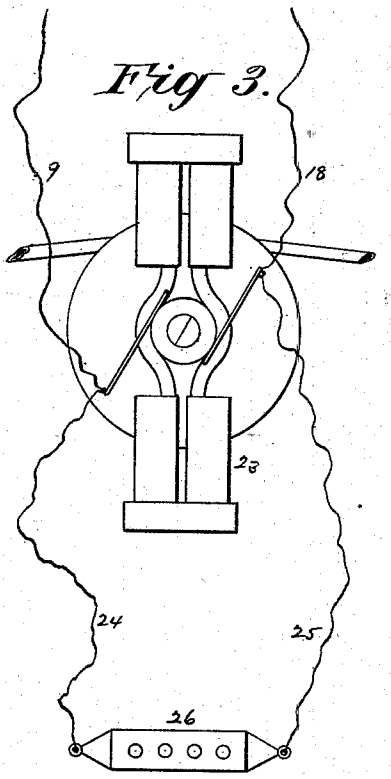


Fig 2.

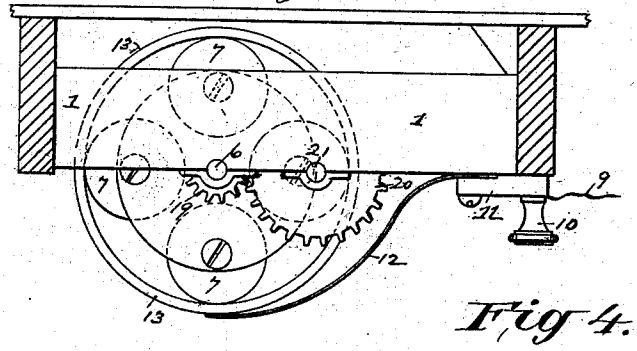
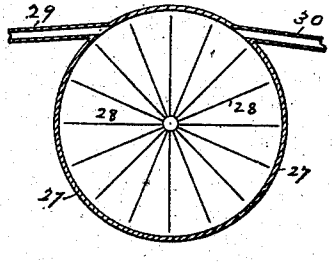


Fig 4.



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UNITED STATES PATENT OFFICE.

HARVEY S. PARK, OF HENDERSON, KENTUCKY.

ELECTRO-MAGNETIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 274,023, dated March 13, 1883.

Application filed July 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, HARVEY S. PARK, a citizen of the United States, residing at Henderson, in the county of Henderson and State of Kentucky, have invented certain new and useful Improvements in Electro-Magnetic Car-Brakes, of which the following is a specification.

My invention relates especially to those brakes in which the brake-shoes are operated by the motion of the train itself, the connecting and disconnecting of the brakes being through the medium of electrical apparatus under the control of the engineer or conductor.

My improvements particularly consist, first, in mounting the electro-magnet employed to operate the clutch for engaging the brake mechanism directly upon the clutch-shaft in such manner that it shall form one member of the clutch and its armature the other member; second, in the interposition in the main circuit to the electro-magnets of a shunt through a rheostat or resistance-coil for the more ready regulation of the current sent through the main circuit.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents, from beneath, the electro-magnetic clutch mechanism. Fig. 2 is a side view thereof. Fig. 3 represents in diagram the arrangement of the shunt into a rheostat. Fig. 4 is a view of the improved rotary motor for the dynamo.

The clutch mechanism is mounted beneath a car within a frame, 1. A band pulley or drum, 2, keyed or otherwise attached on shaft 3, which has bearing, as shown, in frame 1, receives continuous motion, so long as the car moves, by means of band 4, driven by a pulley or drum on the axle of the car. On the inner end of the shaft 3 is placed a disk, 5, having loose square bearings, so as to be capable of horizontal movement on the said shaft, but forced to revolve therewith, and so ground and adjusted on the shaft that its inner face shall revolve in a perfectly-vertical plane. Instead of a square bearing between the disk and shaft, I may employ a round bearing and secure the rotation of the disk by customary key and seat.

Mounted upon the other side of the frame, in line with shaft 3, is a second shaft, 6, which carries on its inner end an electro-magnet, or number of magnets, 7, all wound by a continuous wire in the same direction, so as to present the same pole of each magnet opposite the face of the disk 5. A disk or plate, 8, unites the inner ends of the magnets and presents a plane surface exactly parallel to that of the disk 5.

A current of electricity is transmitted from the generator by conductor 9 to binding-post 10 and plate 11, which is electrically connected by spring or brush 12 with a circular band, 13, wrapped around the electro-magnet, and connected to the induction-wire of the same. The said wire, after passing around all the magnets, is connected to the other band, 14, whence the current flows through brush 15, plate 16, binding-post 17, and conductor 18 to the next car, or back to the generator. Suitable means for obtaining a continuous circuit from car to car should be employed. A small pinion, 19, on shaft 6 gears with large cog-wheel 20 on windlass 21, which carries a chain, 22, for actuating the brake-shoes.

It will now be seen that if an electrical current be thrown into the electro-magnet it will attract the disk 5 on the shaft 3, rapidly rotating if the car be in motion, and the two disks 5 and 8 becoming more or less firmly bound together, (according to the strength of the current,) the disk 8, magnets 7, and shaft 6 will revolve with the disk 5, actuating, through pinion 19 and gear-wheel 20, the windlass 21, which winds up the chain 22 and applies the brakes.

It will be apparent that the brakes will be applied with a greater or less degree of force, according to the strength of the current directed to the electro-magnet, and to regulate this current I employ a rheostat or resistance-coil, arranged substantially as shown in Fig. 3. In this figure, 23 represents a dynamo-generator of any suitable construction, having wires 9 and 18 to and from the braking mechanism, and wires 24 25 to and from a rheostat or resistance-coil, 26, which is placed within con-

venient reach of the engineer. The relative resistances of the line and shunt circuits are such that when the rheostat is closed the entire current passes through the conductors 24 25, to and through the rheostat, and back to the generator, thus completing the circuit, while as the rheostat is opened the current will divide, part passing through the rheostat and part to the braking mechanism, the amount to one or the other being proportioned according to the force with which it is desired to apply the brakes.

It is obvious that by applying springs of different degrees of force to the different clutches of the braking mechanism on the several cars of a train they may be made to set with varying degrees of strength of the electro-current, so that as the rheostat is opened more and more one after another of the brakes will be brought into play, and when the rheostat is pulled entirely open the whole circuit going to line will set the brakes of the entire train.

The advantages of this method of construction is obvious, as the too sudden stopping of a train of any length might be productive of injury to life and property, whereas by placing the current under the absolute control of the engineer, who works it easily at will, all danger from any shock may be avoided.

It is obvious that instead of the faces of the disks 5 and 8 of the clutch mechanism being plane they may be corrugated or ridged or provided with clutches, to render their connection more positive when brought together.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent—

In an electro-magnetic car-brake, the shaft 3, carrying pulley 2 and disk 5, the latter being arranged to slide longitudinally on the shaft 3 and to turn with it, the shaft 6, carrying pinion 19, electro-magnets 7, and disk 8, and the winding-shaft 21, with gear-wheel 20 and chain 22, connecting with the brake-operating mechanism, said parts being attached to a frame, by which they are secured to the car-body or truck-frame, in combination with the dynamo-generator 23, conductors 9 18, posts 10 17, plates 11 16, springs or brushes 12 15, connecting-bands 13 14, said parts being also carried by the said attaching-frame, and a rheostat, 26, for regulating the strength of applied currents, as set forth.

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Witnesses:
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