

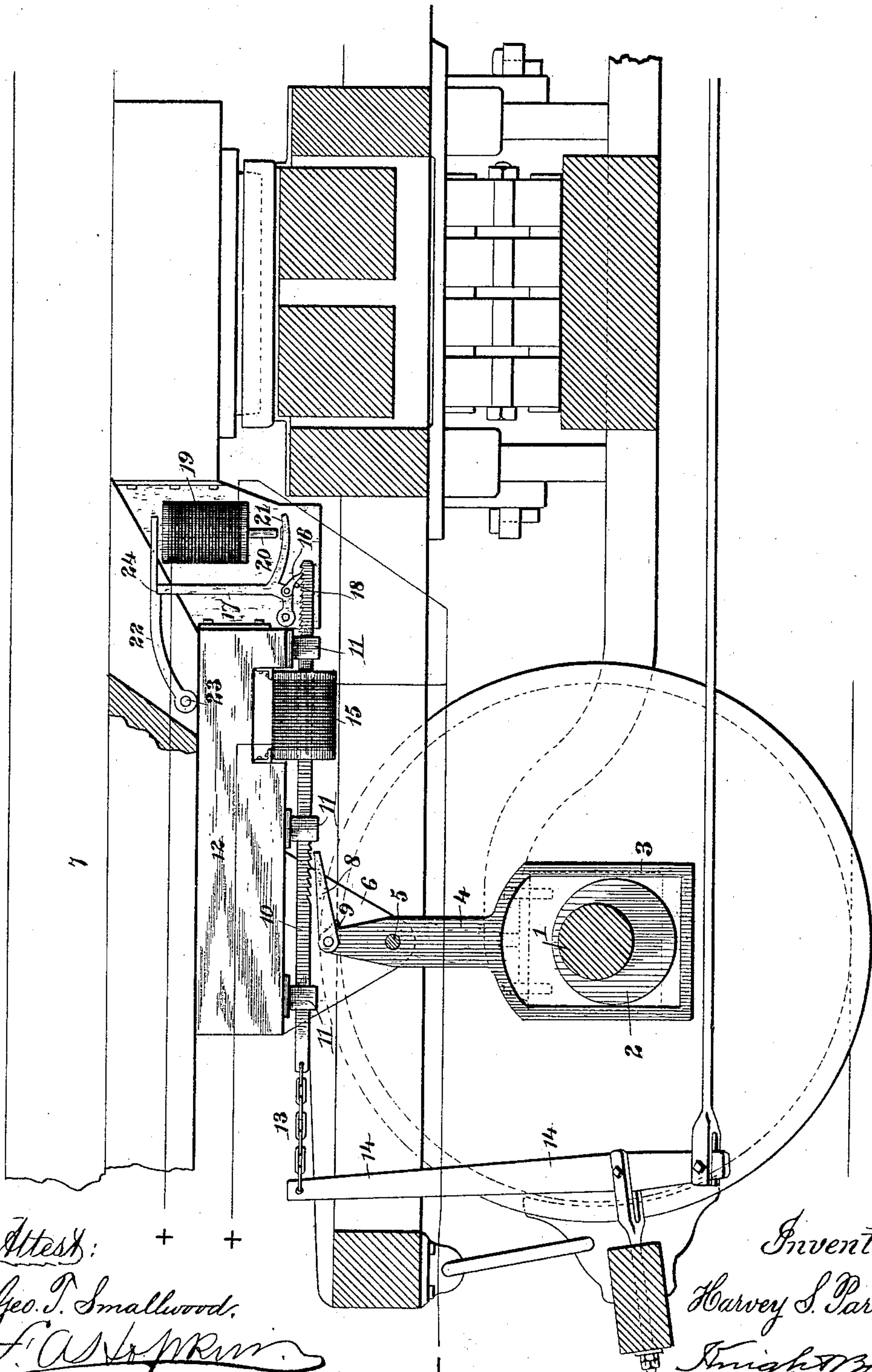
(No Model.)

H. S. PARK.

ELECTRO MAGNETIC CAR BRAKE.

No. 348,636.

Patented Sept. 7, 1886.



Attest:  
Geo. T. Smallwood,  
F. A. [Signature]

Inventor  
Harvey S. Park  
By [Signature] attys



# UNITED STATES PATENT OFFICE.

HARVEY S. PARK, OF HENDERSON, KENTUCKY.

## ELECTRO-MAGNETIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 348,636, dated September 7, 1886.

Application filed November 14, 1885. Serial No. 182,797. (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 a new and useful Improvement in Electro-Magnetic Car-Brakes, of which the following is a specification.

My invention relates to a brake system in which the momentum of the car is employed for applying the brakes by means of a connection between the brake-lever and the car-wheel axle; and my invention particularly consists in improved devices whereby electric circuits are employed for connecting or disconnecting the car-wheel axle with the brake-lever for the purpose of applying or releasing the brakes.

In carrying my invention into practice I employ a rack-bar, of steel or other magnetic metal, arranged within the field of an electro-magnet and mechanically connected with the brake-lever. With the face of this rack-bar a steel pawl actuated by the car-wheel axle is made to engage whenever the rack-bar is magnetized by a current passing through its surrounding or neighboring magnet. When such magnet thus forms a part of the closed electric circuit, the rack-bar will be fed longitudinally and the brakes applied. A locking-pawl is arranged to engage with teeth on the rack-bar, and thus retain it to any position to which it has been forced. The said locking-pawl is also governed by an electro-magnet, and may be operated to release the brakes by closing the circuit through said magnet.

In order that the invention may be better understood, I will proceed to describe it with reference to the accompanying drawing, which represents a portion of a car body and truck having my invention applied thereto.

1 is a car-wheel axle, carrying an eccentric, 2, which moves in the yoke or stirrup 3 of a lever, 4. The lever 4 is pivoted at 5 in brackets 6, depending from the car-body 7, and its yoke or stirrup 3 is made of sufficient length to allow of relative vertical motion between the lever 4 and the car-wheel axle, owing to change of load or unevenness of track. A steel pawl, 8, is pivoted to the upper end of lever 4, and is supported by stud 9, with its nose in close proximity to the teeth of a rack-bar, 10, which is supported in straps or stirrups 11, hanging from a beam, 12, fixed to the car-body

7. The rack-bar 10 is also of steel or other magnetic metal of sufficient strength, and is connected by chain 13 to the main brake-lever 14. The brake-lever 14 is connected to the brake beam and shoes in any customary manner.

15 is a hollow magnet or solenoid fixed to the under side of the beam 12 and surrounding the rack-bar 10, or in such proximity thereto as to magnetize some portion of its length when the said magnet is included in a closed electric circuit.

16 is a locking-pawl arranged to engage normally with teeth on the upper surface of the rack-bar 10 and pivoted to a bent lever, 17, which is itself pivoted to a bracket bolted to the car-body. A stud, 18, receives the end of the pawl 16 when it is lifted by the lever 17 from contact with the rack-bar 10 and prevents it from again coming in contact with said rack-bar until the lever 17 is depressed.

19 is a second electro-magnet, having a loose core-armature, 20, which normally rests upon an arm or projection, 21, from the lever 17.

22 is a latch pivoted to the beam 12 at 23, and having a shoulder, 24, engaging with the upper end of the lever 17. Beyond said shoulder the latch 22 projects over the loose core 20 in position to be struck by said core when the latter is drawn up into its solenoid.

The operation of the improvement is as follows: The lever 4, and pawl 8, carried thereby, has a continuous vibratory motion imparted to it by the eccentric 2 on the car-wheel axle. If, now, the magnet 15 be placed in a closed electric circuit, the rack-bar 10 is magnetized and the pawl 8 drawn into engagement therewith. The rack-bar 10 will then be fed longitudinally, applying the brakes with any degree of tension desired and being locked at each step by the pawl 16. The circuit through the magnet 15 being then opened, the pawl 8 will fall away from the rack-bar 10; but the rack-bar will still be retained to position by the locking-pawl 16, and the brakes thus retained at the same tension. If, now, the current through the second magnet, 19, be closed, the core 20 is raised, lifting the latch 22, releasing the lever 17, and the back-pressure of the rack-bar 10 upon the pawl 16 will throw said pawl away from it, releasing the latter and allowing the brake-chain to unwind and



release the brakes. When the pawl 16 is released from the rack-bar, it is kept separated therefrom by the stud 18. As soon as the current through the magnet is opened the armature 20 drops back onto arm or projection 21, restoring the lever 17 to its normal position and allowing the latch 22 to fall and lock it. The pawl 16 is thus restored to engagement with the face of the rack-bar 10 in position for use when the brakes are to be again applied.

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

15 1. In combination with a rack connected with the brake-chain, a pawl carried by a lever actuated by the car-wheel axle and normally out of clutch with said rack, and an electro-magnet and circuit so arranged that when  
20 the circuit through said magnet is completed the rack and pawl are brought into engagement, substantially as and for the purpose set forth.

25 2. In combination with a pawl of magnetic metal actuated by the motion of the car-wheel axle, a rack-bar, also of magnetic metal, connected with the brake-lever, an electric circuit and an electro-magnet or solenoid therein in proximity to said rack-bar, substantially as and for the purpose set forth.

3. In combination with a brake-bar connected with the brake-lever and having means of operation, substantially as described, a locking-pawl adapted to engage with said bar, a lever carrying said pawl, and an electro-magnet and core for operating said lever, substantially as set forth. 35

4. In combination with a bar connected with the brake-lever and having means of operation, substantially as described, a pawl engaging with said bar, a lever carrying said pawl, a latch arranged to lock said lever, an electric circuit, a solenoid or magnet therein, and a removable core for said solenoid or magnet arranged to operate said latch and lever, substantially as and for the purpose set forth. 45

5. In combination with a reciprocating rack-bar connected with the brake-lever, a locking-pawl adapted to engage with said rack-bar, a lever carrying said pawl, and having suitable means of operation, and a fixed stud or projection arranged under said pawl and adapted to support it when lifted out of engagement with said rack-bar, substantially as set forth. 50

HARVEY S. PARK.

Witnesses:

E. A. PARK,  
JOHN W. GEIBEL.