(No Model.)

P. V. CONOVER.

ELECTRIC CAR BRAKE.

No. 265,023. Patented Sept. 26, 1882.

Fig. 1

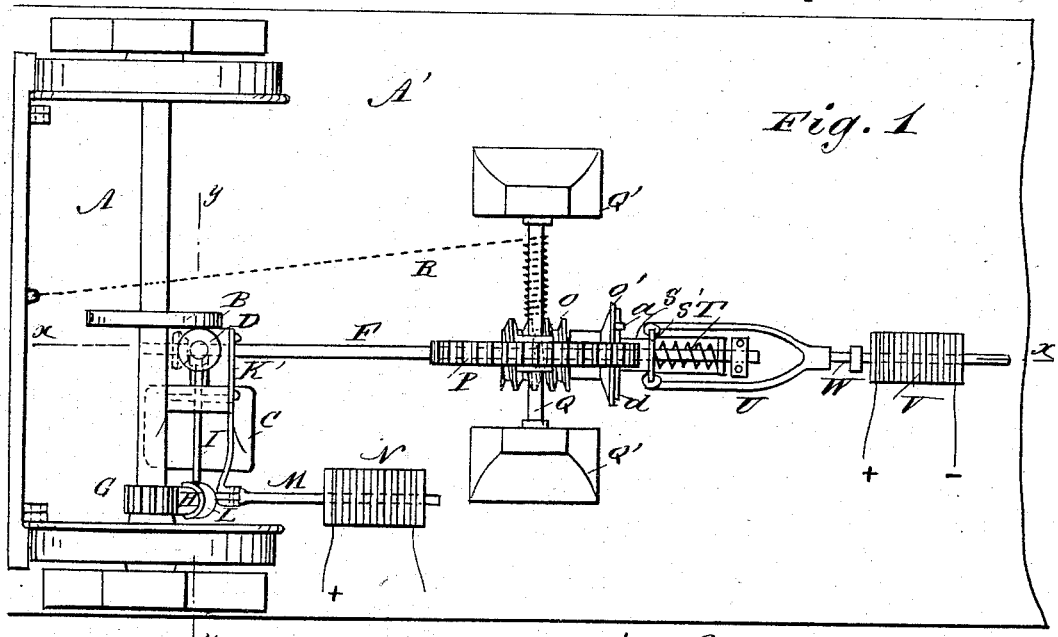


Fig. 2

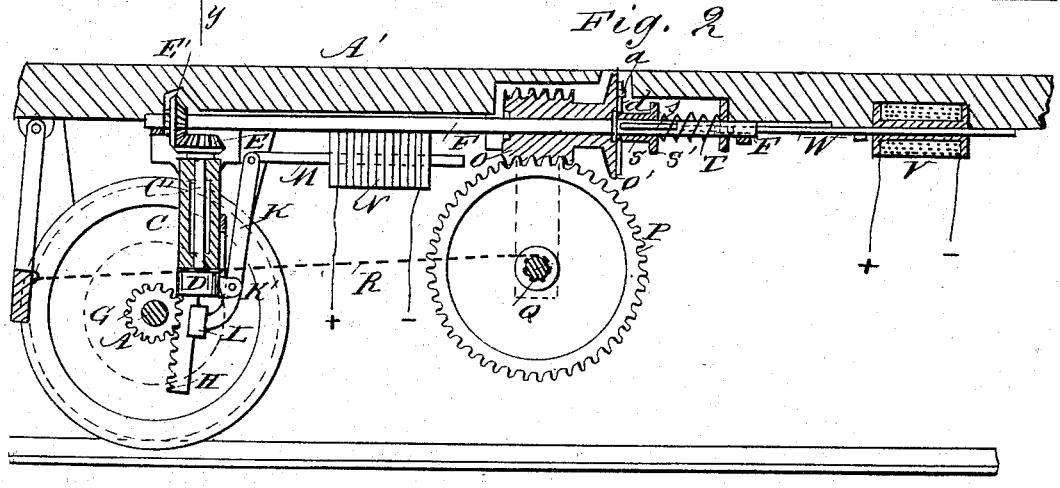
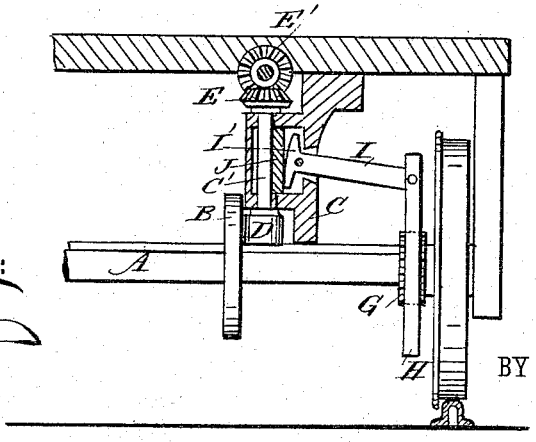


Fig. 3



WITNESSES:

C. Neveux

E. Sedgwick

INVENTOR:

P. V. Conover

BY Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

PHILIP V. CONOVER, OF UVALDE, TEXAS.

ELECTRIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 265,023, dated September 26, 1882.

Application filed August 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, PHILIP V. CONOVER, of Uvalde, in the county of Uvalde and State of Texas, have invented a new and Improved Electric Car-Brake, of which the following is a full, clear, and exact description.

The object of my invention is to facilitate the applying and releasing of car-brakes by means of electricity.

The invention consists in a combination, with a friction-wheel mounted on the car-axle, of a friction-wheel mounted on a laterally-adjustable vertical shaft, provided at its upper end with a beveled cog-wheel, engaging with a beveled cog-wheel on a horizontal shaft journaled in the under side of the car-floor, on which horizontal shaft is loosely mounted a worm, which engages with a worm-wheel mounted on the shaft to which the brake-chain is attached, whereby when this worm is locked on the shaft by suitable devices and the shaft is rotated the brake-chain will be wound on the shaft of the worm-wheel, and the brakes will be applied.

The invention further consists in a sliding sleeve mounted on the horizontal shaft on the under side of the car-floor in such a manner that it can slide on the same and turn with it, which sleeve is provided with radial arms, which are pressed against the annular flange at the end of the worm and engage with a stud on this flange, thereby locking the worm to this sleeve, which sleeve is connected with a fork or rod, passing into a helix, whereby when the circuit of this helix is closed the rod will be drawn into the helix and the clutch-sleeve will be drawn from the end of the worm, which is thus released.

The invention also consists in the combination, with a cog-wheel on the axle, of a rack adapted to be pressed against this cog-wheel by a lever acted upon by a rod passing into a helix, which rack has its upper end pivoted to a lever, which is adapted to press the friction-wheel on the laterally-adjustable shaft against the friction-wheel on the axle, so that the friction-wheel on the lower end of this laterally-adjustable shaft will engage with the friction-wheel on the axle.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the under side of a car provided with my improved electric car-brake. Fig. 2 is a longitudinal sectional elevation of the same on the line *x x*, Fig. 1. Fig. 3 is a detail cross-sectional elevation of the same on line *y y*, Fig. 1.

On the car-axle A, which is journaled in the truck in the usual manner, is mounted a vertical friction-wheel, B. In a hollow standard, C, projecting from the under side of the car-floor A′, a vertical shaft, C′, is held loosely in such a manner that it can be moved laterally, and on the lower end of this shaft a small friction-wheel, D, is rigidly mounted, which can be pressed against the side of the friction-wheel B. On the upper end of the shaft C′ a beveled cog-wheel, E, is mounted, which engages with a beveled cog-wheel, E′, mounted on a horizontal shaft, F, journaled on the under side of the car-floor A′. A cog-wheel, G, is rigidly mounted on the car-axle A, preferably near one end of the same. A rack-bar, H, is pivoted at its upper end to the outer end of a lever, I, which is pivoted in the hollow standard C, projecting from the under side of the car-floor, and which lever I has its inner end provided with a slightly-rounded head, I′, which rests against a boxing or plate, J, resting against the shaft C′. The lever K, pivoted to an arm, K′, of the standard C, is provided at its outer end with a recessed plate, L, fitting against the outer surface of the rack-bar H, and to its upper end is pivoted a rod, M, which passes through a helix, N, held to the under side of the car and connected with a battery. On the horizontal shaft F a worm, O, is loosely mounted, which engages with a worm-wheel, P, rigidly mounted on a shaft, Q, journaled in standards Q′, projecting from the bottom of the car, to which shaft Q the brake-chain R is attached. The worm O is provided at the end farthest from the car-axle with an annular flange, O′, from which a stud, *a*, projects. A sleeve, S, is loosely mounted on the shaft F in such a manner that it can slide longitudinally on the same, but is rotated with this shaft by a key or spline, *s*, inserted between the sleeve and the shaft. At

the end toward the flange O′ of the worm O this sleeve S is provided with a series of arms, *d*, which are preferably arranged radially. A spiral spring, T, surrounding the shaft F, presses the sleeve S against the flange O′ of the worm O. The sleeve S is provided at the end opposite the one provided with the arms *d* with an annular flange, S′, which passes into the notched ends of the shanks of a fork, U, attached to a rod, W, passing through a helix, V, held to the under side of the car-floor and connected with a battery.

The operation is as follows: If the brakes are to be applied, the circuit of the helix N is closed, and the rod M will be drawn into the helix, whereby the lower end of the lever K will press the rack H against the cog-wheel G, and this rack will be moved upward or downward, according to the direction in which the car is running. If this rack H is moved upward or downward, the head I′ of the lever I will press the shaft C′ toward the friction-wheel B, causing the friction-wheel D on the lower end of this shaft C′ to be rotated by the friction-wheel B on the shaft A, whereby rotation of the beveled cog-wheels E and E′ is caused, and, as the beveled cog-wheel E′ is mounted on the shaft F, this shaft will be rotated, and will rotate the sleeve S thereon. As the radial arms *d* of this sleeve S are pressed against the flange O′ at the end of the worm O, which flange is provided with a stud, *a*, this worm will be rotated by the shaft F, and in turn will rotate the worm-wheel P, mounted on the shaft Q, whereby the brake-chain R will be wound on the shaft Q, and the brakes will be applied. The brake remains locked in this position. If the brake is to be released, the circuit of the helix V is closed, whereby the rod W will be drawn into this helix, and the sleeve S will be withdrawn from the end of the worm, which is thus released from the shaft F, and is rotated independently of the same. As soon as this worm O is released the brakes are loosened. The batteries of the helices N and V can be located in the engine, and can be connected with the several cars, so that the brakes can be applied from any part of the train, as may be desired.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In an electric brake, the combination, with a friction-wheel mounted on the axle, of a friction-wheel mounted on an adjustable shaft, connected by suitable gearing with the shaft to which the brake-chain is attached, a cog-wheel mounted on the axle, and a rack hung on a lever, adapted to act on the adjustable shaft carrying the friction-wheel, which is to be pressed against the friction-wheel on the axle, substantially as herein shown and described, and for the purpose set forth.

2. In an electric brake, the combination, with the axle A, of the friction-wheel B, mounted thereon, the cog-wheel G, the rack H, the lever I, pivoted in the hollow standard C, projecting from the under side of the car-floor, the laterally-adjustable shaft C′, the friction-wheel D on the lower end of the same, the beveled cog-wheel E at the upper end of the same, engaging with a cog-wheel, E′, on a shaft connected by suitable gearing with a brake-chain, the lever K, the rod M, and the helix N, substantially as herein shown and described, and for the purpose set forth.

3. In an electric brake, the combination, with the axle A, of the friction-wheel B, mounted thereon, the cog-wheel G, the rack H, the lever I, pivoted in a hollow standard, C, projecting from the under side of the car-floor, the rounded head I′ at the inner end of this lever I, the boxing J, the laterally-adjustable shaft C′, the friction-wheel D on the lower end of the same, the beveled cog-wheel E at the upper end of the same, engaging with the beveled cog-wheel E′ on the shaft, connected by suitable gearing with the brakes, the lever K, the rod M, and the helix N, substantially as herein shown and described, and for the purpose set forth.

4. In an electric brake, the combination, with the axle A, of the horizontal shaft F, journaled to the under side of the car, the worm O, loosely mounted thereon, the worm-wheel P, mounted on a shaft, Q, the brake-chain R, attached to the shaft Q, the devices for looking the worm O on the shaft F, and of the devices for operating the shaft F from the car-axle A when desired, substantially as herein shown and described, and for the purpose set forth.

5. In an electric brake, the combination, with the car-axle A, of the horizontal shaft F, the worm O, loosely mounted thereon, and provided at one end with an annular flange, O′, provided with projecting studs *a*, the sliding sleeve S, held on the shaft F to rotate with the same, and provided with radial arms *d*, the worm-wheel P, mounted on the shaft Q, the brake-chain R, attached to the shaft Q, the devices for engaging the sleeve S with the worm O, and the devices for operating the shaft F from the car-axle when desired, substantially as herein shown and described, and for the purpose set forth.

6. In an electric brake, the combination, with the car-axle A, of the horizontal shaft F, the worm O, loosely mounted thereon, and provided at one end with an annular flange, O′, provided with projecting studs *a*, the sliding sleeve S, held on the shaft F to rotate with the same, and provided with radial arms *d*, the worm-wheel P, mounted on the shaft Q, the spring T, the fork U, the rod W, the helix V, and the devices for operating the shaft P from the axle A, substantially as herein shown and described, and for the purpose set forth.

PHILIP VORUS CONOVER.

Witnesses:
EUGENE ARCHER,
A. J. SPENCER.