





# UNITED STATES PATENT OFFICE.

EDMOND O. RICHARD, OF QUEBEC, QUEBEC, CANADA, ASSIGNOR OF PART INTEREST TO JEAN E. RICHARD, OF COLUMBIA, SOUTH CAROLINA, AND JOSEPH C. RICHARD, OF QUEBEC, CANADA.

## IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. 182,477, dated September 19, 1876; application filed August 8, 1874.

*To all whom it may concern:*

Be it known that I, EDMOND O. RICHARD, of Quebec, in the Province of Quebec and Dominion of Canada, have invented a new and valuable Improvement in Automatic Car-Brakes; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figures 1 and 2 of the drawings are representations of sectional views of my car-brake. Figs. 3 and 4 are plan views.

This invention relates to car-brakes of the automatic kind; and it consists in a novel way of arranging the brake-chains and pulleys between the trucks, and also in an arrangement of draw-rods, so that these rods draw directly on the brake-shoes, instead of on the brake-bars between the shoes. It also consists in certain mechanism, combined with the drum on which the brake-chains are wound, and with the hand-lever used to cut off steam in stopping the engine, whereby the engineer can give motion to the winding-drum simultaneously with the shutting off of steam or reversing, or he can actuate the said lever independently of the winding-drum, as will be hereinafter explained.

The following is a description of my improvements:

In the annexed drawings, A designates a portion of the bed of a passenger-coach, and B a truck applied underneath the bed in the usual manner. C designates part of the locomotive-frame; D, the axle of the drivers D', and E a windlass, on which brake-chains *a a* are wound in applying the brakes. Between the two longitudinal beams A' A' of the car-bed are two longitudinally-movable bars, F F, to each one of which a single-tree, *b*, is pivoted, so as to vibrate freely, which tree has two pulleys, *b' b'*, attached to its extremities, as shown in Fig. 3. Each bar F has a brake-lever, G, pivoted to one end of it, which lever extends down between the axles of the truck-

wheels, and is connected by bail-rods *c c* to the tubular shanks *d d* of brake-shoes *d' d'*. The rods *c c* are connected as near the brake-shoes as possible, so that, in applying the brakes, the brake-rods H H are not subjected to strain. The brake-rods are hung by straps from the truck-frames, and acted on by springs in the usual well-known manner.

The brake-chains, which are attached to the windlass E, extend back beneath the different cars of the train, and for each car these chains pass through tubes *e e*, over pulleys *e' e'*, and over and under pulleys *b' b'*. At the rear end of the rearmost car the chains *a a* are suitably secured.

When the chains are wound on the windlass E the bars F F of each car in the train will be moved in opposite directions, and the brake-shoes will be forcibly pressed against the peripheries of the wheels; and when the brake-chains are slackened, springs S, acting on the bars F, will move these bars back and take up the slack.

The windlass E has a spur-wheel, *f*, keyed fast on it, which wheel engages, at times, with a wheel, *f'*, on the axle of the drivers D'. Wheel *f'* is allowed endwise play on the axle D, and is engaged with this axle by means of a feather and groove. Wheel *f'* has an annularly-grooved collar on one end of it, the groove of which is embraced by a forked pendant, *g*, which is secured to the longest arm of a laterally-vibrating lever, J. The short arm of this lever J is pivoted to a vertically-vibrating connecting-rod, *h*, which extends forward and is connected to the lower arm of the reversing-lever K by means of a stud, *i'*, and a long curved slot, *n*, shown in Fig. 2. N designates a treadle, which extends up vertically through the floor of the locomotive, in rear of the reversing-lever K, and is held up by means of a spring, *j*. This treadle is connected to the rod *h* by means of a pin and slot, *k*, which allows free play.

When the treadle is up the stud *i'* is in such a position relatively to the fulcrum of the lever K, that this lever can be operated freely and independently of the wheel *f'*. When the

treadle is depressed, as shown in Fig. 2, the stud *i'* will be carried below the fulcrum of lever K, so that when this lever is drawn back it will cause wheel *f'* to engage with the wheel on the windlass and rotate this windlass, thus winding up chains *a a* and applying the brakes. When treadle N is released, spring *j* will throw it up, and at the same time disengage the wheel *f'* from wheel *f*. P designates a guard beneath the windlass E, for receiving the slack of the chains *a a* and protecting the gearing.

What I claim as new, and desire to secure by Letters Patent, is—

1. Brake-chains *a a*, applied around pulleys *e' e'* and *b' b'*, in combination with single-trees

*b b*, longitudinally-movable bars F F, brake-levers G, and rods *c c*, connecting with the brakes, substantially as described.

2. In combination with the winding-drum E, fast spur-wheel *f*, and shifting spur-wheel *f'*, the yoke *g*, arm J, connecting-rod *h*, treadle N, and reversing-lever K, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

EDMOND O. RICHARD.

Witnesses:

GEORGE E. UPHAM,  
H. C. HOLLINGSHEAD.