4 Sheets—Sheet 1.

# E. O. RICHARD.

## CAR-BRAKE.

No. 182,478. Patented Sept. 19, 1876.

*Fig 1.*

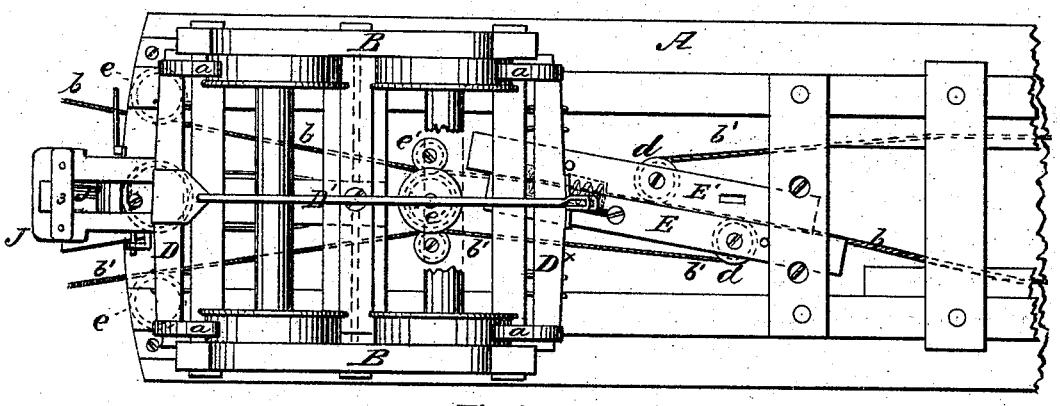
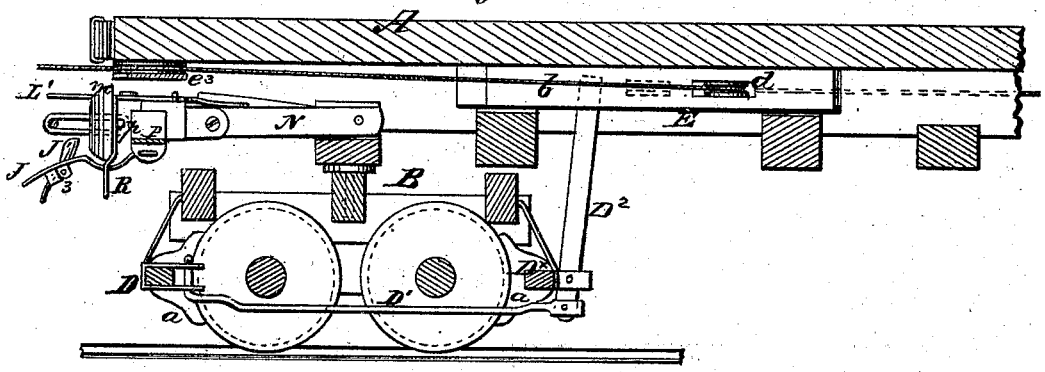



*Fig 2.*

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## CAR-BRAKE.

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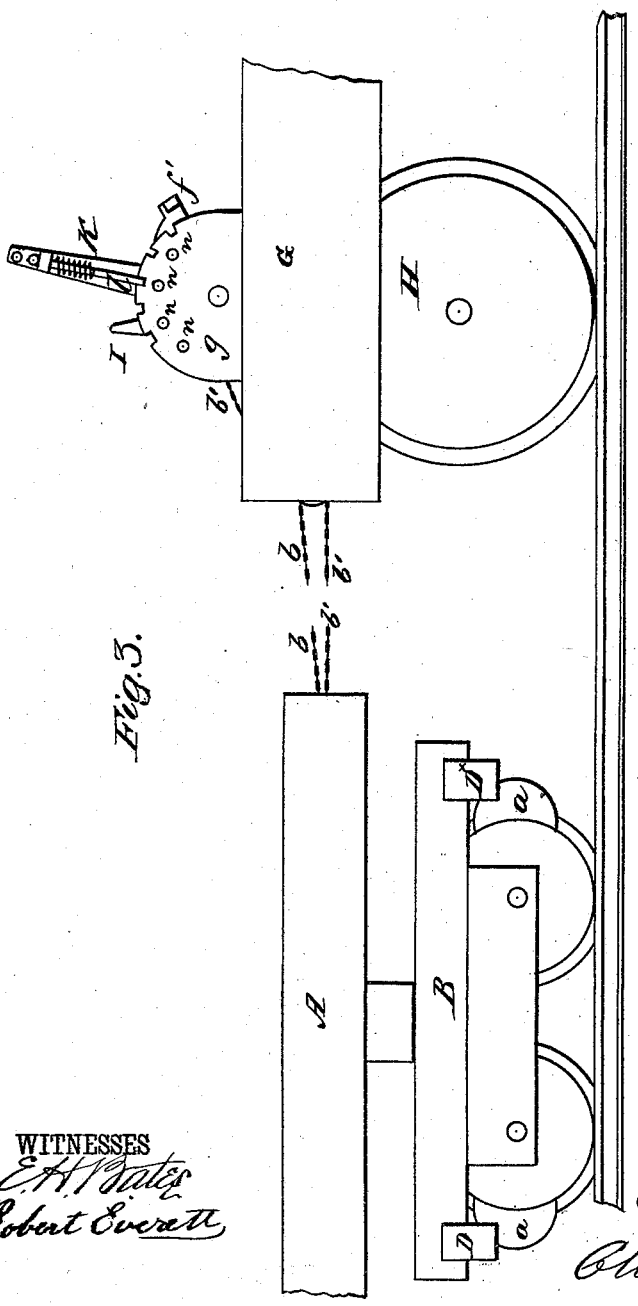


Fig. 3.

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CAR-BRAKE.

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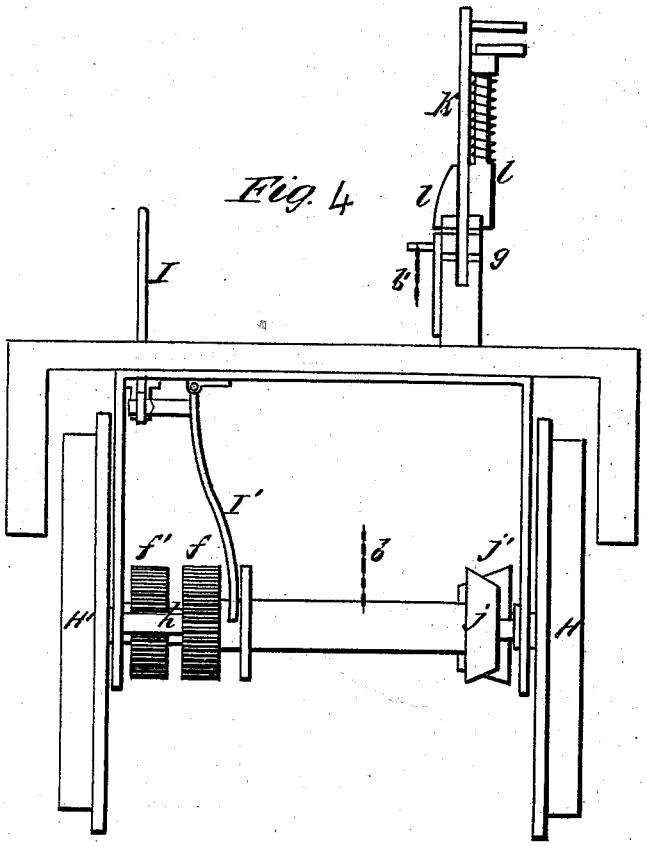
Fig. 4

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## CAR-BRAKE.

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Fig. 5.

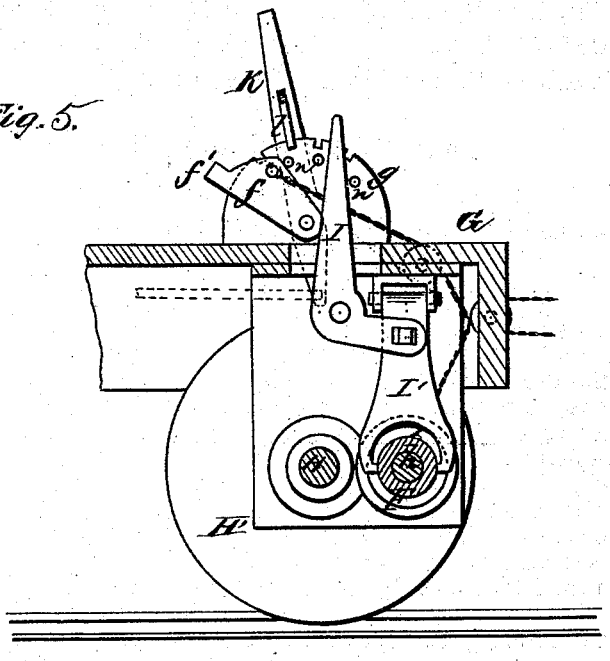
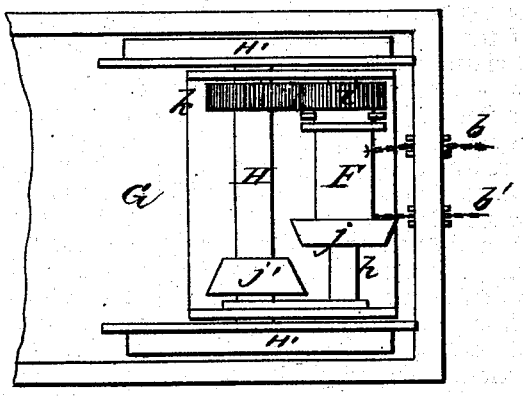



Fig. 6.

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# UNITED STATES PATENT OFFICE.

EDMOND O. RICHARD, OF QUEBEC, QUEBEC, CANADA, ASSIGNOR OF PART HIS 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. **182,478**, 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 Couplers; 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.

Figure 1 of the drawing is a representation of a plan view of my car-brake. Fig. 2 is a sectional view of the same, and Figs. 3, 4, 5, and 6 are detail views of the same.

This invention has relation to railroad-car brakes of the automatic kind, wherein the brakes will be applied automatically, should any one of the cars leave the track, and wherein the brakes can be applied at the engine to each car in succession from the rear car.

The nature of my invention consists, first, in a branch chain, which is attached to devices for cutting off steam and reversing, and which extends through the entire train, and is connected at the rear end of the rearmost car to a return branch chain, which is carried around pulleys on sliding bars, which actuate the brake-levers, and attached to a windlass on the locomotive, as will be hereinafter explained. Second, in a novel contrivance, in combination with the lever, for cutting off steam and reversing the engine, whereby these operations may be effected automatically by the act of applying the brakes, or in the event of a car leaving the track, as will be hereinafter explained. Third, in a novel arrangement of guide-pulleys beneath the "tender," in connection with the two chain branches, whereby the ends of the chains on the tender can be changed right or left, as will be hereinafter explained.

The following is a description of my improvements: In the annexed drawings, A designates the bed of a tender, and B one of the trucks thereof. D $D^{\times}$ are brake-bars, carrying brake-shoes *a a* on their ends, and $D^{1}$ is a rod, which is connected at one end to one of the bars D, and at the other end to the lower end of a brake-lever, $D^{2}$, which is pivoted to the bar $D^{\times}$ and loosely attached to an obliquely-arranged bar, E, which is suitably guided between the longitudinal beams of the bed A, and acted on by a spring. (Indicated in dotted lines, Fig. 1.) Alongside of the bar E is another bar, E′, which actuates the brakes of the other truck of the tender in a precisely similar manner to that above described. The braking devices on the coaches are constructed and operated like those on the tender, the only difference being that on the coaches the bars E E′ are straight. I employ two brake-chains, *b b′*, one of which, *b*, is attached to a windlass, F, on the locomotive G, and is carried directly through the train past pulleys *e*, and between pulleys $e^{1}$ $e^{1}$, and at the rear end of the rearmost car the chain *b* is attached to the chain *b′*, which latter is carried back between pulleys $e^{1}$ $e^{1}$ around pulleys *d d* in bars E E′, thence past pulleys *e*, and at the locomotive this return chain is attached to a segment, *f*, which is pivoted to a fixed arc, *g*, in the engineer's cab. The chain *b′* passes from the rear forward and around the pulleys *d d* in such a manner that in the act of applying the brakes the bars E E′ are moved in opposite directions longitudinally. The bars E E′ on the tender are arranged obliquely to allow the ends of the chains *b b′* thereon to be crossed when the tender is turned around, so as to have the chains *b b′* in line with their respective chains on the coach to which the tender is coupled. When the chains are so crossed they play around pulleys $e^{3}$, which are between the pulleys *e* at the ends of the tender and coaches. The windlass F is applied so as to turn loosely, and to receive endwise play on a horizontal shaft, *h*, in rear of the axle H of the driving-wheels H′. On one end of the windlass F is a spur-wheel, *i*, and on the other end is a cone-shaped friction-wheel, *j*. The wheel *i* is intended to engage with a wheel, *k*, fast on the axle, which engagement can be effected by means of a hand-lever, I, and a forked arm connection, I′, which latter embraces an annular groove in one end of the windlass.

The wheel *j* is intended to work in combination with an anti-friction cam, *j'*, which is fast on the axle H, for ordinary use in the application of the brakes. In extraordinary cases, when it is necessary to prevent a collision between trains, wheel *i* is made to engage with wheel *k*, and all the brakes are brought up hard on the truck-wheels.

The reversing-lever K is provided with a spring-latch, *l*, adapted to engage in one or the other of several notches made in the edge of the fixed arc *g*, and hold the lever K in any desired position. When lever K is in the position shown in Fig. 3, steam is cut off from the engine. When forward of this position steam is on, and when in rear of said position the engine is reversed. The segment *f* has a hooked portion, *f'*, formed on its front upper corner, in rear of which the segment presents a cam-shaped edge, which is directly under the latch *l*. When lever K is moved forward to let on steam and start the engine, the segment *f* is carried with it by the lever pressing against the hooked portion *f'*. A pin is then inserted into one of several holes, *n*, through the arc *g*, for the purpose of stopping lever K at the "cut-off" point, or at a reversing-point. Now, when the windlass F applies the brakes, or should the brakes be applied by a car in the train leaving the track, the return chain *b'* will draw back the segment *f*, and with it the lever K, thus automatically cutting off steam or reversing the engine.

N designates a draw-bar, and *m* the draw-head. *p* is a coupling-pin, which passes horizontally and laterally through the bar N, just in rear of the head *m*.

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

1. In an automatic car-brake, the chain *b*, connected to a windlass on the locomotive, and the chain *b'* carried around pulleys *d d* in bars E E', and attached to a segment, *f*, in combination with the lever K, substantially as described.

2. The segment *f*, combined with the latch *l*, the lever K, the notched arc *g*, and the brake-chains *b b'*, substantially as described.

3. The guide-pulleys *e e* on the rear of the tender, in combination with the pulleys $e^1$ $e^1$ and $e^3$, obliquely-arranged brake-bars E E', provided with pulleys *d d* rotating in slots therein, and brake-chains *b b'*, whereby the latter can be crossed when the tender is turned around, 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.