3 Sheets--Sheet 1.

J. E. RICHARD.

Car-Brakes.

No. 157,351. Patented Dec. 1, 1874.

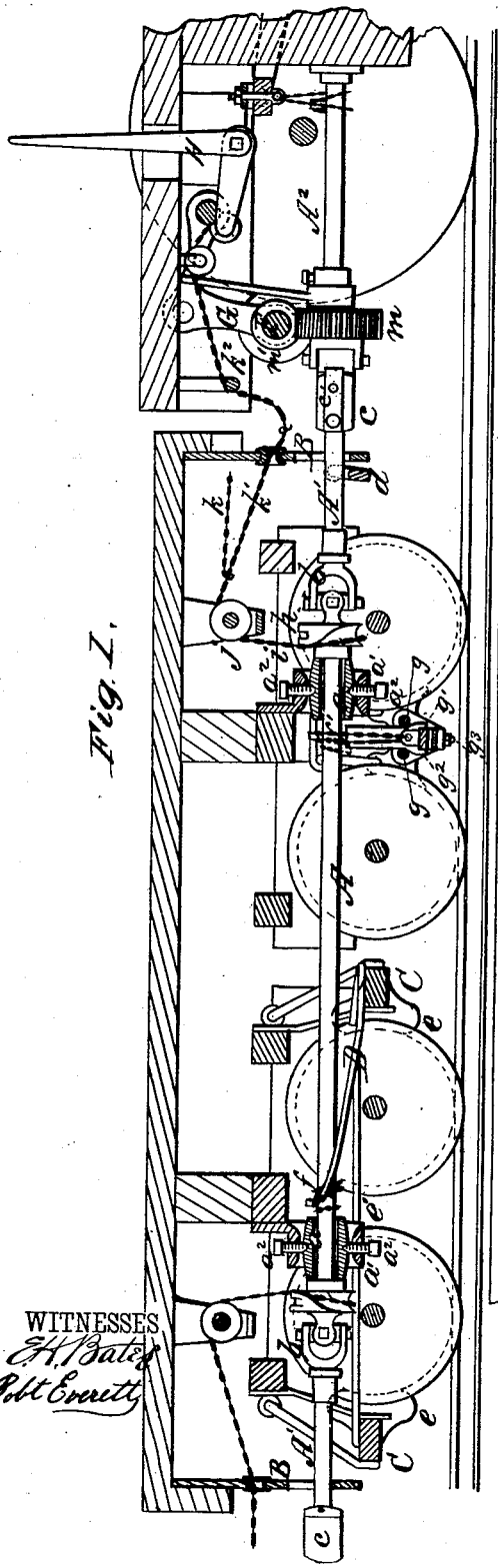

Fig. 1.

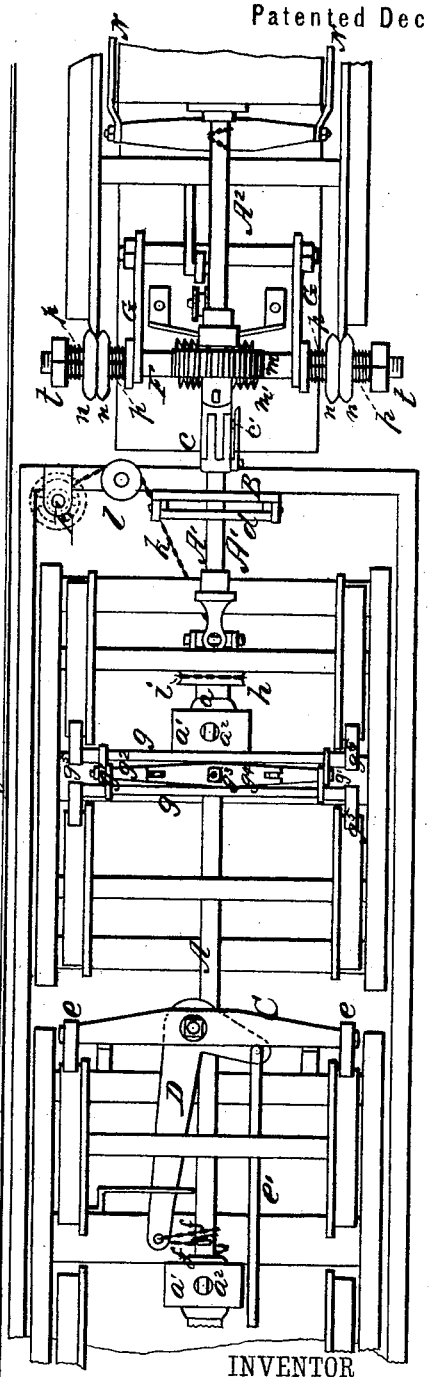

Fig. 2.

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Fig 3

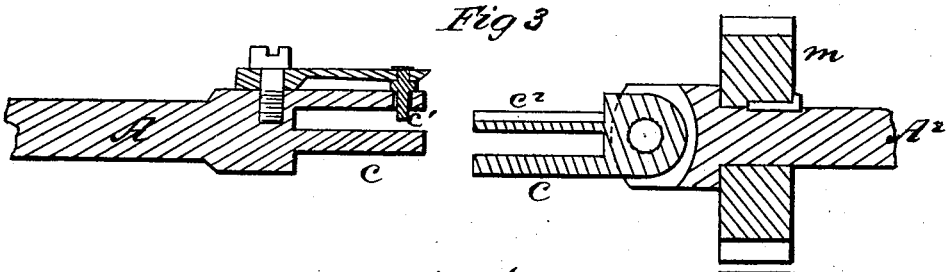

Fig. 4

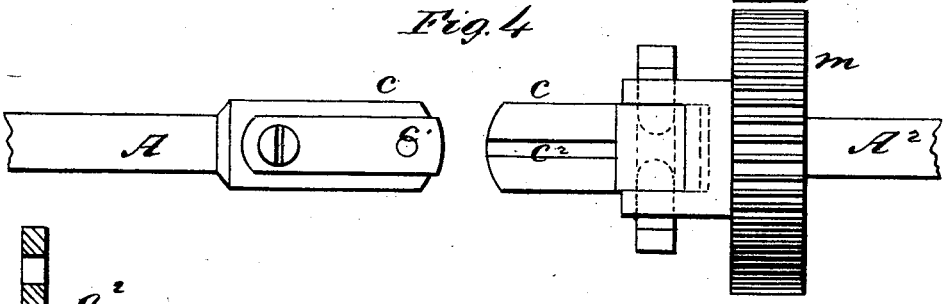

Fig. 5

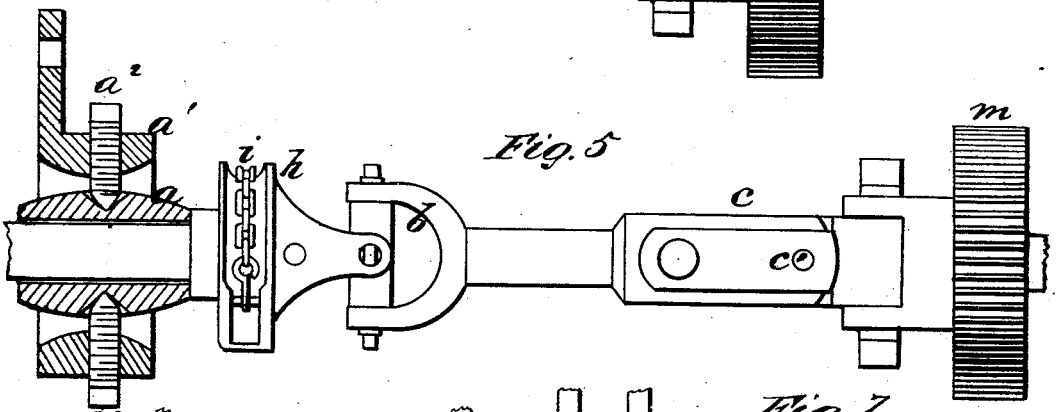

Fig. 6

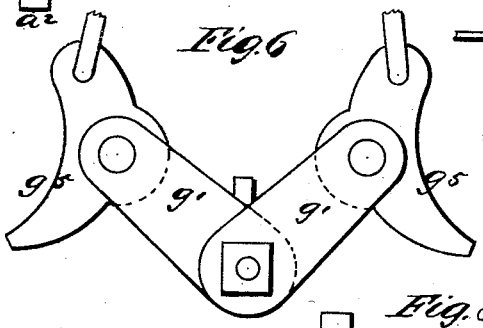

Fig. 7

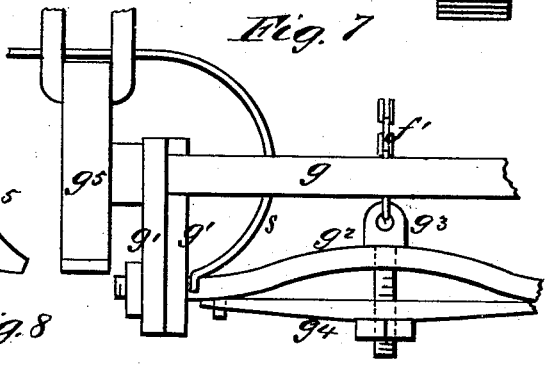

Fig. 8

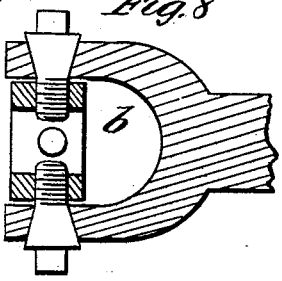

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Fig. 10

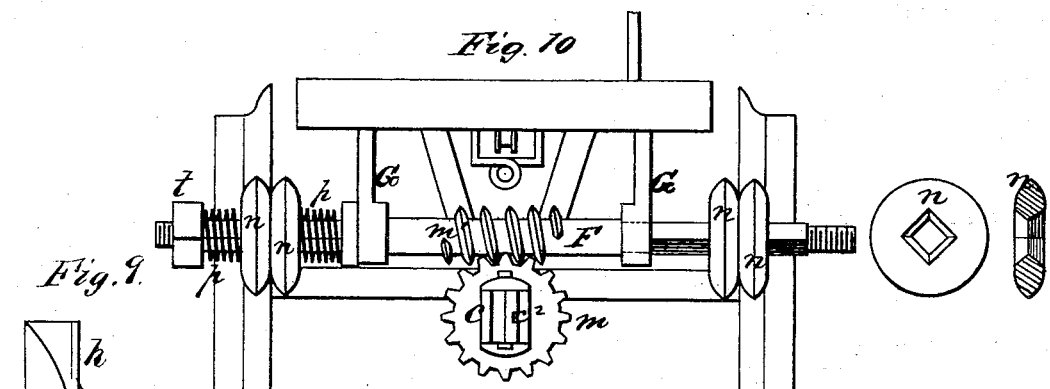
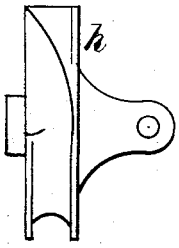
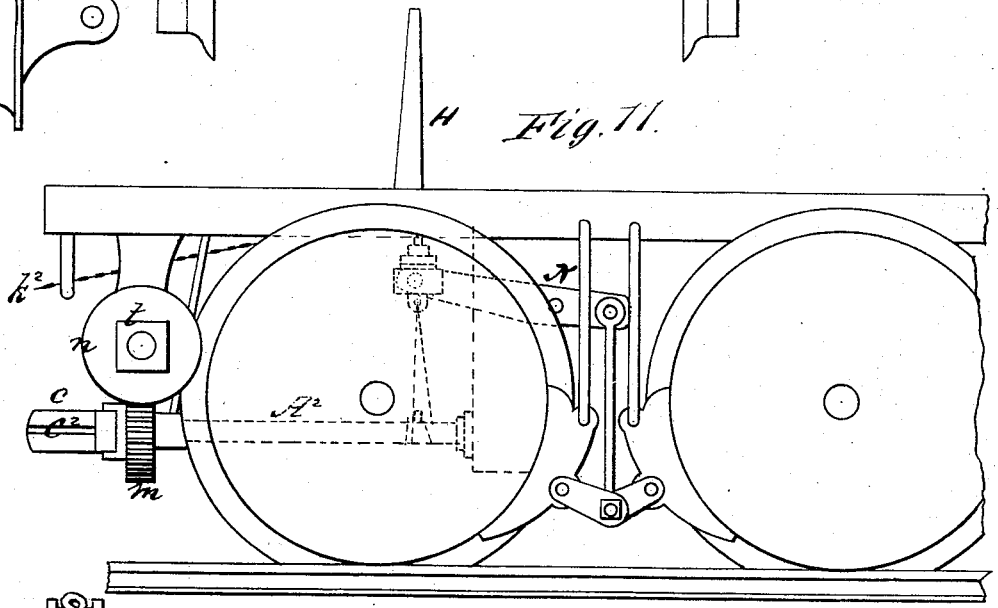
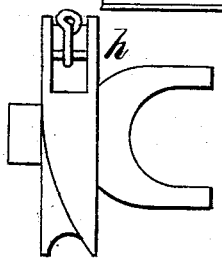


Fig. 9.



H Fig. 11.





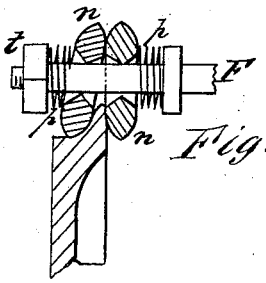


Fig. 12.

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UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **157,351**, dated December 1, 1874; application filed August 8, 1874.

CASE A.

To all whom it may concern:

Be it known that I, JEAN E. RICHARD, of Columbia, in the county of Richland and State of South Carolina, have invented a new and valuable Improvement in 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.

Figure 1 of the drawing is a representation of a longitudinal vertical section of my car-brake. Fig. 2 is a plan view of the same, and Figs. 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 are detail views.

This invention has relation to railroad-car brakes, wherein a sectional shaft, extending from the locomotive through the train, is employed for applying the brakes on all the cars simultaneously. My objects are to so contrive a brake, working on this general principle, that either the engineer in his cab or a brakesman stationed on any car can apply all the brakes at the same time; also, to provide for the application of the brakes should any one of the coaches or the locomotive leave the track; also, to enable the engineer to apply the brakes whether the train be running backward or forward; also, to combine with the section of the brake-shaft a novel coupling, which will automatically uncouple should any one of the cars in a train leave the track. Another object I have in view is to hang the brake-shaft from the bolsters of the truck-frames in such manner that the trucks are free to move about their king-bolts and follow curves in the road without interfering with the operation of the brake-shaft.

The following is a description of my improvements:

In the annexed drawing, Figs. 1 and 2, I have represented my improvements applied to the bed of a coach and the frame of a locomotive.

A designates the long section of a brake-rod, which extends from one truck-frame to the other, and has its end bearings in boxes *a a*, which are supported and held in place in circular hangers a^1 a^1, depending from the bolsters of the truck-frames, and which are free to swivel laterally on screw-pivots a^2 a^2 having cone-shanks. These cone-shanked pivots can be set up and always kept tight, thus preventing the bearing-boxes from looseness. A^1 A^1 designate two end sections of the brake-rod, which sections are connected to the long section A by means of gimbal-joints *b b*, which allow sections A^1 universal motion. The pivot-screws of the gimbals have cone-shanks, as shown in Fig. 5, which allow them to be set up to compensate for wear, as described for the hangers of the boxes *a a*. The sections A^1 A^1 have couplings *c* on their free ends, which connect them with the corresponding sections on other cars. One section A^1 has a female fork adapted to receive a male fork on the section A^1 of another car, and this female fork is provided with a spring-pin, C^1, which enters a groove, C^2, in one of the prongs of the male fork, and prevents lateral detachment of the coupling, but allows an automatic uncoupling of the sections should a car or locomotive leave the track. The jointed sections pass freely through hangers B B on the ends of the coach, to which hangers gates *d d* are hinged for the purpose of holding one of the sections A^1 up out of the way of a corresponding section on another car while coupling cars together. After the cars are coupled the couplings *c c* are engaged by a side movement. On one of the trucks I have represented brake-bars C C carrying brake-shoes *e e*, and hung from the truck-frames in the usual well-known manner. These bars C C are connected together by means of a rod, *e'*, and to one of the bars an angular lever, D, is pivoted, one end of which is connected to the rod *e'*, and the other arm, which rests on a suitable support, is connected by two chains, *f f*, to the section A of the brake-rod. The chains *f f* pass around the section A in opposite directions, so that whichever way this section is rotated the brakes will be applied.

On the other truck I have represented an improved braking device, wherein the brake-bars *g g* have their end bearings in links g^1 g^1 between the truck-wheels, which links are

pivoted to the ends of an arched rod, g^2, that is suspended from the section A by means of the chains f' f', arranged in a similar manner to the chains f f of lever D. The lower ends of said chains f' f' are connected to an eye-bolt, g^3, which passes loosely through the rod g^2, and is connected to a spring, g^4. The brake-shoes g^5 are suspended by hangers from the truck-frame, and when the brakes are "off" they are depressed by means of springs s. The object of the spring g^4 is to equalize the pressure on all of the brake-shoes g^5, so that they will all press alike on the wheels. Between the bearing-box a and the gimbal-joint b, at each end of the car, is a pulley, h, shown clearly in Fig. 9, one portion of which is cut away for a purpose presently explained. To the grooved periphery of this pulley a chain, i, is secured, which passes up and over a pulley, j, and is attached to two chains, k k^1, one of which, k, passes around a pulley, l, and is wound around a hand brake-rod, E. The other chain, k^1, passes freely through the hanger B and is provided with means for coupling it with a similar chain on another car or on the locomotive.

It is desired to have as little slack in the chains i k k^1 as possible when the brakes are off, and for this reason I construct the pulley h with one portion omitted, so that, in applying the brakes, the chain will pass from the periphery of the pulley on the shaft A of smaller diameter.

It will be seen that the brakes can be applied by a person on the car-platform by the well-known hand brake-rod; also, that should a car jump the track, the brakes will be automatically applied by the draft on the chains k^1.

I will now describe the mechanism on the locomotive. A^2 is the brake-rod section, which is supported in suitable bearings beneath the engineer's cab and provided with a jointed coupling, c, like the other couplings c, above described; also, with a perimeter spur-wheel, m, adapted to engage with a worm-screw, m', on a horizontal transverse shaft, F. This shaft F has its bearings in a vertically-rocking frame, G, to the front cross-bar of which the lower end of an angular hand-lever, H, is pivoted, the upper portion of which lever passes up through the floor of the engineer's cab, as shown in Fig. 1. There is also attached to the front cross-bar of frame G a chain, k^2, which is fastened in any suitable manner to the chain k^1. The ends of the worm-shaft F are square and shouldered, and on these square portions friction-clamps n n are applied in pairs, which clamps are like double convex lenses, and they are confined together by means of springs p p and adjusting-nuts t t. The clamps are reversible, so that when one side wears out the other side can be used. The space between each pair of clamps n n is in the same vertical plane as the rim of the driving-wheel of the locomotive, against which the clamps are caused to act. By means of the nuts t t the clamps are held together with more or less force, according to the degree of friction which it is intended they shall exercise. When the engineer desires to apply the brakes he presses the lever H forward and engages the worm m' with the wheel m, at the same time pressing the friction-clamps n n against the rims of the driving-wheels, which clamps will forcibly hug the rims and rotate the shaft F, which in turn will rotate the brake-shafts throughout the train and apply the brakes to all the cars at the same time.

Should any one of the cars leave the track it will uncouple from the other cars, and the brakes will be applied by the draft on the chains k^1 k^2. In practice I shall employ brakes for the locomotive driving-wheels actuated by means of chains connected to the shaft A^2 and to a lever, N, as shown in Fig. 11.

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

1. The brake-rod section A, hung in boxes a a from the truck-frames, in combination with sections A^1 A^1 connected to section A by gimbal-joints, and provided with couplings, substantially as described.

2. The gates d in hangers B, combined with the jointed brake-rod sections A^1, substantially as described.

3. The brake-rods g g carrying shoes g^5, and applied to links g^1 g^1, in combination with the arched bar g^2, equalizing-spring g^4, eye-bolt g^3, and chains f' f', substantially as described.

4. In combination with the brake-rod A^2 on the locomotive, the spur-wheel m', worm-shaft F carrying friction-clamps, rocking frame G, and hand-lever H, substantially as described.

5. The friction-clamps n n on shaft F, in combination with pressure-springs p p and adjusting-nuts t, substantially as set forth.

6. Chain k^2, connected at one end to the frame G, and at the other end to the brake-chain k^1, and combined therewith, as and for the purpose set forth.

7. Forked couplings c, in combination with pins c^1, grooves c^2, and brake-rods, substantially as set forth.

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

JEAN ELIE RICHARD.

Witnesses:
GEO. E. UPHAM,
H. C. HOLLINGSHEAD.