(No Model.) 2 Sheets—Sheet 1.

C. F. DE REDON.

ELECTRIC CAR BRAKE.

No. 597,432. Patented Jan. 18, 1898.

Fig. 1.

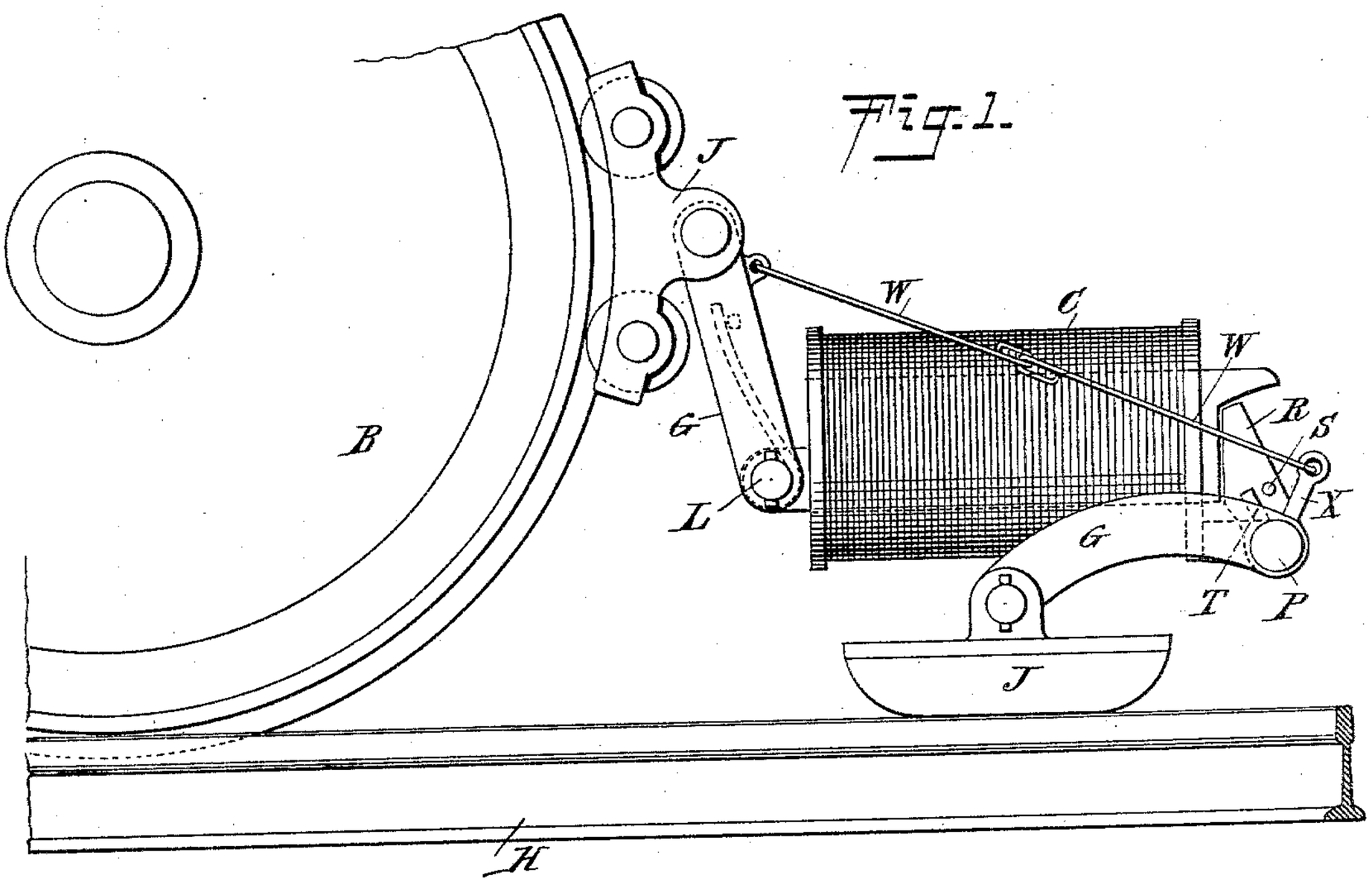


Fig. 2.

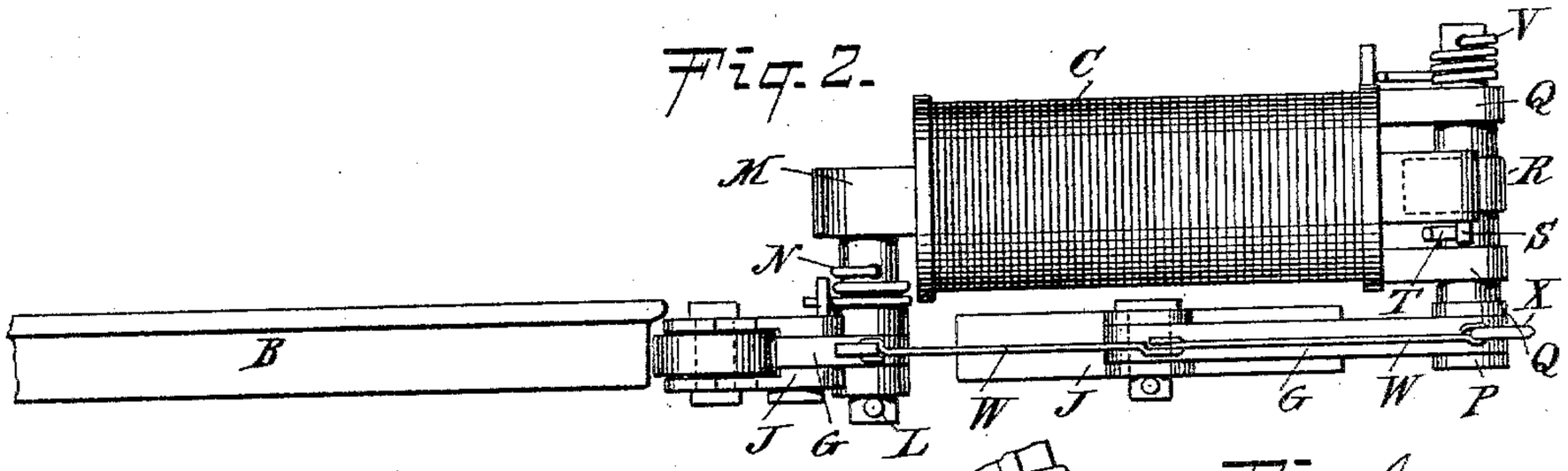


Fig. 3.

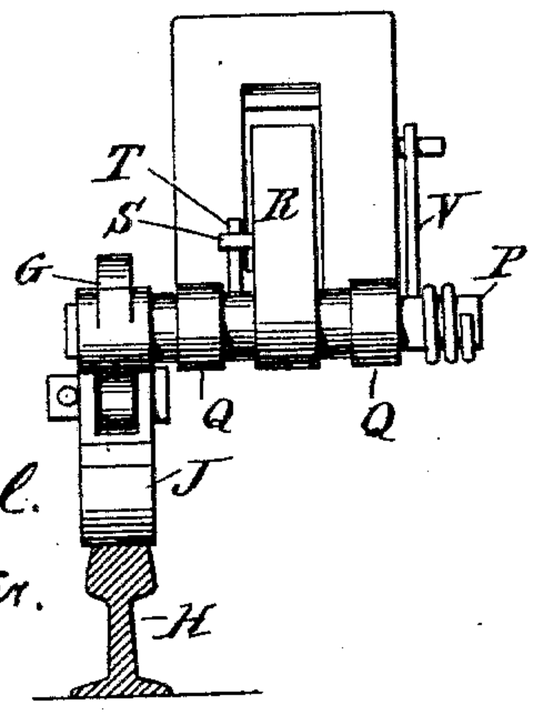
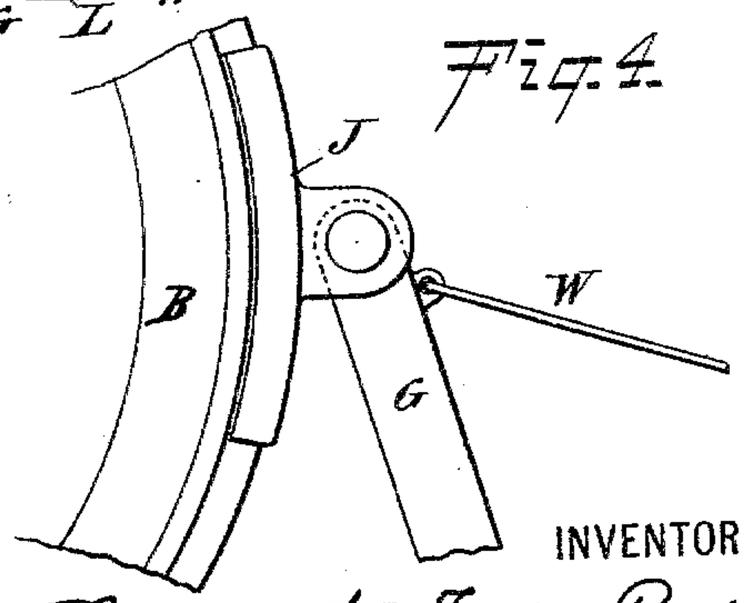


Fig. 4.



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ATTORNEY

(No Model.) 2 Sheets—Sheet 2.

C. F. DE REDON.

ELECTRIC CAR BRAKE.

No. 597,432. Patented Jan. 18, 1898.

Fig. 5.

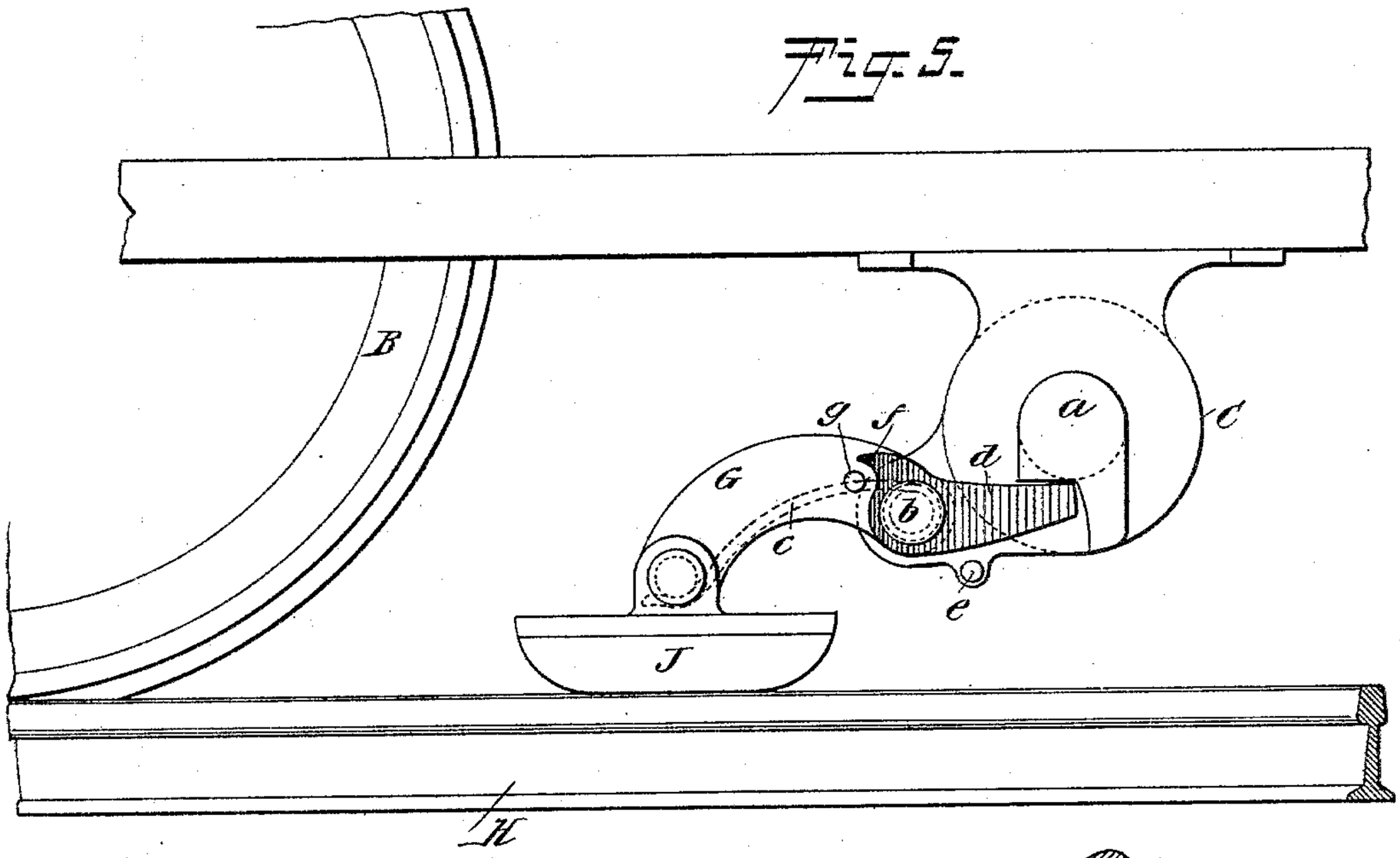


Fig. 6.

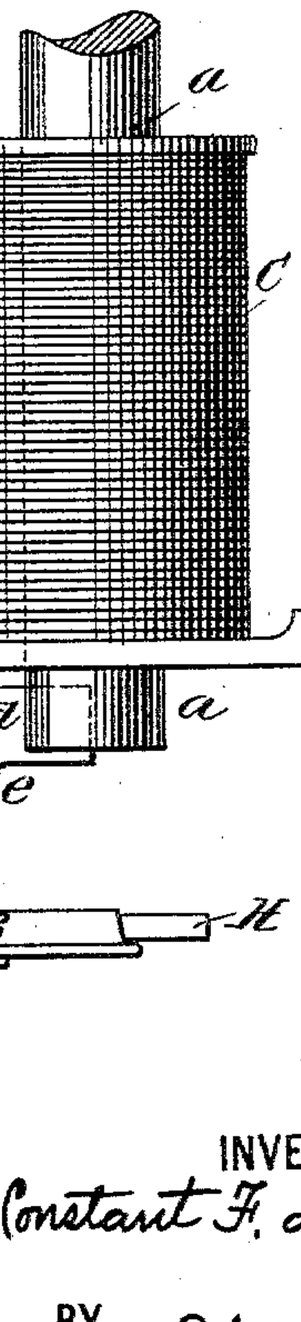
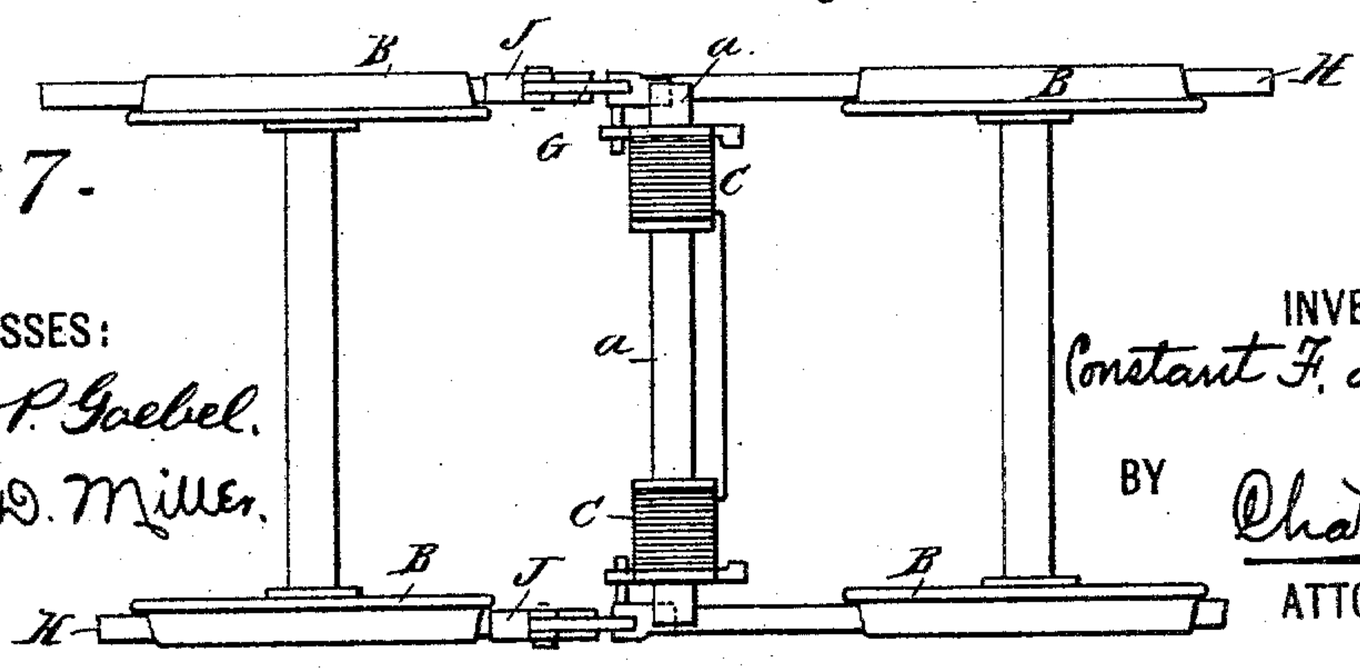


Fig. 7.



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UNITED STATES PATENT OFFICE.

CONSTANT F. DE REDON, OF NEW YORK, N. Y.

ELECTRIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 597,432, dated January 18, 1898.

Application filed September 22, 1896. Serial No. 606,602. (No model.)

To all whom it may concern:

Be it known that I, CONSTANT F. DE REDON, a citizen of France, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Car-Brakes, of which the following is a specification.

The invention relates to improvements in electric car-brakes, and particularly to the class of brakes in which by magnetic attraction or the power of an electromagnet the brake-shoes are drawn against the track-rails or against both the track-rails and car-wheels.

The object of my invention is to greatly improve and increase the efficiency of this class of brakes and to produce structures of great durability, simplicity, and reliability and which may be conveniently applied to the cars.

The system embodying my invention embraces stationary electromagnets at opposite sides of the car, pivoted brake-arms at the ends or terminals of the electromagnets, and brake-shoes pivotally secured to said arms and held normally upward by means of springs. The brake-shoes are adapted to the form of the rails or wheels, as the case may be, and they are capable of yielding upward to pass over any obstruction that may be on the rails.

The nature of my invention and several means for carrying the same into effect will be understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a portion of a car-truck provided with brakes constructed in accordance with and embodying the invention. Fig. 2 is a top view of same. Fig. 3 is an end view of same. Fig. 4 is a detached side elevation showing a modified form of brake-shoe for same. Fig. 5 is a side elevation of a portion of a car-truck employing a modified form of the invention. Fig. 6 is a top view, partly broken away, of same; and Fig. 7 is a top view of a portion of a car-truck provided with the form of brake mechanism shown in Figs. 5 and 6.

In the drawings is represented a portion of the usual car-truck, having wheels B, of usual character. At each side of the car and between the wheels B is suitably suspended by any suitable hangers the electromagnet C, having heads at its opposite ends, to which are pivotally secured by means of the horizontal pins or shafts the brake-arms or links G, which extend lengthwise of the track-rails H and support in their outer ends in a pivotal manner the brake-shoes J J, one of which contacts with the car-wheel B and the other with the rail H. In Figs. 1 to 3, inclusive, the left-hand link or brake-arm G extends upward to the brake-shoe J from the pin or shaft L, secured in the head M of the electromagnet C, and on this shaft L is provided a spring N, normally holding the brake-shoe from the car-wheel. The right-hand link or brake-arm G of Figs. 1 to 3, inclusive, is secured upon the outer end of the horizontal shaft P, which is journaled in sleeves or bearings Q Q and loosely receives between the latter the plate R, having the transverse pin S for contact with the pin T, carried by the shaft P. The shaft P, under the action of the spring V, retains the right-hand brake-arm G, with its shoe J, normally in an elevated position, but when the current is applied the plate R will be drawn to the magnet and through the contact of its pin S with the pin T will turn the shaft P and move the right-hand brake-shoe J toward the rail. When the current is cut off, the spring V will restore the shaft P and its brake arm and shoe to their normal position, and during the return of these parts to their normal position the pin T will strike the pin S and move the plate R outward from the end of the magnet. When the left-hand brake-shoe J is against the wheel and the right-hand brake-shoe is on the rail, as shown in Fig. 1, the circuit will be from the left-hand shoe through the wheel and rail to the right-hand shoe. The application of the energizing-current will cause the shoes to bind against the car-wheel and track-rail, respectively, and when the current is cut off the springs N V will at once withdraw the brake-shoes to their normal position free of said wheel and rail.

The left-hand brake-shoe may be either in the form shown in Fig. 1 or that illustrated in Fig. 4, or of any other suitable or convenient form or construction.

The parts shown in Figs. 1 to 3, inclusive, will be duplicated for opposite sides of the car and will be suspended from the car-frame by hangers of any suitable form—such, for instance, as the hangers illustrated in Fig. 5 with respect to the electromagnet there shown.

While I show in Figs. 1 to 4, inclusive, two different forms of brake-shoes for engagement with the car-wheel, I prefer the form of shoe illustrated in Fig. 1, for the reason that its surface which contacts with the car-wheel may roll thereon, being in the form of rollers, as shown, and not wear flat the periphery of the car-wheel, as would be the case with the use of the brake-shoe shown in Fig. 4. The body of the shoe J for the car-wheel shown in Fig. 1 is sufficiently close to the periphery of the wheel to maintain the lines of magnetic force between itself and the surface of the wheel, but only physically contacts with the car-wheel through the rollers shown, (one or more of the rollers being employed, as may be preferred,) while the lower or rail shoe J directly and fully contacts with the rail.

In the use of the construction shown in Fig. 1 there will be a stronger binding action between the lower or rail shoe J and the rail than between the upper or wheel shoe J and the car-wheel, and since the wheel-shoe J is relatively near to the car-wheel and will move first under the action of the current its movement may be used to aid in forcing the lower or rail shoe J downward through the medium of the rod W, extending from the pin X to the left-hand brake-arm G. Another advantage of the construction shown in Fig. 1 is that all the parts of the brake are confined within a small compass by reason particularly of the fact that the lower or right-hand arm G turns inward in line with the length of the magnet and at its end pivotally supports from a central point the rail-shoe J, which also is confined within the length of the magnet; and a further advantage of the construction shown in Fig. 1 is that the rocking of the car when brought to a stop will have but slight effect on the brake-shoes, due to their position and pivotal connections.

In Figs. 5, 6, and 7 I illustrate a modification of the invention, in which, as will be observed, the magnets C at opposite sides of the car are arranged transversely of the car and are connected by the core or shaft *a*. Each magnet of Figs. 5, 6, and 7 employs but one brake-shoe, and at each magnet this brake-shoe is carried by the brake-arm G, which is hung from the shaft *b* and given a normal upward tension by means of the spring *c*. Upon the shaft *b* is mounted the contact plate or dog *d*, whose downward movement is limited by the pin or stop *e*, and which, when drawn upward by the magnet, will drive its toe *f* against the pin *g* on the brake-arm and move the latter, with its shoe, downward toward the track-rail. When the current is cut off from the magnet, the spring *c* will elevate the brake-arm and brake-shoe, and during such upward movement the pin *g* on the arm will strike the toe *f* and turn the plate or dog *d* downward toward the stop-pin *e*.

With the construction shown in Figs. 5, 6, and 7 the magnetic current is from the shoes through the rails to the car-wheels and thence through the car-axle.

In all of the forms of construction shown in the drawings there is an articulated connection intermediate the rail brake-shoes and the magnet, and hence the shoes may yield upward to any obstruction which may be on the rails.

The constructions shown in the drawings and above described are particularly efficient, durable, and comparatively inexpensive, and they may be readily applied to the cars at minimum cost.

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

1. In a railway-brake, the magnet carried by the car and at each side of the latter, combined with a pivoted brake-arm carried from the end of each magnet and turning inward in line with the length of the magnet, and a brake-shoe for contact with the rail carried by each of said brake-arms; substantially as set forth.

2. In a railway-brake, the magnet carried by the car and at each side of the latter, combined with pivoted brake-arms carried from one end of the magnets and turning inward in line with the length of the magnet, brake-shoes carried by said arms for contact with the rails, pivoted brake-arms carried from the other end of the magnets, and brake-shoes carried thereby for contact with the car-wheels; substantially as set forth.

3. In a railway-brake, the magnet carried by the car and at each side of the latter, combined with the pivoted brake-arms carried from one end of the magnets and turning inward in line with the length of the magnets, brake-shoes carried by said arms for contact with the rails, pivoted brake-arms carried from the other end of said magnets, brake-shoes carried thereby and having rolling surfaces for contact with the car-wheels, and the rods connecting the brake-arms at opposite ends of said magnets whereby the movement of one arm will aid the movement of the other arm; substantially as set forth.

4. In a railway-brake, the magnet carried by the car and at each side of the latter, combined with the shaft mounted at the end of each magnet, the brake-arm thereon, the brake-shoe carried by each of said arms for contact with the rail, the contact-plate on each shaft to be attracted by the magnets and means for imparting movement from the contact-plates to said brake-arms; substantially as set forth.

5. In a railway-brake, the magnet carried by the car and at each side of the latter, com-

bined with the shaft mounted at the end of each magnet, the brake-arm thereon, the brake-shoe carried by each of said arms for contact with the rail, the contact-plate on each shaft to be attracted by the magnets, the spring holding the brake-arms normally upward, and the engaging pins whereby the inward motion of the contact-plates moves the brake-arms downward and the upward movement of the brake-arms is simultaneous with the outward movement of said plates; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 21st day of September, A. D. 1896.

CONSTANT F. DE REDON.

Witnesses:
CHAS. C. GILL,
E. JOS. BELKNAP.