

(No Model.)

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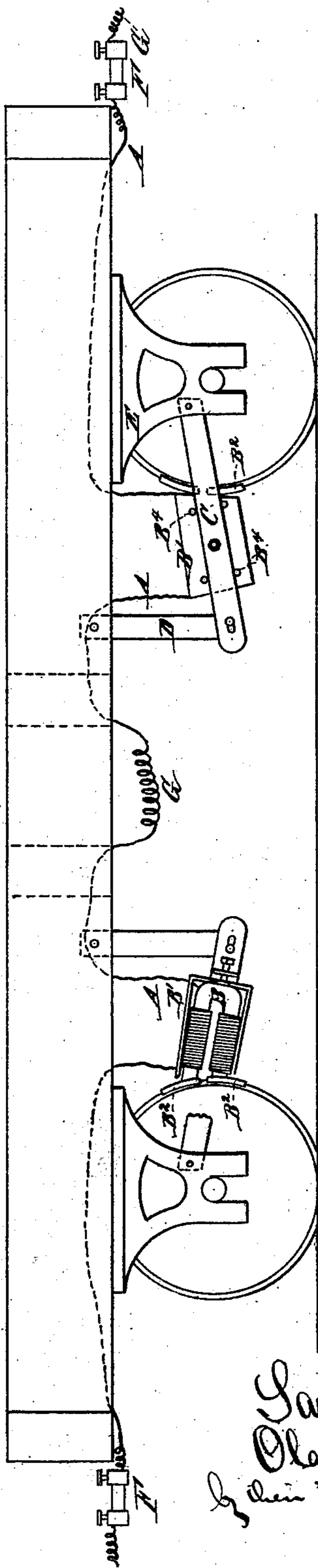
S. MILLIGAN & O. S. WHEELER.

Electric Railway Brake.

No. 238,048.

Patented Feb. 22, 1881.

Fig. 1.



WITNESSES—

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INVENTORS—

Samuel Milligan,
Olaf S. Wheeler,
by their attorneys J. S. Stetson.

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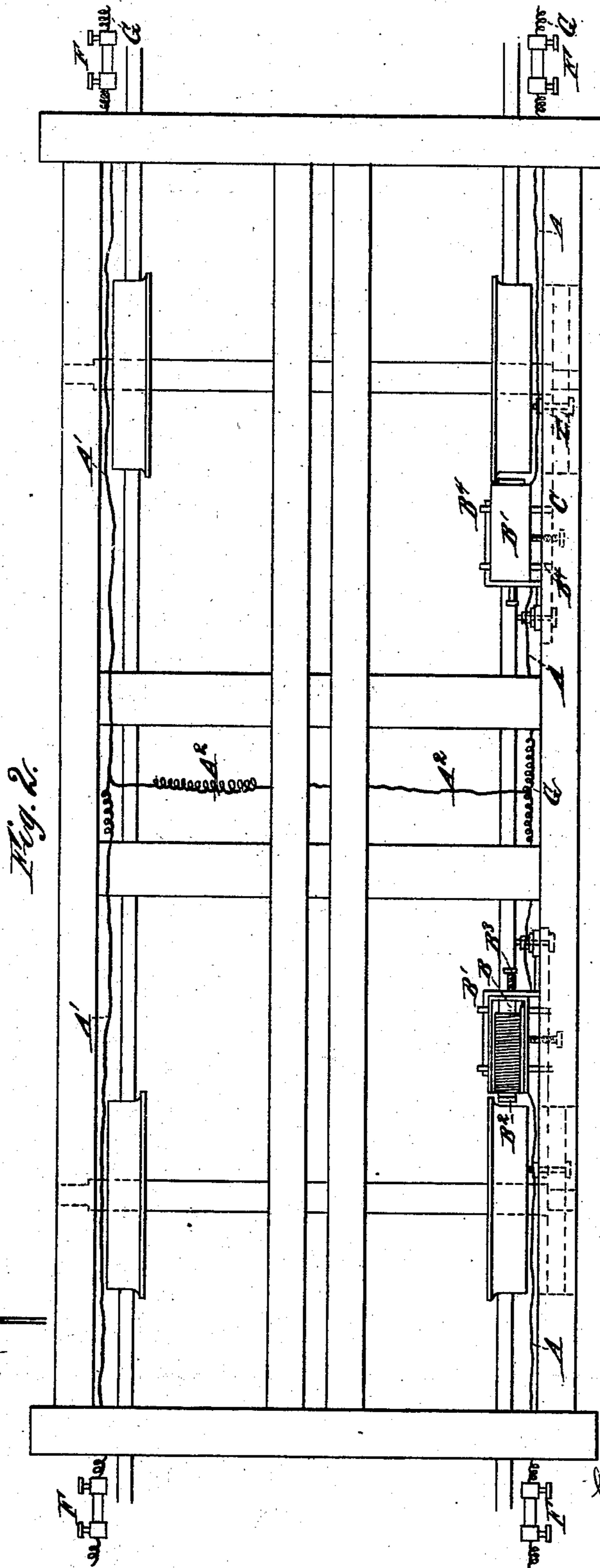
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UNITED STATES PATENT OFFICE.

SAMUEL MILLIGAN AND OLAF S. WHEELER, OF MELBOURNE, COLONY OF VICTORIA, ASSIGNORS TO SAID MILLIGAN AND THOMAS WELTON STANFORD, OF SAME PLACE.

ELECTRIC RAILWAY-BRAKE.

SPECIFICATION forming part of Letters Patent No. 238,048, dated February 22, 1881.

Application filed May 8, 1880. (No model.) Patented in the British Colony of Victoria July 5, 1879.

To all whom it may concern:

Be it known that we, SAMUEL MILLIGAN, engineer, and OLAF SPENCER WHEELER, journalist, both of the city of Melbourne, in the British Colony of Victoria, have invented new and useful Improvements in Railway-Brakes, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

This invention consists in the application of electricity to the wheels of railway rolling-stock as a brake-power. This power we apply in the form of electro-magnets fixed in close proximity to all the wheels of all the vehicles in a train, or to so many of them as may be thought desirable. The electric current can be supplied of any force within the compass of the battery or electrical machine used, so as to give the most perfect and accurate control of the brake-power brought into play, thereby insuring an absolute prevention of the waste now caused by using a greater power than is necessary for accomplishing the required retardation or stoppage. Our invention has also the additional advantage of being exceedingly cheap in construction and working. These electro-magnets may be of any useful form; but we prefer to make them with their faces of a corresponding shape to that of the periphery of the wheel which they are to gripe, and in order to their practical working they must be so set as to retire or fall back from the wheel when the brake is not in use. We prefer that they should be made to so fall back by their own weight.

In order, however, that our invention may be distinctly understood, we will now refer to the drawings hereto attached, where—

Figure 1 shows side elevation of the lower framing of a railway-carriage with our invention applied, and Fig. 2 plan thereof. In each of these figures a part of one of the cases containing our brake-blocks is removed in order to show the interior.

A is an electric wire proceeding from a battery or machine, and connected to electro-magnets B contained in a case, B', and shod with iron shoes B², made to fit the periphery of the wheel. B³ is a regulating-screw, and

B⁴ are studs on either side for supporting the case B' on arm C, which is supported at one end by pendent lever D, and at the other by a stud on a bracket, E, descending from the framing of the carriage. F F are connections of the ordinary description for joining the wires between each carriage, and G G are curls in the wire, so as to allow of any stretching that may be found necessary or convenient.

In Fig. 2 an extra electric wire, A', is shown. This proceeds from the guard-van and is connected by cross-wires A² underneath each carriage, so as to enable the brakes to be put on either from the engine or from the brake-van, and also to provide against the contingency of the breakage of any part of the wire A, or of the refusal of the electric current to pass along it.

The working of our brake is as follows: Whenever it is required to be applied a current of electricity of the requisite power is communicated to the electro-magnets B through the wires A, when the shoes B² instantly fly onto the wheels, holding them with all their force until the speed of the train is sufficiently lessened or it is stopped altogether, as may be required. When the object of applying the brakes has been accomplished the electric current is cut off from the wires A. The brake-blocks will then instantly release themselves from the wheels and slide backward on the arms C by reason of their own weight. The bar C is just sufficiently inclined to cause the case B' and its contents to move backward or away from the wheel by gravity, aided by the jarring of the carriage, so soon as the magnetism is destroyed. Gravity and the friction involved by the motion on the bar serve to retain the brake away from the wheel until the magnetic force is again applied.

Of course there is no necessity to withdraw or apply the whole power of our electro-magnetic brake at once; but, on the contrary, it can be governed with the greatest nicety, giving the most perfect control over it at all times.

Having thus described the nature of our invention and the manner of performing same, we would have it understood that what we claim as our invention is—

1. The inclined bar C, firmly supported at both ends, in combination with the casing B', fitted to travel thereon, and with electro-magnets B and brake-shoes B², adapted to serve
5 relatively to the wheels, and to a suitable battery and connections, as herein specified.

2. In a magnetic car-brake apparatus, the duplicate set of connections A A', with the cross-connection A², as shown, in combination

with the magnets B, case B', shoes B², and an inclined guide-bar and support, arranged to allow the application of the current from two independent sources at will, as herein specified.

SAML. MILLIGAN.

OLAF S. WHEELER.

Witnesses:

EDWD. WATERS,

W. S. BAYSTON.