

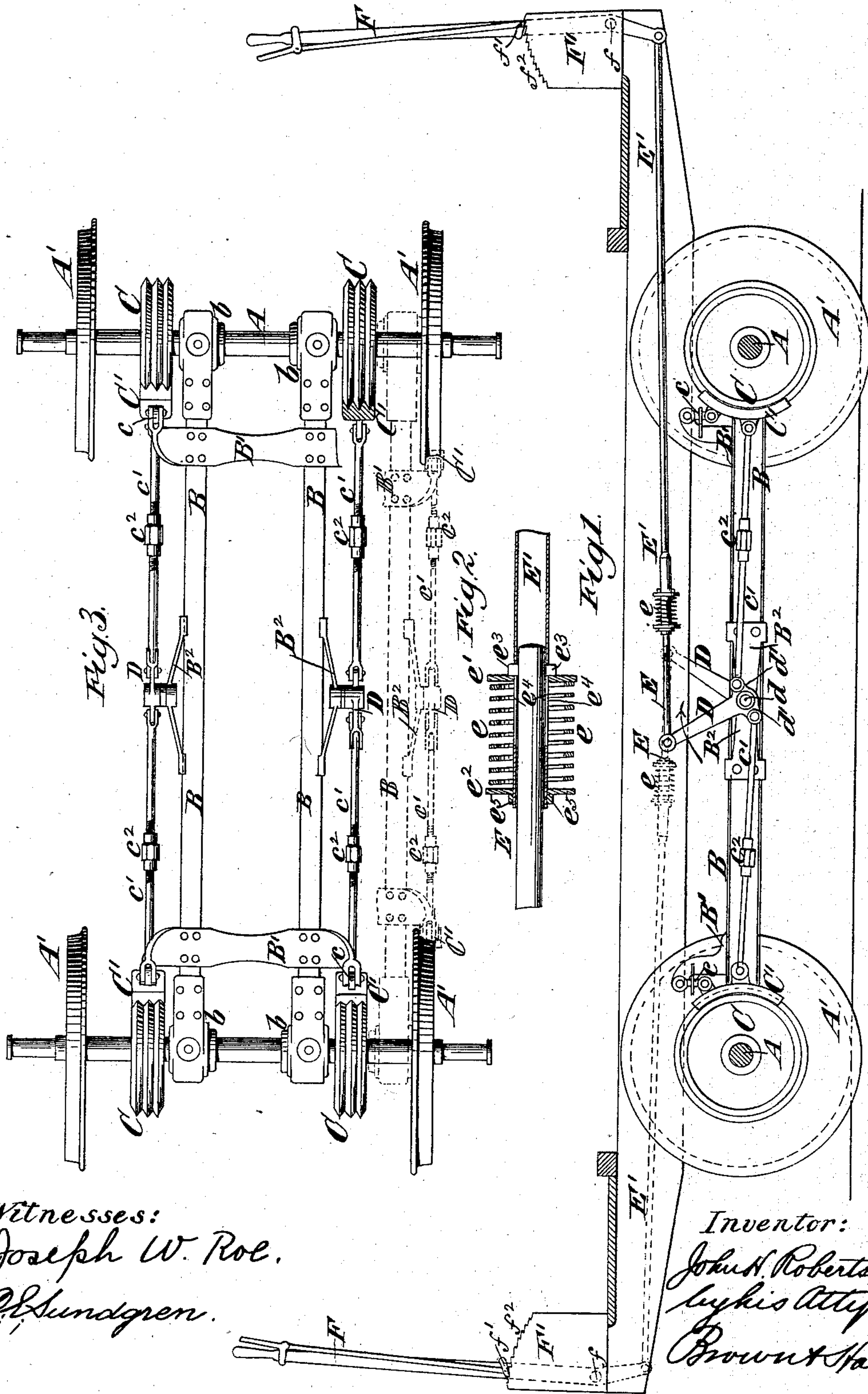
(No Model.)

J. H. ROBERTSON.

CAR BRAKE.

No. 384,870.

Patented June 19, 1888.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOHN H. ROBERTSON, OF NEW YORK, N. Y.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 384,870, dated June 19, 1888.

Application filed December 1, 1887. Serial No. 256,622. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. ROBERTSON, of the city and county of New York, in the State of New York, have invented a new and useful  
5 Improvement in Brakes for Railway Vehicles, of which the following is a specification.

The object of my invention is to provide a system of mechanism whereby the brakes may be applied and held with great power against  
10 wheels or brake-drums upon the axles.

The invention will be hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section of the truck of a street-  
15 car having brakes embodying my invention. Fig. 2 is a sectional view, upon a larger scale, of a portion of one of the rod connections leading to the brake-applying devices at the end of the car, showing the construction whereby  
20 said rod connection is made elastic in the direction of its length; and Fig. 3 is a plan of the truck, one of the brake-shoes being shown in section.

Similar letters of reference designate corresponding parts in the several figures.

My invention, although applicable to railway-cars in general, is more particularly intended for use upon cable-railway cars, which also comprise a grip mechanism, whereby the  
30 cars may be made fast to the moving cable.

A designates the axles of the car, on which are the supporting-wheels A', and between the wheels I have represented longitudinal beams or girders B, which have at the ends boxes b, whereby they are fitted to the axles A. In the present example of my invention these beams or girders B serve to support the brake-operating mechanism. (Here shown as in duplicate upon opposite sides of the car.) I prefer to  
40 employ in carrying out my invention brake-drums C, which are independent of the supporting-wheels A', and which are fast upon the axles between said wheels. As here represented, these drums C have their surfaces circumferentially grooved, and the brake-shoes  
45 C' are correspondingly grooved.

As here represented, a cross-piece, B', is applied to the longitudinal beams or girders B near each end, and the opposite ends of each  
50 cross-piece B' are extended upward and form hangers, from which the brake-shoes C' are

pivotally suspended by swinging links c, as best shown in Fig. 1. The brake-shoes C', which are on each side and at opposite ends of the car, are operated by a lever, D, which is  
55 pivoted at d in the frame B<sup>2</sup> or bridge-piece secured to the adjacent beam or girder B, and said lever D, in addition to a long and upwardly-extending arm to which a rod-connection, E, is attached for operating it, has two  
60 shorter arms, d', extending in opposite directions from its fulcrum, and which are connected with the brake-shoes C' by rods c'. (Here represented as having in them turn-buckles  
65 c<sup>2</sup>, whereby their length may be varied.)

As here represented, the brake-applying devices consist of levers F, which are fulcrumed at f in frames or housings F' at the ends of the car, and from the shorter arms of which extend the rod connections whereby the levers D are  
70 operated. As here represented, the lever D which operates the brakes upon one side of the car is connected with the brake-applying lever F at one end of the car, and the corresponding lever D of the brakes on the opposite side  
75 of the car is connected with a corresponding lever at the opposite end of the car.

It will be understood that as the lever D is moved in the direction indicated by the arrow thereon in Fig. 1 the brake-shoes C' in line  
80 therewith will be pressed strongly against their brake drums C, and as the pivotal centers between the said lever and the rods c' approach a line drawn between the lever-fulcrum D and the point of connection of the rods c' with the  
85 brake-shoes they exert a toggle-like action upon the brake-shoes and apply them with very great power to the drums. As the brake-shoes C' become worn, provision is afforded by the turn-buckles c<sup>2</sup> for increasing the length of  
90 the rod-connections c', so as to apply said shoes with greater force against the drums. As will be readily understood, after the brake-applying levers F have been moved to apply the  
95 brakes, they are held in the position to which they are moved by stop-pawls f' upon the levers engaging toothed racks f<sup>2</sup>, (here shown as formed upon the top of the housings F';) but, owing to the distance between the teeth of these rack-bars, the pawls might not hold the  
100 shoes pressed with their initial pressure against the brake-drums if the connections were un-



yielding. I therefore may employ in the rods E, for operating the levers D, a spring-actuated yielding device, which will enable such rods to slightly elongate when a strain is put upon them by operating the levers F. This device is represented best in Fig. 2, and when it is used each rod for operating the levers D is composed of two sections, E E', the latter being tubular to receive the former within it, as clearly shown. A spring, e, bears at its ends against disks or flanges e' e'', secured, respectively, to the two rod-sections E E'. The disk or flange e' is secured to the rod section E by a key, e<sup>3</sup>, inserted through said section and working in slots e<sup>4</sup> in the rod-section E', and the disk or flange e'' may be secured to the rod-section E' by a nut or collar, e<sup>5</sup>. It will be understood that when a pull is exerted upon the rod E E' the spring will be compressed, and consequently that the brake-shoe will always be held tightly pressed against its drum by the action of the spring e. Although I have here represented shoes C' as arranged to operate upon the independent brake-drums C, they may operate upon the supporting-wheels A', as ordinarily, and to provide for this I have represented in Fig. 3 by dotted lines a beam or girder, B, and the brake-applying connections applied thereto and supported in proper posi-

tion to press the shoes C' directly against the wheels A'.

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

1. The combination, with the axles of a car and brake-shoes for acting on wheels or drums on the two axles at opposite sides of the car, of levers D, fulcrumed at opposite sides of the car and each having short arms d', connected by rods c' with the brake shoes at that side of the car, and brake-applying devices at opposite ends of the car connected, respectively, one to each of the levers D, substantially as herein described.

2. The combination, with a brake-shoe acting upon a wheel or drum upon a car-axle and a lever connected with the shoe for operating it, of a brake-applying device at the end of the car, and a rod connecting the said brake-applying device and lever and composed of two sections, one receiving the other within it, a spiral spring, and collars bearing against opposite ends of the spring and fastened, respectively, to the inner and outer rod-sections, substantially as herein described.

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