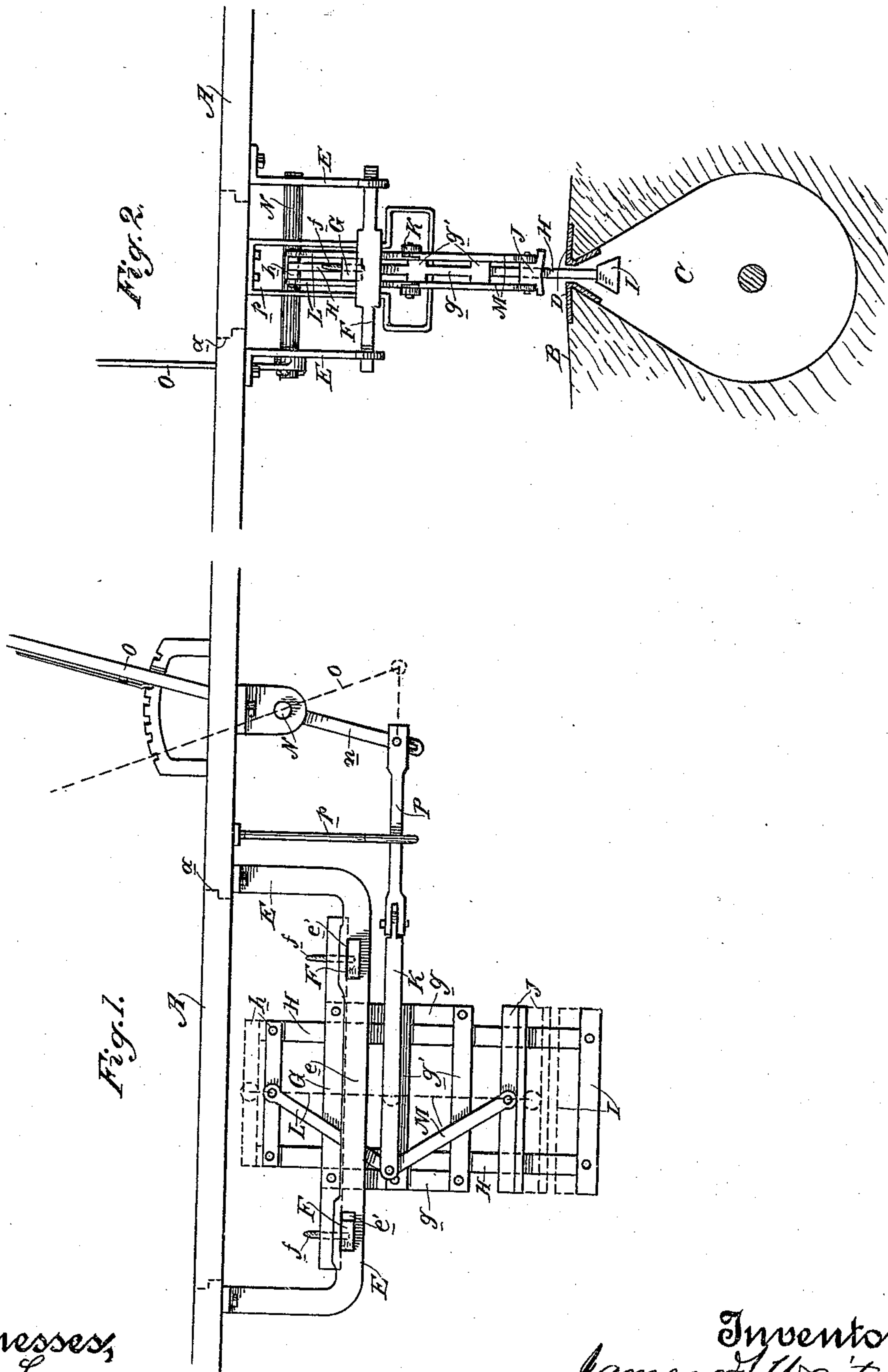


(No Model.)

J. F. WAITE.  
BRAKE FOR CABLE CARS.

No. 446,305.

Patented Feb. 10, 1891.



Witnesses,  
H. C. Lee.  
J. H. House

Inventor,  
James F. Waite  
By Dewey & Co  
attys

# UNITED STATES PATENT OFFICE.

JAMES F. WAITE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF  
TO WILLIAM HOLLIS, OF SAME PLACE.

## BRAKE FOR CABLE CARS.

SPECIFICATION forming part of Letters Patent No. 446,305, dated February 10, 1891.

Application filed June 5, 1890. Serial No. 354,387. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES F. WAITE, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Brakes for Cable-Railway Cars; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the general class of cable-railway devices, and especially to the brakes for the cars, and to that class of said brakes in which the slot-irons are acted upon as a frictional resistance or contact.

My invention consists in the novel brake and means for hanging and operating it, hereinafter fully described, and specifically pointed out in the claims.

The object of my invention is to provide a simple and effective brake of this class adapted to all the conditions and courses of travel.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a side elevation of my cable-car brake. Fig. 2 is an end view of same, showing the brake-bars in position.

A is a car or portion thereof traveling upon the tracks B of a cable-railway bed, of which C is the tube or tunnel, which may be supposed to contain the parts usual to railways of this class, but unnecessary herein to show. In the top of the tube or tunnel is the usual slot formed between two separated bars D, termed the "slot-rails."

Depending from the car is a frame E, in the side bars *e* of which are made the grooves *e'*, in which the ends of the hangers F are fitted. Said hangers are adapted to have a longitudinal movement in the grooves *e'*, and one of them is adapted to have a slight forward-and-back movement, due to its ends being narrower than the length of the grooves; but the other hanger has ends which fit the grooves snugly enough that while permitting a longitudinal movement a forward-and-back movement is avoided. Upon the hangers are the upright pins *f*, termed "horns," and upon these is fitted the carrying-bar G of the brake-frame; said frame having also the depending end bars *g* and guide-bars *g'*. Fitted in this

frame are the side bars H, which carry at their lower ends the lower brake-bar I. The side bars H pass up freely through the bars *g'* and G of the carrying-frame and have a top bar *h*, and they are adapted to be raised and lowered, thereby carrying the brake-bar I up and down. Fitted and adapted to move up and down upon the lower ends of the side bars H is the upper brake-bar J.

The lower brake-bar I lies within the upper portion of the tube or tunnel between the slot-rails D, and the lower ends of the side bars H travel in the slot. The upper brake-bar J lies above the slot-rails.

The two brake-bars are adapted to be moved toward each other, so that they may bind upon the under and upper sides of slot-rails, thus clamping said rails between them, and to be moved apart, thus relieving said rails. The mechanism to effect these movements is as follows:

K is a horizontal slide-bar fitted freely over the brake-frame. To one end of this are pivoted the links L, which extend upwardly and connect with the top bar *h* of the side bars H and the links M, which extend down and are connected with the upper brake-bar J.

Mounted under the car is a rock-shaft N, to one end of which is connected the operating-lever O, extending upwardly through the car-floor within reach of the gripman. The shaft N has a crank-arm *n*, which is connected by a link P with the end of the slide-bar K, a suitable frame, such as *p*, guiding said link.

The operation is as follows: When the car is running free the two brake-bars are separated; but when the necessity for checking it arises the lever O is operated to rock shaft N, which, through its crank-arm and link P, slides bar K, and this, through the links L and M, draws the two brake-bars together, the lower one rising and the upper one descending, so that between them they grasp and bind upon the intervening slot-rails. The frictional contact may be more or less gradually or suddenly effected according to the necessities of the case, and the car will be checked, as required. The brake-bars will be made to conform in shape to the character of the surfaces of the slot-rails against which



they operate, and may be made of suitable length and shod, as required. The manner of hanging the brake provides for turning curves properly, for the sliding of the hangers permits the brake-frame to conform to the course. The object in mounting one of the hangers so that it has no forward or back movement is to avoid unduly affecting the position of the operating-lever *o*. With this hanger the link *P* is connected. The other hanger has sufficient forward-and-back movement to allow the brake-frame, in connection with the longitudinal movement of the hanger, to conform to the curve, while the first hanger, remaining steady as far as any forward-and-back movement is concerned, does not affect the position of link *P* nor through it the position of lever *O*.

A trap-door *a* in the floor of the car permits the insertion of the brake-frame and provides for access to it.

It will be understood that my brake apparatus is wholly independent of the grip and any of its connections.

I am aware of the existence of slot-brakes. In some instances a wedge is projected from above into the grip-slot. In others a wedge is pulled up from below into the slot, and in one instance a rocking bar passes into the slot and has fast upon it above and below the slot-rails plates, which by the vibration of the bar are adapted to nip the rails by their diagonally-opposite points. I do not, therefore, claim a slot-brake, broadly; but

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

1. A brake for cable-railway cars, consisting of a carrying-frame, vertically-movable bars *H*, mounted in said frame and passing through the tube or tunnel slot, a brake-bar secured to the lower ends of said bars and lying under the slot-rails, an independently vertically-movable brake-bar mounted on the bars *H* and lying above the slot-rails, and the mechanism for moving the brake-bars toward each other to bind the slot-rails between them and separating them to relieve said rails, consisting of the slide-bar *K*, the links *L*, connecting said slide-bar with bars *H*, and the links *M*, connecting it with the upper brake-bar, substantially as herein described.

2. A brake for cable-railway cars, consisting of a carrying-frame, vertically-movable bars *H*, mounted in said frame and passing through the tube or tunnel slot, a brake-bar secured to the lower ends of said bars and lying under the slot-rails, an independently vertically-movable brake-bar mounted on the bars *H* and lying above the slot-rails, and the mechanism for moving the brakes toward each other to bind the slot-rails between them and separating them to relieve said rails, consisting of the slide-bar *K*, the links *L*, connecting said slide-bar with bars *H*, and the links *M*, connecting it with the upper brake-bar, the rock-shaft *N*, having the operating-lever *O* and the crank-arm *n*, and the link *P*, connecting said crank-arm with the slide-bar *K*, substantially as herein described.

3. A brake for cable-railway cars, consisting of the depending frame *E*, the longitudinally-sliding hanger mounted in one end of the frame and having a forward-and-back movement, and the longitudinally-sliding hanger mounted at the other end of the frame, the carrying-frame suspended from the hangers, the vertically-movable side bars *H*, mounted in the frame and having a top bar, said side bars passing down through the tube or tunnel slot, the brake-bar secured to the lower ends of bars *H* and lying under the slot-rails, the independently vertically-movable brake-bar mounted on the side bars and lying above the slot-rails, and the mechanism for moving the brake-bars toward each other to bind the slot-rails between them and to move them apart to relieve said rails, consisting of the slide-bar *K*, the links *L* and *M*, connecting said bar with the top bar of bars *H* and with the upper brake-bar, respectively, the rock-shaft *N*, having the operating-lever *O* and crank-arm *n*, and the link *P*, connecting said crank-arm with the slide-bar *K*, substantially as herein described.

In witness whereof I have hereunto set my hand.

JAMES F. WAITE.

Witnesses:

HOLLAND SMITH,  
S. H. NOURSE.