No. 758,131. PATENTED APR. 26, 1904.

P. FLOOD.

EMERGENCY BRAKE FOR STREET RAILWAY CARS.

APPLICATION FILED AUG. 27, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

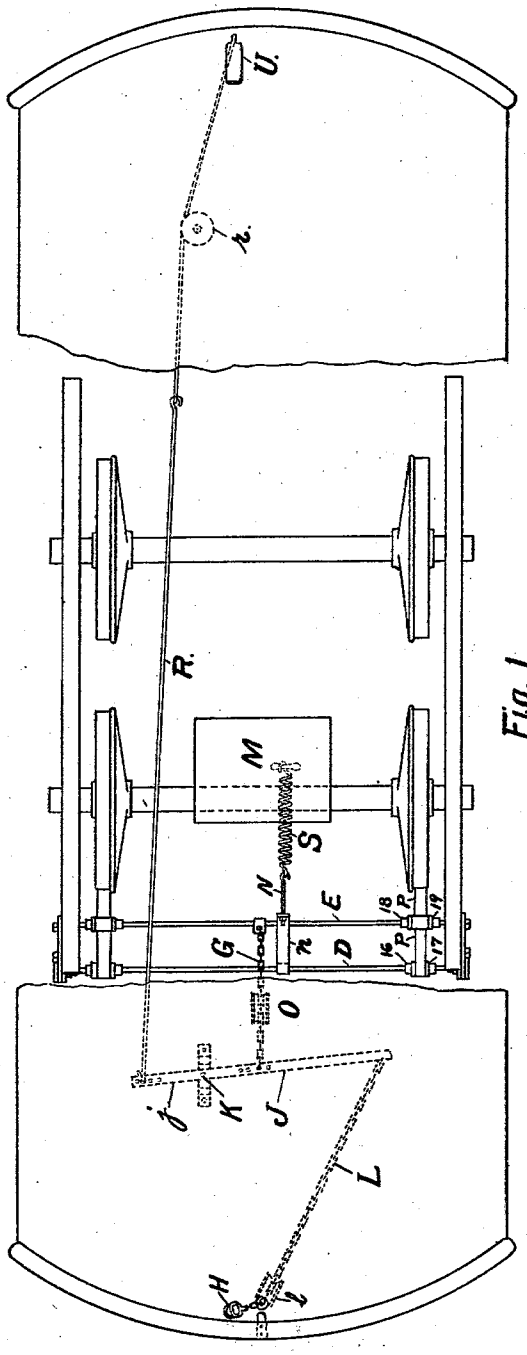

Fig. 1.

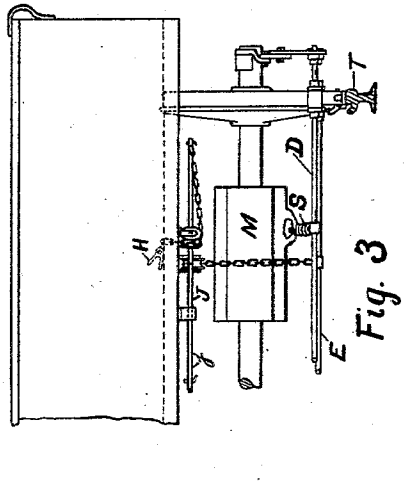

Fig. 3

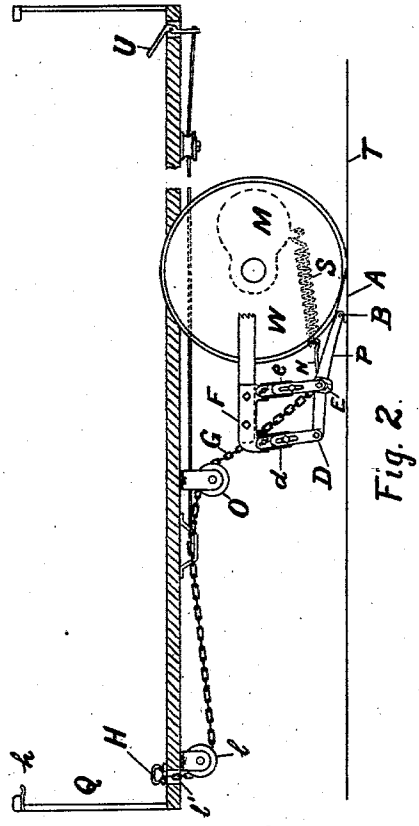

Fig. 2.

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NO MODEL. 2 SHEETS—SHEET 2.

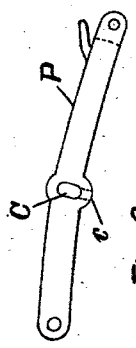

Fig. 6

Fig. 8.

Fig. 7.

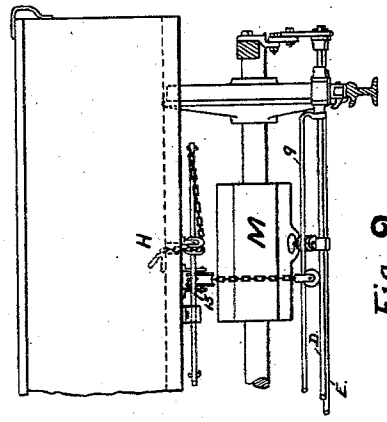

Fig. 9.

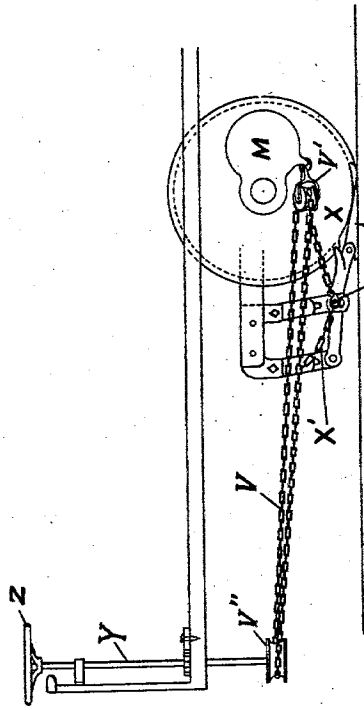

Fig. 4

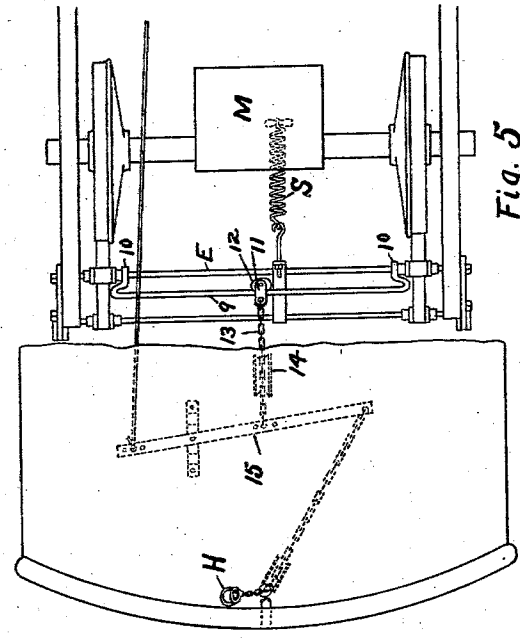

Fig. 5

Witnesses
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No. 758,131. Patented April 26, 1904.

UNITED STATES PATENT OFFICE.

PATRICK FLOOD, OF ALBANY, NEW YORK.

EMERGENCY-BRAKE FOR STREET-RAILWAY CARS.

SPECIFICATION forming part of Letters Patent No. 758,131, dated April 26, 1904.

Application filed August 27, 1903. Serial No. 170,936. (No model.)

To all whom it may concern:

Be it known that I, PATRICK FLOOD, a citizen of the United States of America, and a resident of the city and county of Albany, State of New York, have invented certain new and useful Improvements in Emergency-Brakes for Street-Railway Cars, of which the following is a specification.

My invention relates to car-brakes for street-railways; and the object of my invention is to provide an emergency-brake particularly adapted for use on steep grades, together with the improvements in connection therewith hereinafter particularly set forth and claimed. I attain this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan of a car with parts broken away, showing my brake and attachments. Fig. 2 is a section of a car, showing a side elevation of my invention. Fig. 3 is an end elevation of my invention. Fig. 4 is a side elevation of a modified form of my invention. Fig. 5 is a plan with parts broken away of a car provided with another modified form of my invention. Fig. 6 is a detail view of the brake-arm P. Fig. 7 is a detail view of the handle. Fig. 8 is a detail view of the brake-shoe. Fig. 9 is an end elevation with parts broken away of the modified form shown in Fig. 5.

Similar characters refer to similar parts throughout the several views.

For the purpose of arranging a brake-shoe which may be placed between the track and the periphery of one of the wheels for the purpose of retarding or stopping a car on a grade I arrange the brake-shoe A in connection with the brake-arm P, pivoting the two together in any suitable manner at B. Brake-arm P is in the form of a bell-crank lever and is provided with an elongated slot C, through which a round rod D with squared ends passes. The end of the brake-arm P is mounted on the rod E. The rods D and E are supported by the adjustable links *d e*, respectively, to the arm F, secured to the frame of the truck in any suitable manner, the links *d e* having square openings fitting on the squared ends of the rods, respectively. As thus arranged there is formed a swinging frame. The links *d e* being pivoted to the arm F or to dependent lugs secured thereto or formed integral therewith are capable of a movement in the direction of the length of the car, and the brake-arm P being attached to the ends of the links *d e*, respectively, is capable of a movement in the direction of the length of the car. One portion of the brake-arm P, carrying the brake-shoe A, is so arranged in reference to the track-rail T and car-wheel W that when the brake-arm moves toward the wheel the brake-shoe will be inserted between the wheel and the track, as shown in Fig. 2.

To regulate the lateral position of the brake-arm on the rods D and E so that the brake-shoe will be in alinement with the rail, I place on the rod D the collars 16 and 17 and on the rod E the collars 18 and 19, each of which collars being adjusted by a set-screw. (Not shown.)

To draw the brake-shoe between the periphery of the wheel W and the rail of the track T, I arrange a spring S, secured at one end to the motor-box M in any suitable manner, the other end attached by hook N and bar *n* to the rod D, or in any suitable manner, the resiliency of the spring tending to draw the rod D, and therefore the shoe A, forward, bringing the shoe in contact with the wheel and track.

I may attach the spring S to the rod E instead of to the rod D, if desired. For the purpose of withdrawing the brake-shoe from contact with the wheel and rail I attach the chain G to the rod E, passing the chain over the sheave O, and connect the same with the lever J. The lever J is fulcrumed at K to the bottom of the car and has a portion *j* extending beyond the fulcrum K, as shown in Fig. 1.

The chain L, secured to the end of the lever J and passing under the sheave *l* and through the opening *l'* in the platform of the car, extends above the platform and is preferably provided at its end with the handle H. This handle is preferably provided, as shown in Fig. 7, with two loops joined together at the bottom and separated at the top for the purpose of enabling the operator to take hold of one of the two loops

of the handle and to secure the other of the two loops on the projection *h* on the dashboard Q or secure the same in any convenient manner. The end of the lever *j* is attached to a rod R, extending to the opposite end of the car, where it engages with a sheave *r* and at the end beneath the platform of the car is attached to one end of the bell-crank lever U, which bell-crank lever acts as a pedal for the foot of the motorman. Thus when the motorman presses down on the pedal the lever J will be operated and the brake-shoe A will be drawn from contact with the wheel and rail. The same result will be attained by lifting the handle H.

It will be understood that I arrange on each side of the car brake-shoes mounted as described and that the rods E and D extend across the car, as shown in Fig. 1.

By making the rod E square at its connection with the link *e* and constructing the brake-arm P in the form shown, having a portion of the brake-arm projecting downward toward the rail, another portion thereof extending at but a slight angle to the rail, and having the rod E at the place of angle between the two portions of the arm P, I arrange, by means of the swinging links *d e*, a positive direct movement of the brake-shoe under the influence of the spring S.

An important part of my invention is this construction of the brake-arm and the means for mounting it, by which there is assured a direct and positive movement of the brake-shoe to its place of contact between the wheel and the rail.

For the purpose of preventing dirt and mud from accumulating and remaining in the elongated slot C of the brake-arm P, I construct an opening *c* therethrough, as shown in Fig. 6, through which the dirt may escape.

In Fig. 4 I show my brake-shoe and brake-arm mounted as hereinbefore described, the modified form consisting simply in the means for operating the brake by the use of the chain V, pulley V′, and sprocket V^2. I attach the chain X to the chain V, the other end of the chain X being secured to the hook I at the point of intersection of the brake-arm with its supporting-link. The chain V passes around the pulley V′, secured to the motor-box M, and also about the sprocket V^2 at one end of the rod Y, to which is secured the brake-handle Z. As thus arranged by the movement of the brake-handle the shoe may be inserted between the wheel and rail. For the purpose of removing the shoe from its position I attach a chain X′ to the rod connecting the brake-arm and its link with the chain V, chain X′ extending in an opposite direction from the link supporting the brake-arm from the direction in which the chain X extends therefrom. As thus arranged the movement of the brake-handle Z in the direction opposite to that in which the brake was set in contact with the wheel and rail will remove the brake from such contact.

In Fig. 5 I have shown a modified form of attachment especially designed for use on a double truck, the brake and connections being the same as that shown in Figs. 1 and 2, the modifications simply being in arranging the yoke 9 on the rod E, securing the yoke by its projections 10 10 to the rod E, and in the yoke 9 mounting the block 11 carrying the roller 12, which roller is arranged to engage with the yoke 9. To the block 11 is attached the chain 13, which passes over the sheave 14 and is connected with the lever 15. The lever 15 is connected, by means of the chain, to the handle H, as in the manner shown and described in reference to Figs. 1 and 2. The lever 15 is also connected to a rod and chain extending to the opposite end of the car and operated by means of a foot attachment, as already described.

The object of the yoke 9 is to provide for the car turning a corner without straining or breaking the chain connecting the rod to the lever. The lever and its attachments being connected with the floor of the car while the rod E is connected with the truck, as the car swings about the corner or curve there is a strain upon the chain connecting the said rod with the said lever, and when the yoke 9 is provided with a block the block will move along the yoke toward one end or the other thereof, depending upon the side to which the curve is made, and undue strain on the lever and chain is thus avoided.

I have shown two ways of operating the brake—one by foot or pedal attachment, the other by brake rod or handle attachment. I preferably operate the brake by one of these methods at one end of the car and use the other method at the opposite end, for the reason that it is more convenient to have the pedal attachment on the front of the car, where it can be operated by the motorman by means of the foot when the car is going upgrade, and after the grades are passed the conductor at the rear end of the car can raise the brake by means of the brake rod or handle described.

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

1. In an emergency-brake for street-railway cars a car body and truck; a brake-shoe; a brake-arm in the form of a bell-crank lever secured thereto; a rod having a squared end engaging with a squared opening in swinging links on which rod said brake-arm is mounted; means for supporting said swinging links from the car-truck; a lever; a chain connecting said rod with said lever; a means for operating said lever from each end of the car, respectively; a spring connecting said rod with a support on the truck, substantially as described.

2. In an emergency-brake for street-rail-

way cars; a car body and truck; a brake-shoe; a brake-arm in the form of a bell-crank lever secured thereto; two rods upon which said brake-arm is mounted; swinging links supporting said rods; a yoke connected to one of said rods; a block carrying a chain mounted on said yoke; a lever to which said chain is connected; a means for operating said lever from either end of the car; a spring mounted on the car-truck and attached to one of said rods, all substantially as described.

3. In an emergency-brake; a car body and truck, a brake-shoe; a brake-arm in the form of a bell-crank lever; a swinging frame supporting said arm; a pulley secured to the truck-frame; a chain passing over said pulley and around a sprocket on the end of a brake-rod; chains connecting said swinging frame with said first-mentioned chain; so arranged and connected up that by the operation of said brake-rod contact may be made or broken between the brake-shoe and the car-wheel.

Signed at Albany, New York, this 21st day of August, 1903.

PATRICK FLOOD.

Witnesses:
FREDERICK W. CAMERON,
DUDLEY B. WADE.