

(No Model.)

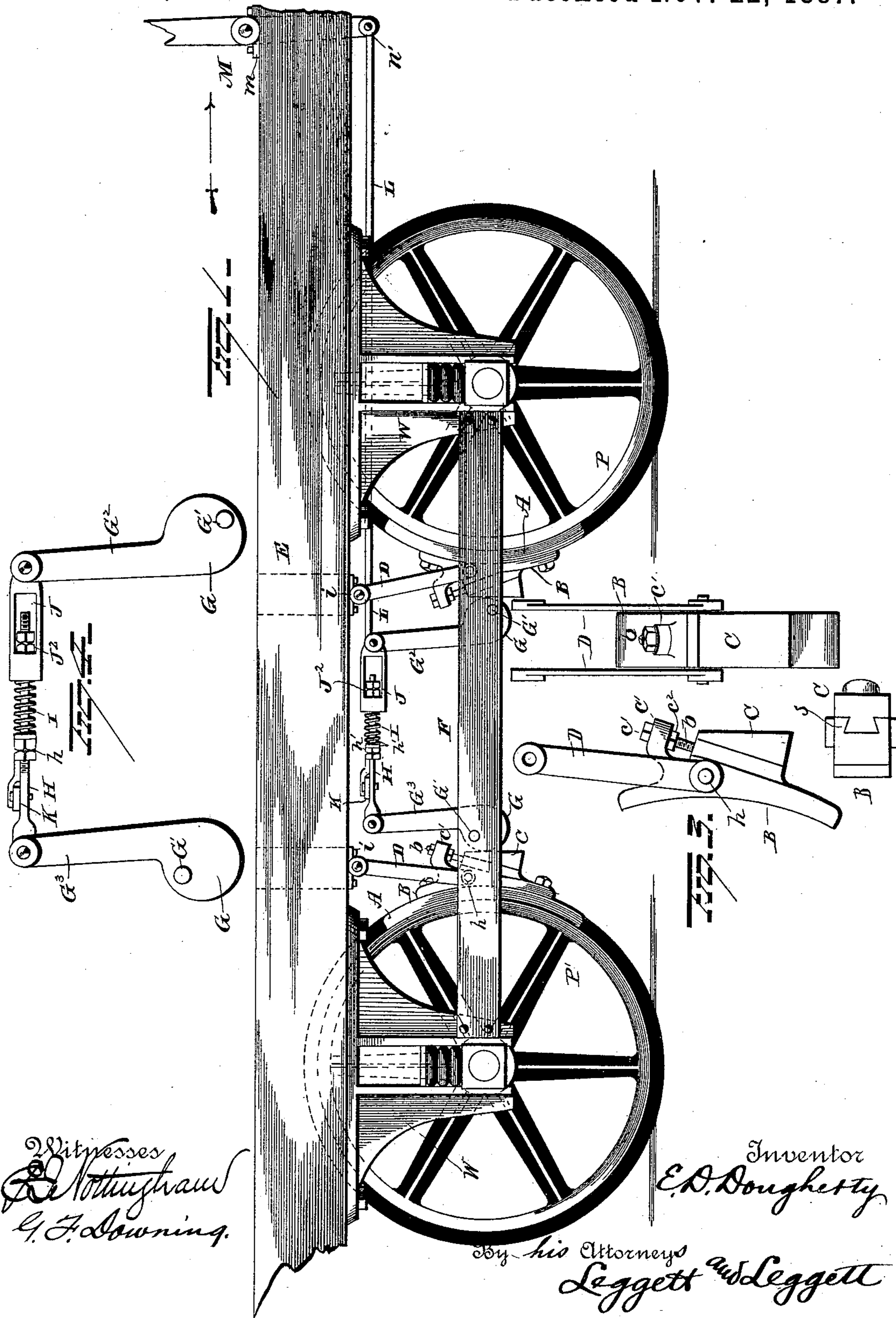
2 Sheets—Sheet 1.

E. D. DOUGHERTY.

CAR BRAKE.

No. 373,446.

Patented Nov. 22, 1887.



2 Witnesses
R. Nottingham
G. F. Downing.

Inventor
E. D. Dougherty

By his Attorneys
Leggett and Leggett

(No Model.)

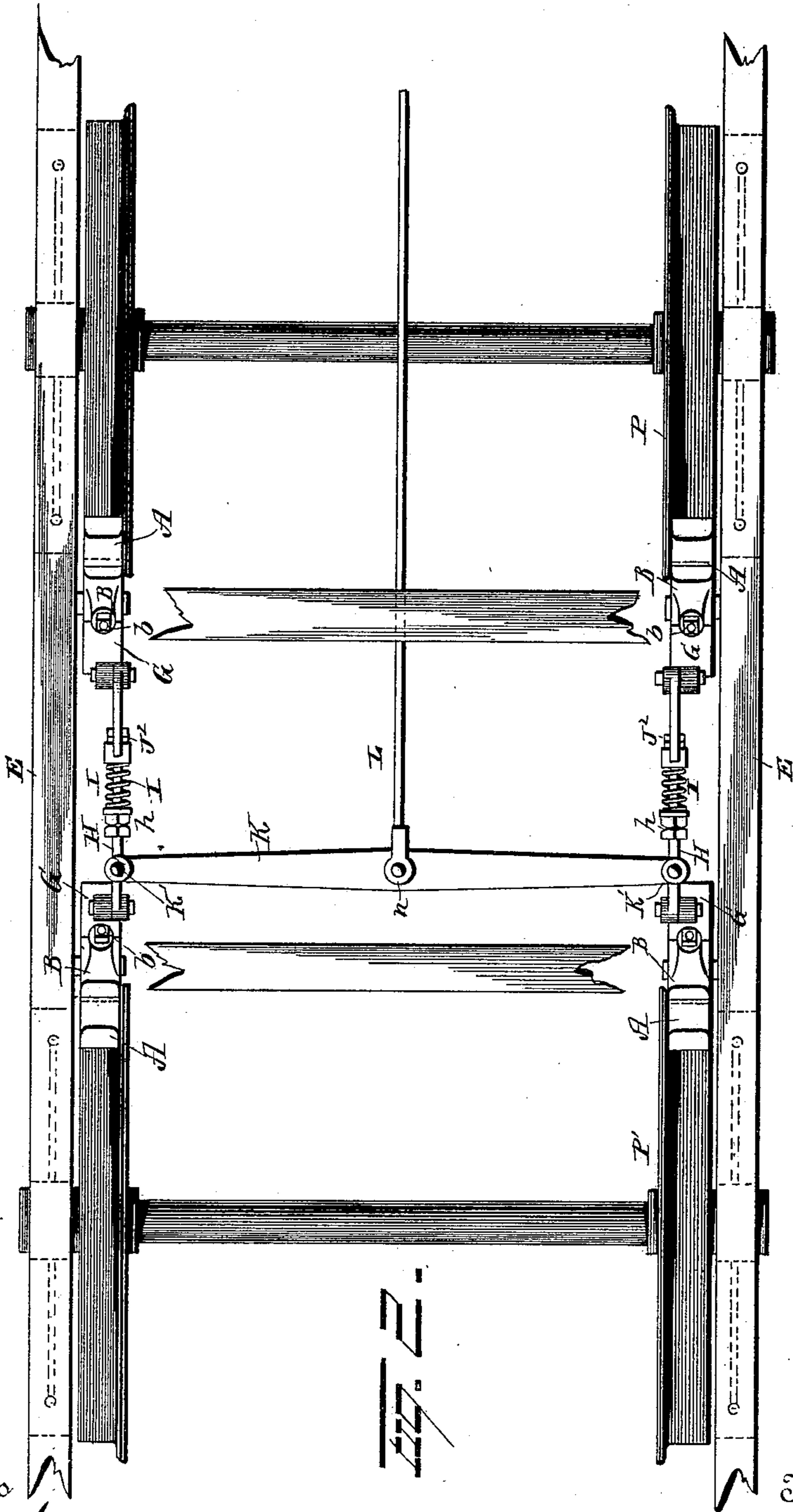
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Witnesses
E. Northrup
G. F. Downing.

Inventor
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UNITED STATES PATENT OFFICE.

EDWARD D. DOUGHERTY, OF PHILADELPHIA, PENNSYLVANIA.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 373,446, dated November 22, 1887.

Application filed February 19, 1887. Serial No. 228,185. (No model.)

To all whom it may concern:

Be it known that I, EDWARD D. DOUGHERTY, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Car-Brakes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to car-brakes.

The object of my present invention is to provide a car-brake that can be attached to any car, the brake being constructed to lock the wearing-faces of its shoes securely against the tread of the car-wheels, their frictional contact being continued by self-contained locking action until released by a reverse movement of the operating-lever or other actuating device.

A further object is to construct a car-brake that will cause secure frictional contact of two brake-shoes upon their opposed front wheels, and, if necessary, to afterward apply the reverse-acting brake-shoes that are adapted to bear on a rear pair of wheels by a further movement of the same lever or other actuator that applies the first pair of brakes.

A further object is to construct car-brake apparatus that will permit the adjustment of its wearing-pieces to take up lost motion in such wearing parts, and also to furnish a compact and powerful brake that is universal in its application and that can be constructed at a moderate expenditure for material and labor.

With these ends in view my invention consists in certain features of construction and combinations of parts, that will be hereinafter described, and pointed out in the claims.

In the drawings making a part of this specification, Figure 1 is a side elevation of the brake apparatus in position on a car. Fig. 2 is a plan view of the car and applied brake apparatus. Fig. 3 are side and edge views of the detached shoe-holder enlarged. Fig. 4 is a view of the cam-levers and attached parts detached from position and enlarged.

E represents the side of a car. Upon its pedestals W are attached the cam-supporting bars F, which latter extend parallel to the lower edge of the car-body and are bolted or otherwise secured to the pedestals W, a suffi-

cient distance being allowed between the upper edge of these plates that have their affixed position on each side of the car and the lower edges of the car-sills to accommodate the brake mechanism that will now be described; and as the apparatus on each side of the car is similar, a description of a set on one side will answer for its duplicate that is opposite it.

B represents the shoe-holder, and A the shoe or wearing-piece, that is made to bear with its concave face upon the "tread" or wearing-surface of the car-wheels. The shoe A is bolted or otherwise attached to the holder B. The shoe-holder B, as shown in Fig. 3, consists of a metal curved body having a dovetail groove, *s*, made on its rear surface a proper distance between its ends. The material of the holder-body B is projected where the groove *s* is formed to afford a bearing-face for the wearing-wedge C.

A projecting boss, *C'*, is formed integral with the body of the holder B a proper distance above the dovetail lugs that form the groove *s*.

The wedge C is made of a proper material to withstand wear, and has a threaded screw-shank, *b*, made to project upwardly to enter a proper sized perforation made to receive it in the boss *c*. Upon the top and bottom sides of the boss *c* the jam-nuts *c'* *c''* are made to bear, the opposite surfaces of the boss being faced parallel and at a right angle to the screw-shank *b*, that penetrates this boss, and thus receive the impinge of these nuts *c*.

At points *h* on the shoe-holders B transverse perforations are made in the holders B for the swinging connection of the links or shoe-carriers D. These carriers are plates of metal that are pivoted to the bracket-plates *i*, which are secured to the body of the car at proper points in relation to the wheel-faces below to cause by gravity the suspended shoe-holders B and their attached shoes or bearing-plates A to recede a clearance distance from the car-wheel treads or faces when at liberty to do so.

Upon the plates F, at a point to the rear of the shoe-holders B, the vertical cam-levers *G*² *G*³ are pivoted by shouldered fulcrum-bolts *G'*, that are inserted through perforations made in the cam-disks G, of which the levers *G*² *G*³ are vertical extensions. The disks G are made of

proper thickness and are preferably given a curved periphery. The perforations made for the supporting fulcrum-bolts G' are eccentric to the body. By reference to Fig. 1 it will be seen that the perforations in the cam-disks are so relatively formed that the eccentric or cam disk that bears against the wedge C on the rear wheel, P, will cause the shoe-holder and the bearing block or shoe A, that is secured to the holder, to forcibly press against the wheel P when the upper end of the cam-lever G^2 is moved toward the face of this wheel. The tread of the wheel P' is in like manner made to receive the frictional contact of its opposed brake shoe by the movement of the cam-lever G^3 in a forward direction or away from the face of the wheel P'. This method of constructing the cams in relation to the front and rear wheels of the car permits them to be brought into effective use to force their respective brake-blocks upon the wheels when their vertical arms G^2 G^3 are moved toward the end of car upon which the actuating-lever or other actuating mechanism is placed, both the cam-levers moving in the same direction.

To the top ends of the levers G^2 G^3 is pivoted the connecting-rod H. This rod is made adjustable in regard to its length. The piece J, that is pivoted to the end of cam-lever G^2 , is slotted through its body transversely to form parallel walls that are extended a proper distance toward the lever G^3 and are integrally joined together, the part that joins these plates or walls being perforated to receive a screw-bolt.

The rear end of the connecting-rod H is pivoted by a perforated boss formed on it. A similar boss is formed at a right angle to the one just described for the attachment of an equalizing-bar, K, that will be described. Contiguous to this boss the material is rounded to form a bolt, h , that is screw-threaded and made of proper length to enter the perforation provided for it in the piece g . A spiral spring, I, is made to encircle the body of the bolt h , the jam-nuts h' being screwed upon the bolt and made to bear on one end of the spring I. The opposite end of this spring is made to impinge upon the piece J, and jam-nuts J^2 are placed upon the end of the bolt h to permit the length of this bolt to be adjusted accurately. The equalizing-bar K is attached pivotally by its ends to the bosses made at K' on the connecting-rod H. (See Fig. 2.) To the center of the bar K the draft-bar L is attached by a clip, n . The opposite end, n' , is pivoted to the upright lever M, which is secured by a journal-box and fulcrum-bolt to the platform at m . (See Fig. 1.)

In operation the movement of the lever M in the direction indicated by the arrow (see Fig. 1) will draw the upper end of the levers G^2 and set the brake-shoes A tightly against the wheels P by the wedging action of the cams G, forcing the shoe-holders with their attached shoes to bear on the front wheels.

The length of the bolts H and spiral springs I is so proportioned to the throw of the cams G that the spring I will be compressed when the levers G^2 are being forwardly moved. The levers G^3 , owing to the yielding of the spiral springs I, will not move until the cam-disks on arms G^2 have moved about their full throw, and if this fails to check the progressive motion of the car a continued draft upon the lever M in the same direction will operate on the other pair of brake-blocks by the complete compression of the springs I, thus affording an unyielding abutment and permitting the draft force exerted on the equalizing-bar K to be transmitted to the levers G^3 , and by their forward movement cause the action of their cam-disks to apply the brakes they are made to bear upon. It is evident that a reverse movement of the lever M will release promptly the brakes from the four wheels of the car, and, further, that by an extension of the draft-bar L and its adaptation to connect a series of brakes on several cars sufficient draft force applied to this bar will simultaneously "set" the brakes on these connected cars, and thus check a train of cars with the same facility and promptitude that will be effected on a single car.

I have shown this brake apparatus as applied to a street-railway car. From the foregoing description it is apparent that the device may be employed with advantage on freight or passengers cars drawn in trains on a railroad, and that any means of applying power to move the brake apparatus may be utilized.

Many minor changes may be made in the construction and arrangement of the parts of this invention without exceeding its legitimate scope. I do not, therefore, desire to confine myself to exact forms and precise combinations shown; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a brake shoe or holder and devices for suspending same, of a wedge against which the actuating-cam bears and devices for positively adjusting the wedge up or down, substantially as set forth.
2. The combination, with a brake-shoe holder, of a dovetail attached wedge, a perforated boss, and a bolt-extension of the wedge, to permit its vertical secured adjustment in contact with the shoe-holder, substantially as set forth.
3. The combination, with the wheel-brackets of a car and two wheels, of two cam-supporting bars, two suspended shoe-holders, their attached shoes or blocks, two wedge-shaped wearing-plates that are vertically adjustable to the shoe-holders, two lever-cams, and means for operating them, substantially as set forth.
4. The combination, with two cam-supporting bars, of two lever-cams pivoted on each bar and cam-actuating mechanism to oscil-

late the cams and thus cause brake-shoes to bear on the front and rear wheels of a car, substantially as set forth.

5 5. The combination, with four wheels, of four suspended brake-shoes, four lever-cams, and actuating mechanism to cause the cams to operate in pairs successively upon the front and rear wheels of a car, substantially as set forth.

10 6. The combination, with four car-wheels, their pedestals or brackets, and two horizontal cam-bars attached to these wheel-brackets, of four link-suspended shoe-holders and shoes, four adjustable wedges, four lever-cams, and
13 two lengthwise - adjustable connecting - rods, substantially as set forth.

7. The combination, with four car-wheels, their pedestals or brackets, and two cam-sup-

porting bars, of four link - suspended shoe-holders, their attached shoes, four adjustable 20 wedges, four lever-cams, two longitudinally-adjustable connecting-rods and two springs placed on these rods to hold the parts in proper adjustment, a connecting equalizing-bar, a longitudinal draft-bar, and means of 25 operating this draft-bar to set the brakes in contact with the wheels, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 30

EDWARD D. DOUGHERTY.

Witnesses:

WM. H. HARSHAW,
WALTER H. LUFF.