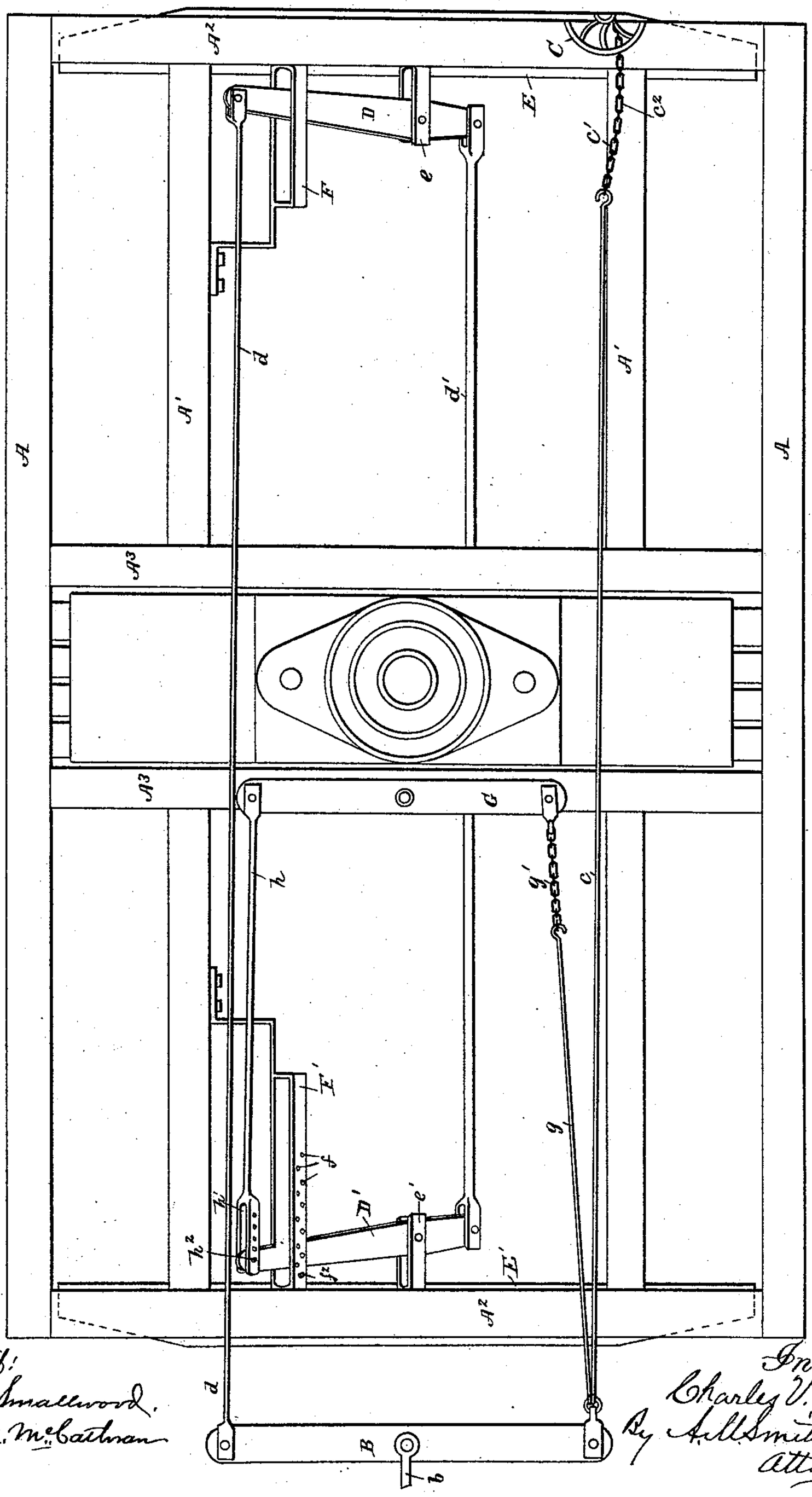
(No Model.) 2 Sheets—Sheet 1.

C. V. ROTE.

CAR BRAKE.

No. 414,891. Patented Nov. 12, 1889.

FIG. 1.



Attest:
Geo. T. Smallwood.
Jas. K. McCathran

Inventor:
Charley V. Rote
By A. L. Smith & Son
Attorneys.

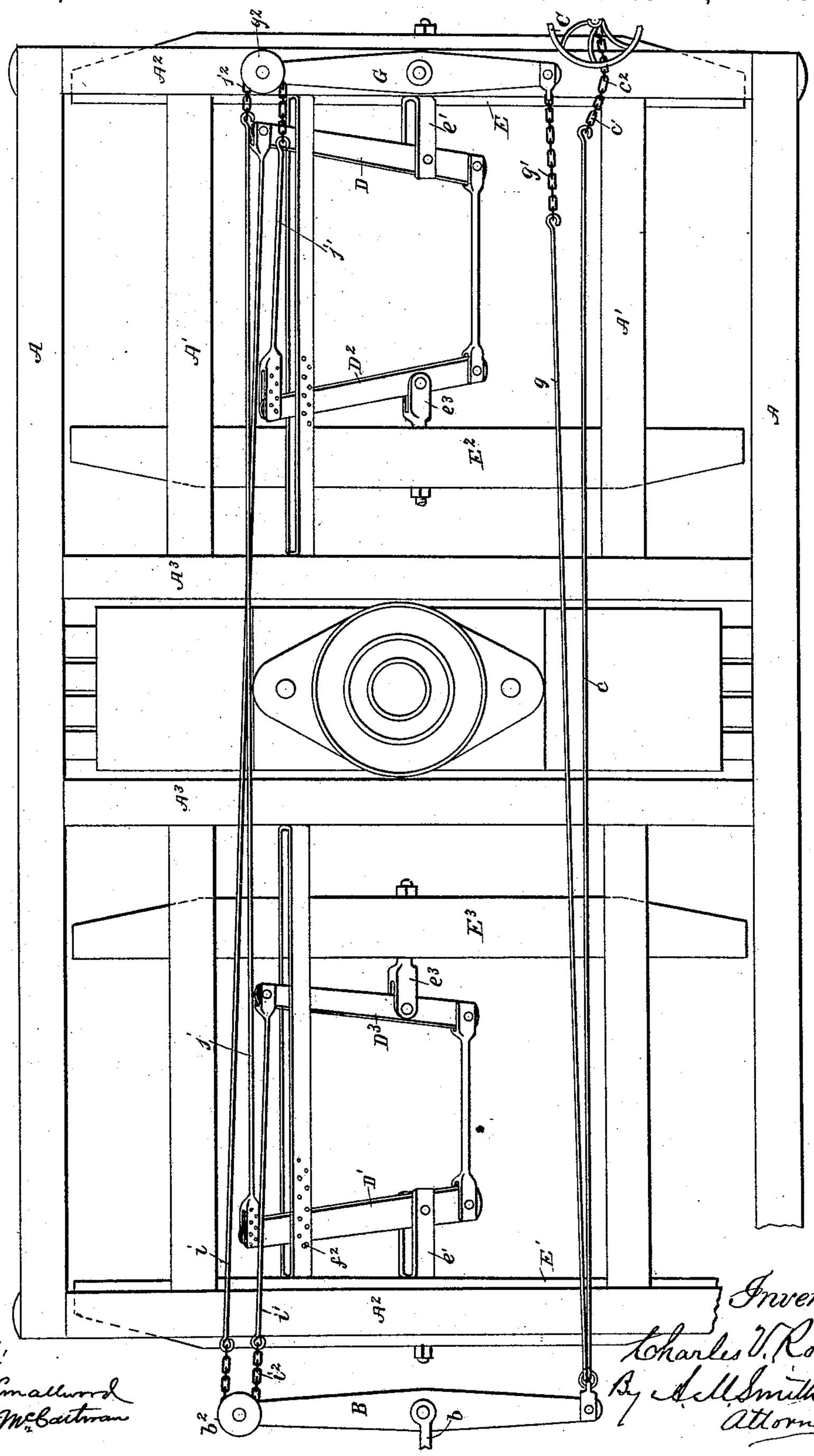
(No Model.) 2 Sheets—Sheet 2.

C. V. ROTE.

CAR BRAKE.

No. 414,891. Patented Nov. 12, 1889.

FIG. 2.



N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

CHARLES V. ROTE, OF LANCASTER, PENNSYLVANIA, ASSIGNOR OF SEVENTEEN TWENTY-FOURTHS TO BERNARD J. McGRANN AND EUGENE G. SMITH, OF SAME PLACE.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 414,891, dated November 12, 1889.

Application filed March 28, 1889. Serial No. 305,069. (No model.)

To all whom it may concern:

Be it known that I, CHARLES V. ROTE, a citizen of the United States, and a resident of Lancaster, county of Lancaster, and State of Pennsylvania, have invented a new and useful Improvement in Car-Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to a novel arrangement of brake-levers and their connecting-rods in connection with the brake-shoes and the power for applying the latter whereby such power is more fully utilized in applying the brakes.

In the ordinary application of steam-power or atmospheric pressure for the application of the brake-shoes to the wheels a large part of such power is wasted or lost through the supposed necessity heretofore existing of connecting one arm of the lever with a fixed point on the truck-frame, and, supposing such fixed point to be at one end of the lever and forming the fulcrum therefor, the power to be applied to the lever centrally of its length for moving, and the brake-rod to be moved to be attached to the other or swinging end of the lever, it will readily be seen that the power applied will be divided between the brake-rod to be moved and the fixed point on the frame, at which latter point it accomplishes nothing but to afford a point on which the lever can be vibrated, the power or pull applied thereto being otherwise lost or wasted. I propose to remedy this difficulty by making the lever to which the power is applied a floating lever and connecting both its ends, through suitable rods and lever or levers, with the brake beams or shoes in such manner that all the power exerted, except such loss as may be due to friction of the parts, shall be utilized for apylying the brakes, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of a car-truck with my improvements applied in the form they would assume when brake-shoes are applied on one (the outer) side only of the wheels; and Fig. 2 is a similar view showing the arrangement of brake-levers, &c., for applying the brake-shoes to both sides of the same wheels.

Referring first to Fig. 1 as showing the simpler arrangement of parts, A A′ indicate longitudinal bars of the truck-frame; A^2 and A^3, transverse bars thereof, the last-named bars A^3 A^3 giving support to the bolster, through which connection is made with the car-body in any usual manner.

B is a lever to which at or near the center of its length a rod *b* is pivoted, said rod at its opposite end connecting with the piston of a steam or air cylinder, or with other suitable motor from which the power for applying the brakes is derived, in any usual or preferred manner. To one end of the lever B is connected one end of a rod *c*, which at its opposite end connects through a chain *c′* with the shaft of a hand-wheel C, which may be operated in the usual manner for applying the brakes by hand, said shaft and the chain and rod connected therewith forming, in the ordinary arrangement of these parts, the fixed point or fulcrum on the frame on which the lever B is vibrated. The opposite end of the lever B has connected to it one end of a rod *d*, which at its opposite end is connected to the upper long arm of a lever D, which is fulcrumed in a swiveling yoke or bracket *e*, secured in the brake-beam E, the upper arm of which moves in a guiding-loop F, secured to the truck-frame.

The lower short arm of the lever D has one end of a rod *d′* connected to it, said rod extending under the bars A^3, and being connected to the lower end of a second lever D′, pivoted in a swiveling yoke attached to the brake-beam E′. The upper arm of lever D′ passes through a guiding-loop F′, in which it is held at any desired adjustment by means of a pin passed through any one of a series of perforations *f* in said guiding-loop.

The construction and arrangement of parts thus far described are similar to such as are in common use, and in operation whenever the rod *b*, which connects with the steam or other

power for operating the brakes, as stated, is drawn outward it vibrates the lever B on its fixed fulcrum or point of attachment to the rod and chain *c* and *c'*, which are held taut for that purpose by the hand-wheel shaft to which the chain is attached, and, the power being applied at the center of the length of said lever B, it will readily be seen that of each pound of power applied to vibrate said lever one half of said power will be utilized to operate the brakes, while the remaining half will be exerted in a direct pull on the lever fulcrum or rod *c*, and thence on the hand-wheel shaft or other point of attachment of the lever and thus lost or wasted.

It is the object of my invention to utilize this lost or wasted power, and to this end, while I use the arrangement of levers and rods described, I leave slack in the chain *c'*, as indicated at c^2, when the hand-wheel C is not in use without preventing or interfering with the use of said hand-wheel for applying the brakes when required, and thereby leaving the lever B free to move bodily, so far as the rod *c* is concerned, and making it constitute what I term a "floating" lever. To the same end of the lever B to which the rod *c* is connected I attach the outer end of a second rod *g*, which at its inner end is connected through a chain *g'* with one end of a lever G, pivoted at or near the center of its length in one end of the transverse bars A^3 or to any other suitable support on the truck-frame. The opposite end of the lever G has one end of a rod *h* connected with it, the opposite end of said rod being bifurcated and having its fork-arms *h'* flattened and perforated at frequent intervals in their length to receive a through-pin h^2, securing it to the upper end of the brake-lever D'. The chain *g'* permits relative movement between the connected ends of levers G and B for adapting the lever B to be operated from the hand-wheel when required, and the perforations in the forked end *h'* of the rod *h* permit the adjustment of the lever D' and the pin h^2 to take up any unnecessary slack in the brake-connections.

The pin in the guide-loop F', (indicated at f^2,) instead of passing through a slot in lever D', as usual, is inserted behind or outside of said lever, thereby not only leaving said lever free to rise and fall in the guiding-loop, but also free to be drawn inward when acted upon by the lever G, said pin being adjusted to prevent unnecessary play of the lever D'.

The operation of the parts last above described will readily be understood. The end of the lever B to which the rod *c* is connected being left free to move outward by the slack in chain *c'*, when power is applied to the rod *b* the movement of the said end and the power applied thereto is transferred, through the rod and chain *g g'*, to the lever G, thence to the lever D', and through the connection of the latter with the lever D, and said levers D and D' being connected with the brake-beams, as explained, all the power applied to the rod *b* is utilized for the application of the brakes, instead of one-half only, as in the ordinary arrangement of the brake rods and levers.

In Fig. 2 my improvement is shown applied to a truck adapted to receive brake-shoes on the inner adjacent sides of the truck-wheels as well as on the outer sides thereof, the parts in said figure, so far as they correspond with the parts of Fig. 1 described, being indicated by the same letters.

E^2 and E^3 indicate the brake-beams (broken away) to which the inner shoes are applied; G, the supplemental lever, applied in this instance to the opposite end of the truck from lever B, (instead of at the center thereof,) and D^2 D^3 the brake-levers connected to the intermediate brake-beams E^2 and E^3. The levers B and G have each upon their free ends a sheave or grooved pulley b^2 or g^2, and the connection between the levers B and G, instead of being direct by means of a rod *h*, as above described, is made through rods *i i'* and an interposed chain i^2, the latter passing around the sheave b^2 and connecting the rods *i* and *i'*, the former connecting with the brake-lever D and the latter with the lever D^3, as shown. The brake-lever D' is connected with the brake-lever D^2 by a similar arrangement of rods *j j'* and chain j^2, the latter passing around the pulley g^2 on the lever G. By this arrangement it will be seen that when the rod *b* is drawn outward its power will be expended, through the levers B and G and the connections described, upon the levers D, D', D^2, and D^3, and will all be utilized in the application of the brakes to both the outer and inner faces of the wheels. It will also be readily understood that the arrangement of the several levers and their connections can be varied to suit the arrangement of the brake-shoes relative to the wheels and to each other without departing from my invention.

Having now described my invention, I claim as new—

1. The combination, with the floating lever B and the brake-levers connected therewith, of the supplemental lever connected to said floating lever and also to the brake-levers, substantially as described.

2. The combination of the floating lever B, the lever G, connected therewith, and the brake-levers D and D', connected to the brake-beams, to each other, and to the levers B and G, substantially as described.

3. The combination, in a power-actuated brake mechanism, of the floating lever B, the brake-levers D, D', D^2, and D^3, the supplemental lever G, connected with said lever B and the brake-levers, and the interposed connections between said levers B and G and the brake-levers, all substantially as described.

4. The combination of the floating lever B

and the supplemental lever connected therewith, said levers carrying the sheaves b^2 and g^2, the connection between said floating lever and the hand-wheel shaft, the brake-levers D, D′, D², and D³, and the connections between said brake-levers and the floating and supplemental levers, all substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand this 25th day of March, A. D. 1889.

CHARLES V. ROTE.

Witnesses:
I. C. ARNOLD,
C. REESE GABY.