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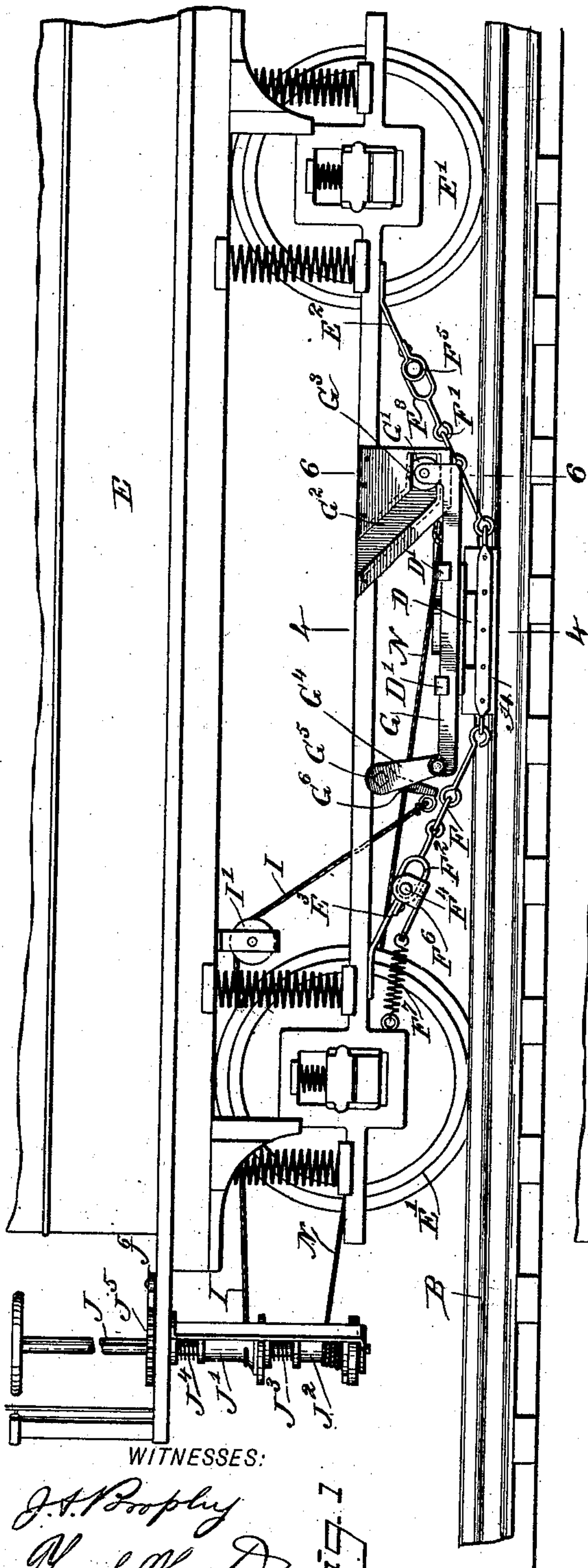
Patented Sept. 9, 1902.

D. S. SEBASTIAN.  
BRAKE MECHANISM.

(Application filed May 24, 1902.)

(No Model.)

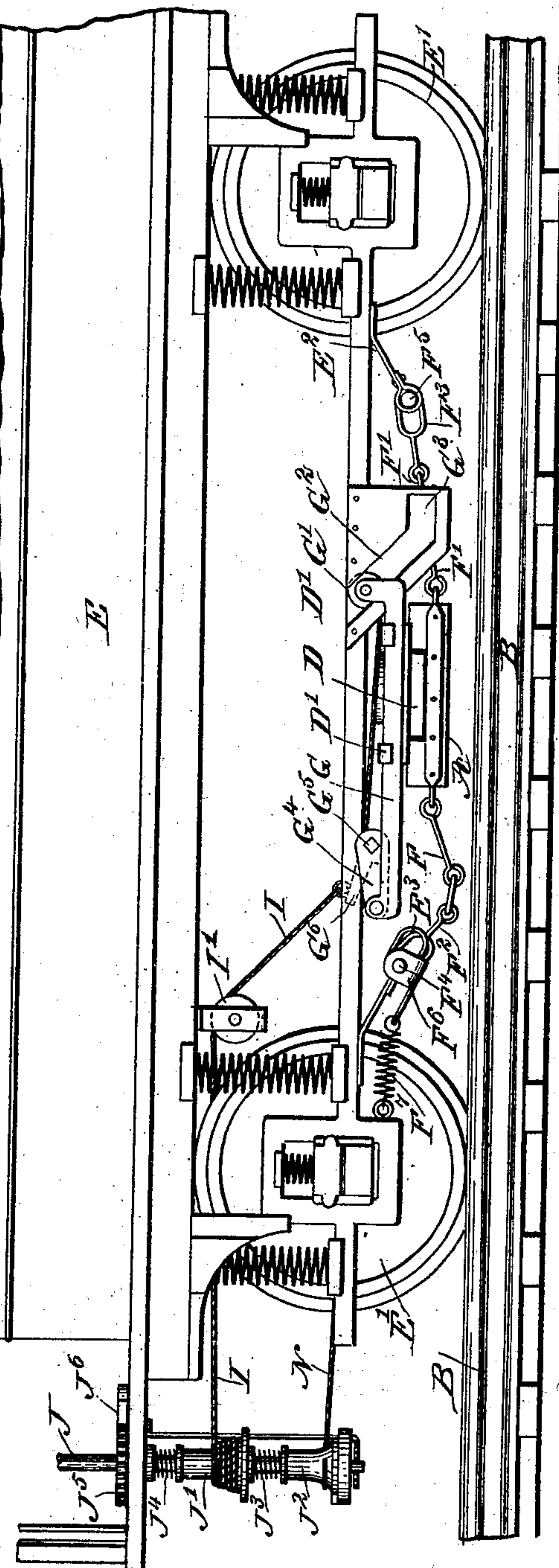
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Fig. 1



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Fig. 2

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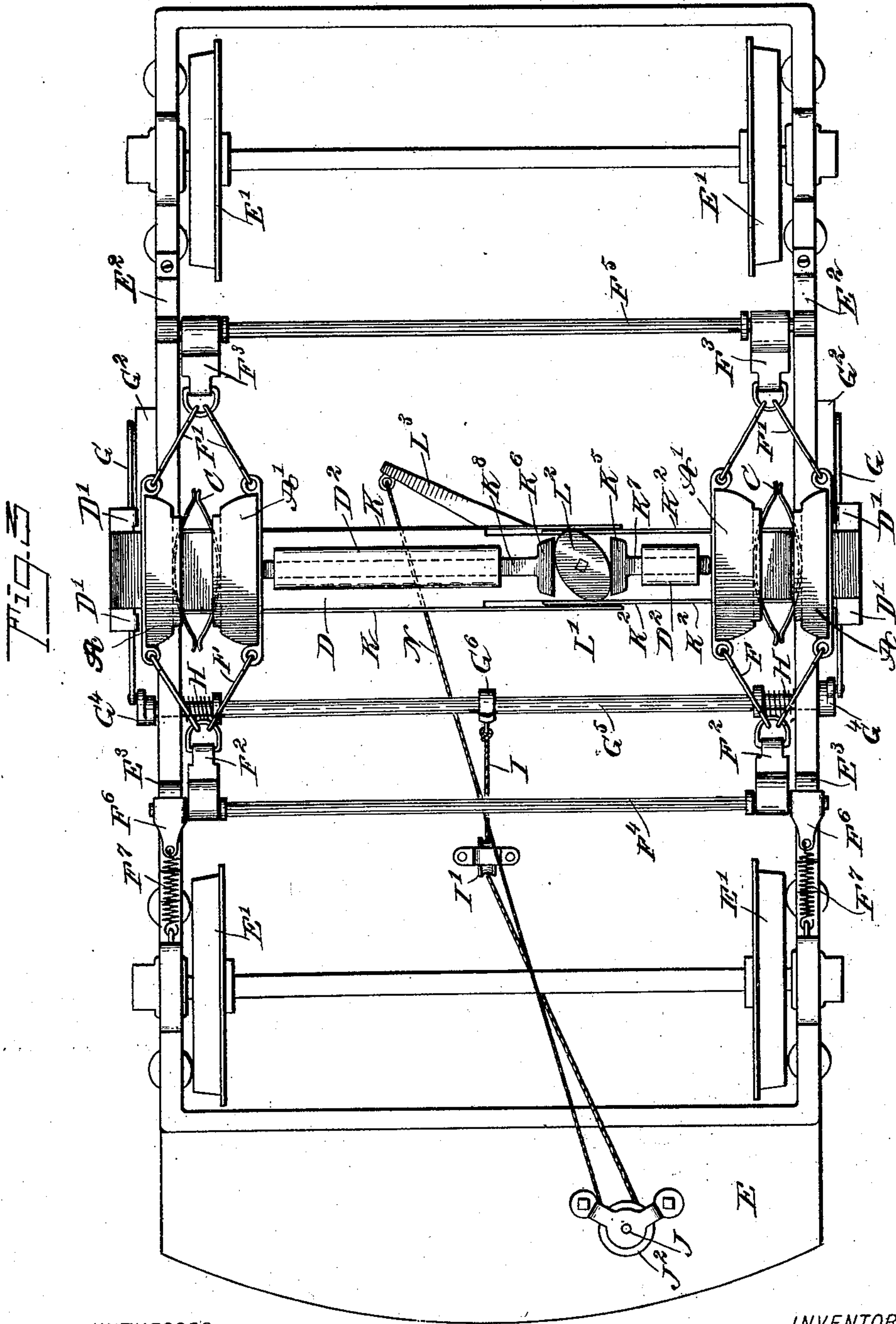
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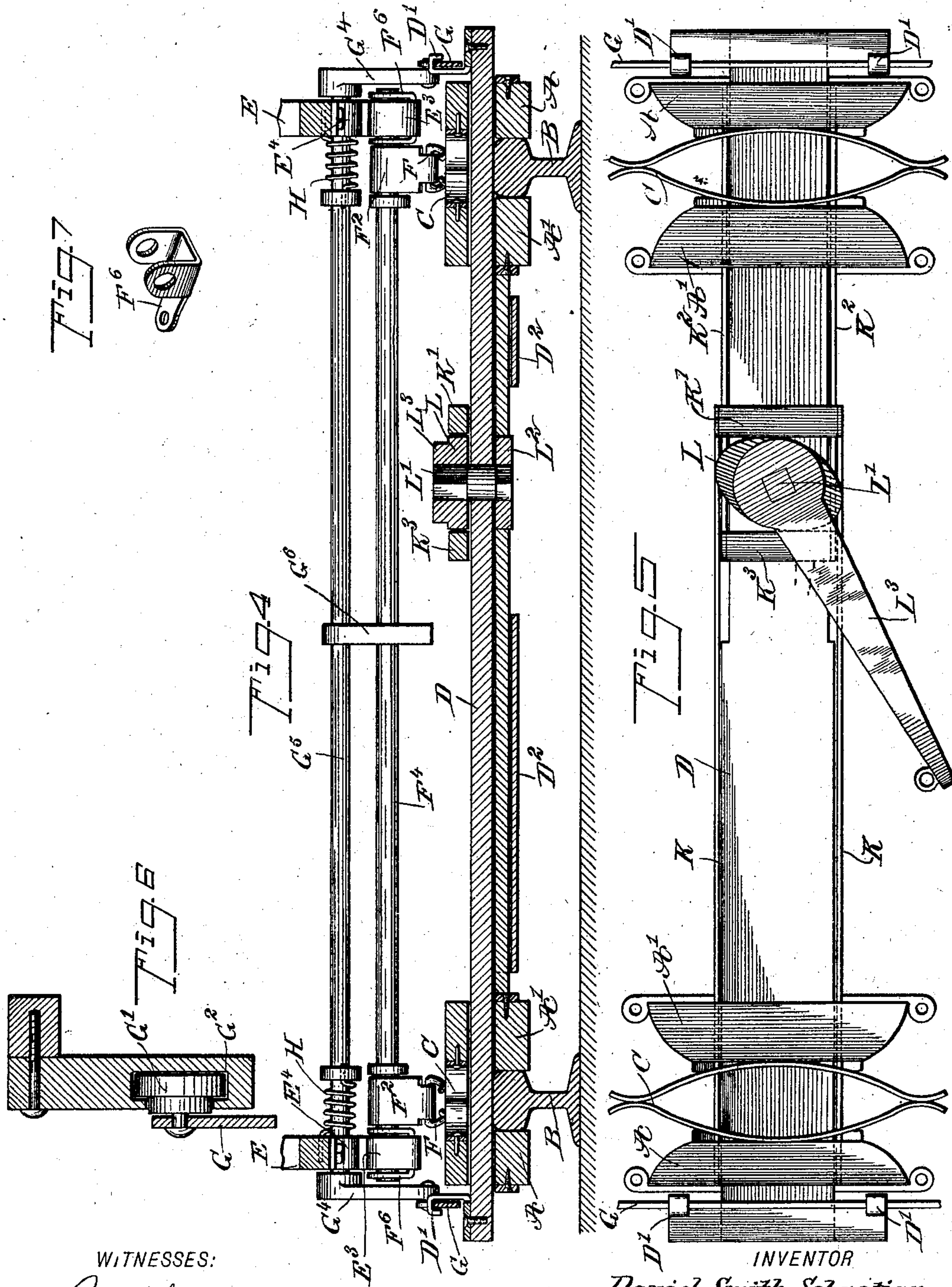
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# UNITED STATES PATENT OFFICE.

DANIEL SMITH SEBASTIAN, OF WALLACE, IDAHO, ASSIGNOR OF ONE-HALF  
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## BRAKE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 708,837, dated September 9, 1902.

Application filed May 24, 1902. Serial No. 108,803. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL SMITH SEBASTIAN, a citizen of the United States, and a resident of Wallace, in the county of Shoshone and State of Idaho, have invented a new and Improved Brake Mechanism, of which the following is a full, clear, and exact description.

The invention relates to railroad-cars, street-cars, and other vehicles traveling on rails; and its object is to provide a new and improved brake mechanism arranged to brake the vehicle to a gradual or comparatively sudden stop by applying brake-power on the rails instead of on the wheels, thus preventing undue abrasion of the wheel-treads.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied and showing the brake mechanism in braking engagement with the rails. Fig. 2 is a like view of the same, showing the brake mechanism in an inactive or non-braking position. Fig. 3 is an inverted plan view of the same. Fig. 4 is an enlarged transverse section of the same on the line 4 4 of Fig. 1. Fig. 5 is a plan view of the brake-beam, the brake-shoes, and the means for sliding the shoes toward and from each other. Fig. 6 is an enlarged transverse section of part of the improvement on the line 6 6 of Fig. 1, and Fig. 7 is an enlarged perspective view of one of the slidable bearings for a supporting-rod.

The improved brake mechanism, as illustrated in the drawings, consists, essentially, of pairs of outer and inner brake-shoes A A', adapted to clamp the outer and inner sides of the heads of the rails B, and the shoes A A' of each pair are normally pressed apart out of engagement with the rails by a spring C, and the said brake-shoes are mounted to slide transversely on the brake-beam D, extending transversely between adjacent car-wheels E' of the car E, on which the brake mechanism is applied. The brake-shoes A

A' of each pair are connected at their front and rear ends by links F and F' with loops F<sup>2</sup> F<sup>3</sup>, held on the transverse rods F<sup>4</sup> F<sup>5</sup>, of which the rear rod F<sup>5</sup> is fixed in brackets E<sup>2</sup>, secured to the car-truck frame, and the rod F<sup>4</sup> is held to slide longitudinally in brackets E<sup>3</sup>, likewise secured to the car-truck frame, as plainly illustrated in Figs. 1 and 2. The rod F<sup>4</sup> is journaled in bearings F<sup>6</sup>, held on springs F<sup>7</sup>, connected with the car-truck frame, so as to take up slack in the links F at the time the brake-shoes are not in engagement with the rails, as plainly illustrated in Fig. 1.

The brake-beam D, previously mentioned, is provided at its ends with longitudinally-extending guideways D', engaged by bars G, provided at their rear ends with friction-rollers G', mounted to travel in inclined guideways G<sup>2</sup>, secured to the car-truck frame, the lower ends of the inclined guideways G<sup>2</sup> terminating in horizontal extensions G<sup>3</sup> to hold the friction-rollers G' and bars G against upward movement during the time the brake-shoes are in braking engagement with the rails B. (See Fig. 1.) The forward ends of the bars G are pivotally connected with crank-arms G<sup>4</sup>, secured on a shaft G<sup>5</sup>, journaled in suitable bearings carried by the car-truck frame, and the said shaft G<sup>5</sup> is pressed on by springs H (see Figs. 3 and 4) to force the shaft G<sup>5</sup> to turn to swing the crank-arms G<sup>4</sup> downward at the time the shaft G<sup>5</sup> is released, as hereinafter more fully explained. On the shaft G<sup>5</sup>, preferably at or near the middle thereof, is secured an arm G<sup>6</sup>, engaged by the rear end of a rope or chain I, extending over a pulley I' to the front end of the car E to wind on a drum J', mounted to turn with the brake-staff J, journaled in suitable bearings on the front end of the car. Now when the staff J is turned in one direction to wind up the rope or chain I on the drum J then the said rope or chain causes an upward swinging of the arm G<sup>6</sup> to turn the shaft G<sup>5</sup>, so that the crank-arms G<sup>4</sup> impart an upward and forward movement to the bars G to cause the friction-rollers G' to travel from the horizontal portion G<sup>3</sup> of the guideway G<sup>2</sup> up the latter, so that the brake-beam D is lifted, and with it the brake-shoes, to hold the latter in a normal inactive position over the rails B,



as plainly illustrated in Fig. 2. The brake-shoes A and A' of each pair are moved toward each other by a mechanism controlled by the brake-staff J, so that the raising and lowering of the brake-beam D, as previously explained, takes place simultaneously with the closing and opening of the brake-shoes—that is, both mechanisms are controlled by a single operator in charge of the staff J. Now for the purpose mentioned the outer brake-shoe A on one side of the car (see Fig. 5) is connected with bars K, extending at the side edges of the brake-beam D, and the inner ends of the said bars K are rigidly connected with each other by a cross-beam K', and the outer brake-shoe A on the other side of the car is similarly provided with bars K<sup>2</sup>, connected with each other at their inner ends by a cross-beam K<sup>3</sup>. The two cross-beams K' and K<sup>3</sup> are spaced apart and are adapted to be engaged at their inner or outside faces by a cam L, secured on the upper end of a cam-shaft L', mounted to turn in suitable bearings in the brake-beam D. (See Fig. 4.) The lower end of this cam-shaft L is provided with a cam L<sup>2</sup>, similar to the cam L and adapted to engage cross-beams K<sup>5</sup> and K<sup>6</sup> on bars K<sup>7</sup> and K<sup>8</sup>, mounted to slide transversely in suitable bearings D<sup>2</sup>, secured to or formed on the under side of the brake-beam D, and the outer ends of the said bars K<sup>7</sup> and K<sup>8</sup> abut against the inner brake-shoes A', so that when the bars are moved outwardly by the cam L<sup>2</sup> the brake-shoes A' are moved toward the brake-shoes A, which at the same time are moved inward by the action of the cam L on the cross-beams K' K<sup>3</sup> of the cross-bars K<sup>2</sup> K, attached to the outer brake-shoes A. An operating-arm L<sup>3</sup> is secured to the upper cam L, and the free end of this arm is engaged by one end of a rope or chain N, extending forwardly and winding on a drum J<sup>2</sup>, similar to the drum J' and likewise mounted to rotate with the staff J. The ropes or chains I and N are so arranged relative to their drums J' J<sup>2</sup> that when the rope or chain I winds upon the drum J' to move the brake-beam and parts thereon into an uppermost position then the rope or chain N unwinds from its drum J<sup>2</sup> to release the arm L<sup>3</sup> and cams L and L<sup>2</sup> and shoes A and A' to allow the spring C to press the shoes apart. A spring J<sup>3</sup> is coiled on the staff J between the adjacent ends of the drums J<sup>2</sup> J', and a similar spring J<sup>4</sup> is arranged on top of the drum J', so as to allow the drums J' and J<sup>2</sup> to yield vertically on the staff J, so that jolting or jarring of the car does not unduly affect the brake mechanism.

The operation is as follows: When the several parts are in the position shown in Fig. 2, then the brake-beam D, with the brake-shoes thereon, is held in an uppermost position—that is, the shoes are in an open position a distance above the track-rails B and the staff J is locked against rotation by the usual ratchet-wheel J<sup>5</sup> and pawl J<sup>6</sup> under the control of the operator. Now when it is desired

to apply the brake the operator releases or unlocks the staff J by swinging the pawl J<sup>6</sup> out of engagement with the ratchet-wheel J<sup>5</sup> and then turns the staff J, so as to unwind the rope or chain I and to wind up the rope or chain N. By the unwinding of the rope I the springs H on the shaft G<sup>5</sup> cause a turning motion of the latter to swing the arms G<sup>4</sup> downward from the position shown in Fig. 2 into the position shown in Fig. 1, the friction-rollers G' then traveling down the inclined guideways G<sup>2</sup> until the said friction-rollers finally pass into the horizontal portion G<sup>3</sup>. Now by the arms G<sup>4</sup> swinging downward and the friction-rollers G' traveling downward in the guideways G<sup>2</sup> it is evident that a downward movement is given to the bars G, so that the brake-beam D is moved in a like direction to cause the brake-shoes to straddle the rails B, and as at the same time the downward movement of the brake-beam D takes place the brake-shoes of each pair are moved toward each other by the action of the rope N pulling on the arm L<sup>3</sup> to work the cams L L<sup>2</sup> it is evident that the brake-shoes move in frictional contact with the sides of the head of the rails B to clamp the same, and thus brake the vehicle. Now by the operator turning the staff J more or less the chain or rope I winds more or less upon the drum J<sup>2</sup>, and consequently pulls more or less on the arm L<sup>3</sup> to cause the cams to move the pairs of brake-shoes with more or less force in frictional contact with the sides of the heads of the rails. When the vehicle has come to a standstill or it is desired to release the brake for other reasons, the operator turns the staff J in the opposite direction, so as to wind up the chain or rope I and to unwind the chain or rope N. In doing so the chain or rope N causes a release of the brake-shoes, so that the springs C thereof open the shoes and the rope I causes an upward movement of the brake-beam D and the parts supported thereon, as previously explained. It is understood that when the brake-shoes are in braking engagement with the rails B then the brake-beam D is relieved of strain by the links F F', connected with the brake-shoes and supported from the car-truck frame, as previously explained.

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

1. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, and a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, as set forth.

2. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost



position, and an operating mechanism connected with the said brake-beam and the said brake-shoes, to simultaneously lower the brake-beam and to move the shoes toward each other, to clamp the rail, as set forth.

3. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, and an operating mechanism connected with the said brake-beam and the said brake-shoes, to simultaneously lower the brake-beam, move the shoes toward each other, to clamp the rail, and to raise the brake-beam, to allow the shoes to open, as set forth.

4. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, a spring between the shoes to normally hold the same open, an operating device for moving the shoes toward each other, to clamp the rail, and a brake-beam-actuating device for moving the brake-beam down and up, as set forth.

5. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, a spring between the shoes to normally hold the same open, an operating device for moving the shoes toward each other, to clamp the rail, and a brake-beam-actuating device for moving the brake-beam down and up, the said devices being actuated simultaneously, as set forth.

6. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, a spring between the shoes to normally hold the same open, an operating device for moving the shoes toward each other, to clamp the rail, a brake-beam-actuating device for moving the brake-beam down and up, and a brake-staff common to both devices, to actuate the latter simultaneously, as set forth.

7. A brake mechanism, comprising a brake-beam, means for lowering and raising the same, a pair of brake-shoes mounted to slide

on the said brake-beam, toward and from each other, a cam mechanism mounted on the brake-beam and connected with the said shoes, to move the same toward and from each other, means under the control of the operator for operating the said cam device, and springs between the brake-shoes, to hold the same normally open, as set forth.

8. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, pairs of brake-shoes mounted on the said brake-beam, springs for holding the brake-shoes of each pair normally apart, a cam-shaft having an operating-arm under the control of the operator, the said cam-shaft being mounted to turn in the said brake-beam, cams held on the said cam-shaft, and means actuated by the said cams and rigidly connected with the brake-shoes, so as to move the shoes of each pair toward each other on turning the cam-shaft in one direction, as set forth.

9. A brake mechanism, comprising a brake-beam carrying brake-shoes for engaging rails, guideways on the said brake-beam, bars engaging the said guideways, a shaft carrying crank-arms connected with the said bars at one end thereof, and fixed inclined guideways engaged by friction-rollers on the other ends of the said bars, as set forth.

10. A brake mechanism, comprising a brake-beam carrying brake-shoes for engaging rails, guideways on the said brake-beam, bars engaging the said guideways, a shaft carrying crank-arms connected with the said bars at one end thereof, and fixed inclined guideways engaged by friction-rollers on the other ends of the said bars, the said guideways having horizontal extensions at their lower ends, as set forth.

11. A brake mechanism, comprising a brake-beam, shoes mounted to slide thereon, a cam mechanism for operating the said shoes, mounted on the said brake-beam, a brake-staff, drums mounted on the said brake-staff, ropes engaging the said drums in such a manner that one rope winds up while the other unwinds on turning the brake-staff in one direction, and means connecting the said ropes with mechanism for raising and lowering the brake-beam and actuating the said cam device, as set forth.

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

DANIEL SMITH SEBASTIAN.

Witnesses:

CHAS. A. ERWIN,  
JOHN H. WOURMS.