

No. 761,692.

PATENTED JUNE 7, 1904.

W. C. MITCHELL & M. CUMMINS.

CAR BRAKE.

APPLICATION FILED OCT. 13, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

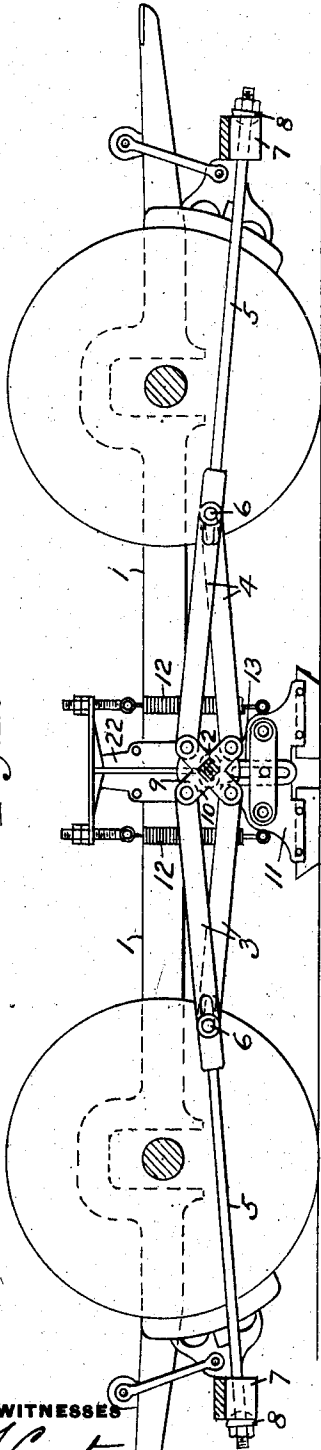
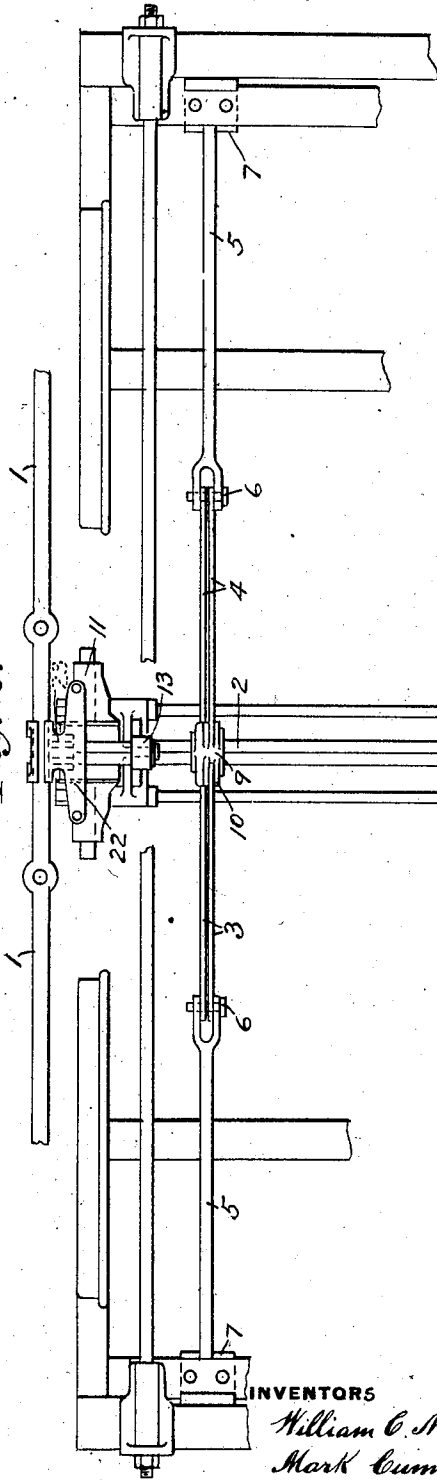


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

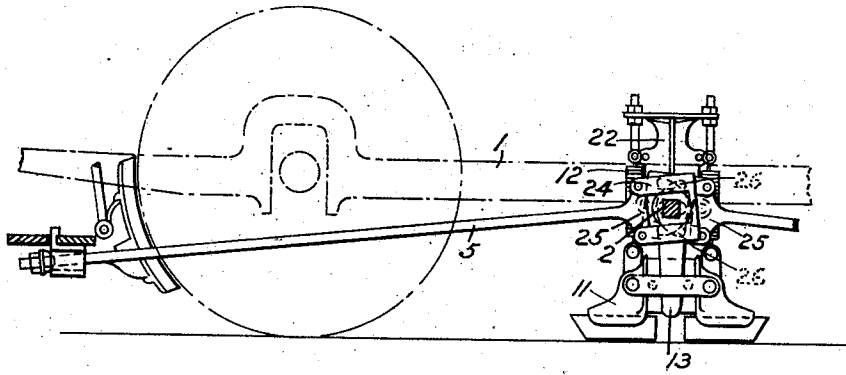


Fig. 4.

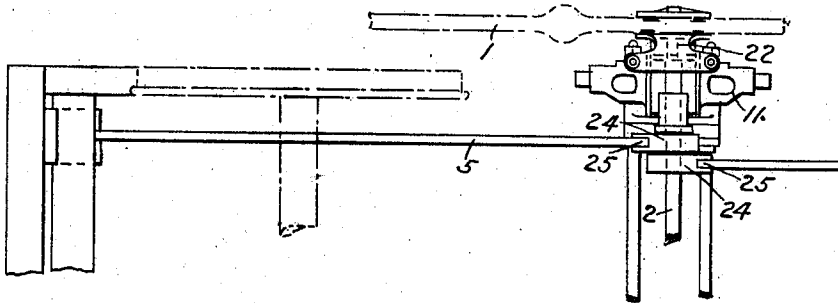
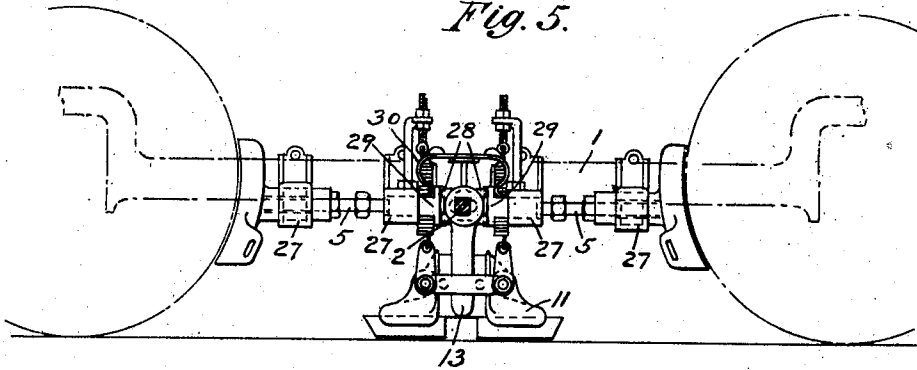


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

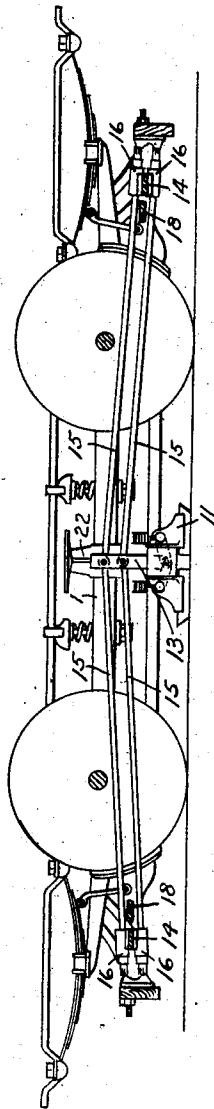
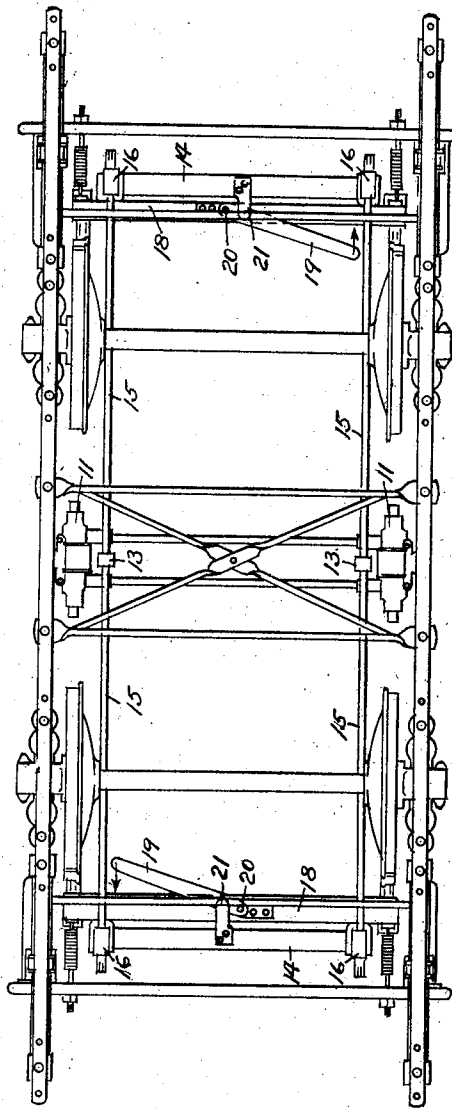


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM CLARK MITCHELL AND MARK CUMMINS, OF TRAFFORD PARK, ENGLAND, ASSIGNORS TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 761,692, dated June 7, 1904.

Application filed October 13, 1903. Serial No. 176,846. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM CLARK MITCHELL and MARK CUMMINS, citizens of the United States of America, residing at Trafford Park, in the county of Lancaster, England, have invented a certain new and useful Improvement in Car-Brakes, of which improvement the following is a specification.

Our invention relates to brakes for railway and like vehicles, and has for its object to provide an exceedingly simple and effective construction of brake-rigging which shall cause the brakes to be applied to the wheels when the operating means is moved in either direction from its normal position.

An important feature of the invention relates to the provision of means whereby the brake-blocks are applied with substantially equal pressure to the wheels on each side of the car even though different amounts of wear have occurred and it is necessary to move the brake-blocks on one side through a greater distance than those on the other side of the car when applying the brakes.

In the accompanying drawings, which illustrate our invention, Figure 1 is a longitudinal elevation, partly in section; Fig. 2, a half-plan of one form of the apparatus. Figs. 3 and 4 are similar views of a modification. Fig. 5 is a side-elevation of another modification; and Figs. 6 and 7 are sectional elevation and plan, respectively, of another arrangement embodying our improvements.

Referring first to Figs. 1 and 2, we secure on each side of the car-frame 1 a bracket 22, adapted to support a horizontal transverse shaft 2, to which are operatively connected pairs of links 3 3 and 4 4, having a pin-and-slot connection with the brake-rods 5, as indicated at 6. These brake-rods 5 pass loosely through brackets 7 on the brake-beam and are secured by nuts having rounded surfaces or bearing upon washers 8, provided with a partially spherical or cylindrical surface, as shown. The connection of the links 3 3 and 4 4 may be variously effected; but conveniently a cruciform piece 9 may be adopted, having arms

10, to the ends of which the links 3 3 and 4 4 are pivoted. The transverse shaft 2 may be rotated for the purpose of applying the brakes, as hereinafter described, by any of the usual means—for example, by the operation of a vertical brake-shaft on the driver's platform, connected through the usual chain with an arm or drum provided on the transverse shaft, or by means of a system of levers adapted to be moved by the hand or by the foot of the operator or by pneumatic means, all of which, being well known, require no further description.

In the arrangement shown the actuation of the shaft 2 is obtained by means of the track-brake or rail-shoe 11, which is supported by springs 12 from the bracket 22 and has a pin-and-slot engagement with an arm 13, secured to the shaft 2 or to the cruciform piece 9. Thus it will be seen that when the track-brake is applied to the rail by electromagnetic means, for example, or in any other manner, and is thereby caused to move longitudinally with respect to the car-frame, it will, by means of the slotted arm 13, rotate the shaft 2 and cause the arms 10 of the cruciform piece 9 to act like cranks and impart a pull or thrust to the brake-rods 5, and thus apply the brakes to the wheels by one of each of the pairs of links 3 and 4, depending upon the direction in which the track-brake moves, the other pair of links being rendered inactive by reason of their slotted connection with the brake-rods.

By reason of the rounded contact-surface between the washer 8 and the bracket 7 the brake-rod 5 is enabled to take up a position inclined to either of the links 3 or 4, as may be required when the brakes are applied.

In order that all the brake-blocks may be applied with equal force on the wheels of the car, (this, of course, being very desirable,) we arrange that the transverse shaft 2 shall not be supported in a cylindrical bearing, but shall have its ends mounted in horizontal slots 23 in the brackets 22. By this means the brake-block, which is first applied to its wheel, will act after the manner of a fulcrum, and

the transverse shaft 2 will take up a position making an angle with the center line of the car until the brake-blocks are also applied to the other wheels of the car.

5 In place of supporting shaft 2 in a slotted bearing, as described, other devices may be adopted for the purpose of allowing a lateral movement of its pivot. For example, it may be suspended by links loosely hung from the
10 car-frame.

The connection of the brake-rods 5 with the transverse shaft 2 may be effected, as shown in Figs. 3 and 4, by providing each at a point approximately midway between the pair of
15 wheel-axes with a box-like portion, which may be constituted, for example, by a channel-shaped yoke 24, the free ends or arms of which are attached to a T-head 25 upon the brake-rod. The box-like portion of one brake-rod 5 is disposed side by side with that of the
20 other brake-rod, and the desired pull is imparted to each by means of one or other of two fingers, projections, or cams 26, carried by the transverse shaft 2, one pair of said
25 fingers, projections, or cams being arranged in each box-like portion, but facing in opposite directions. Rotation of the shaft 2, therefore, in either direction causes one or other of each pair of fingers, projections, or cams 26
30 to exert pressure upon the box-like portion of each of the brake-rods, causing the latter to advance and apply the wheel-shoes.

Fig. 5 shows the wheel-shoes adapted to be applied by a thrust in lieu of a pull. In this
35 example each brake-rod 5 is adapted to slide in brackets 27, mounted on the truck-frame 1, a transverse shaft 2 being employed similar to that already described. Said shaft 2 is provided with fingers, projections, or cams
40 28, which coact directly with T-shaped heads or projections 29 on the inner ends of the brake-rods. Springs 30 may be employed to bear against the rear part of the brake-rod heads 29 to hold the wheel-shoes out of action
45 when the parts are in their normal position. The operation of this device is practically the same as that last described, the fingers, projections, or cams 28 when the transverse shaft 2 is rotated causing the brake-rods 5 to experience a thrust instead of a pull, and so apply the brakes. In another construction, which we have illustrated in Figs. 6 and 7, we dispense with the transverse shaft 2 and employ equalizer-beams 14, connected together by a pair of rods 15, lying one above
50 the other on both sides of the vehicle. These rods pass loosely through sleeves 16, secured to the beams 14, and are provided with lock-nuts, pins, or the like at their outer ends, as is ordinarily employed in such loose connections. Further, these rods 15 are bent at a suitable angle in a vertical plane toward points substantially midway of their length, (see Fig. 6,) at which points a lever 13 is piv-
65 otally secured to both rods, the actuation of

this lever being effected in any of the ways already described, but here illustrated as being operated by an electromagnetic track-brake.

The operation is as follows: When the track-brake 11 is energized and attracted to
70 the rails, the continued movement of the vehicle displaces the track-brake longitudinally relatively to the car, and thus turns or partially rotates lever 13 in the plane of the rods 15, causing the upper rod at one end and the
75 lower rod at the other end to exert a pull upon the equalizer-beams 14, which in consequence advance and make contact with the beams 18, which carry the brake-blocks and apply the
80 brakes, the other corresponding ends of the rods 15 moving through their sleeves 16. In this example also we have illustrated how the wheel-brakes may be applied by hand, which application simultaneously applies the track-brake when the latter is not energized. As
85 illustrated, the means for effecting this comprise a lever 19, pivoted at 20 to the brake-beam 18, there being a connection 21, forked to engage the lever 19 and extending between said lever and the equalizer-beam 14. By
90 this arrangement, when by operating the hand-brake either lever 19 is pulled in the direction of the arrow, so as to apply the brake-blocks to the wheels, its equalizer-beam 14 is forced to move away from the brake-beam 18, and
95 thereby exerts a pull on the rods 15. This pull being transmitted to the brake-beam 18 at the other end of the car causes the brake-blocks at said other end of the car to be applied to the wheels. The rods 15 then become
100 straightened and force the track-brake 11 onto the rails.

It will now be seen that in all of these constructions the arm 13 comprises substantially a floating arm or lever having a vertically-
105 adjustable connection with the track-brake or rail-shoe and other intermediate connections with the wheel-shoes or brake-beams at opposite ends of the truck for applying said wheel-shoes with substantially equal pressure
110 when the arm is operated in either direction from its normal position.

Various other modifications embodying these principles may be designed, and it is to be understood that this invention is not limited to the particular designs shown, but also includes all such modified forms.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A car-brake mechanism, comprising a floating arm or lever having intermediate connections with the wheel-shoes at opposite ends of the truck for applying said wheel-shoes when said arm is operated in either direction
125 from its normal position, and means for moving said arm in either direction.

2. A car-brake mechanism, comprising a rail-shoe, a floating lever operated in either direction by the longitudinal movement of
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the rail-shoe, and intermediate connections between said lever and the wheel-shoes for applying the said wheel-shoes when the lever is moved in either direction from its normal position.

3. A car-brake mechanism, comprising a rail-shoe, an arm or lever operated by the longitudinal movement of the rail-shoe, a rock-shaft operated by said arm, and intermediate connections between the rock-shaft and the wheel-shoes for applying the said wheel-shoes when the arm is moved in either direction from its normal position.

4. A car-brake mechanism comprising a rail-shoe and a plurality of wheel-shoes, an arm or lever operated by the longitudinal movement of the rail-shoe, a rock-shaft operated by said arm and having a longitudinally-movable pivot, and intermediate connections between said rock-shaft and wheel-shoes.

5. A car-brake mechanism, comprising a rail-shoe and a plurality of wheel-shoes, a lat-

erally-movable rock-shaft having an arm operated by the longitudinal movement of the rail-shoe, brake-rods extending in opposite directions for actuating the wheel-shoes, and projections carried by the rock-shaft for operating the brake-rods.

6. A car-brake mechanism, comprising a rail-shoe and a plurality of wheel-shoes, a rock-shaft having an arm operated by the longitudinal movement of the rail-shoe, pull-rods for actuating the wheel-shoes, and slotted links connected with said pull-rods and operated by the rock-shaft to apply the wheel-shoes when the rail-shoe is moved in either direction from its normal position.

In testimony whereof we have hereunto set our hands.

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MARK CUMMINS.

Witnesses:

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