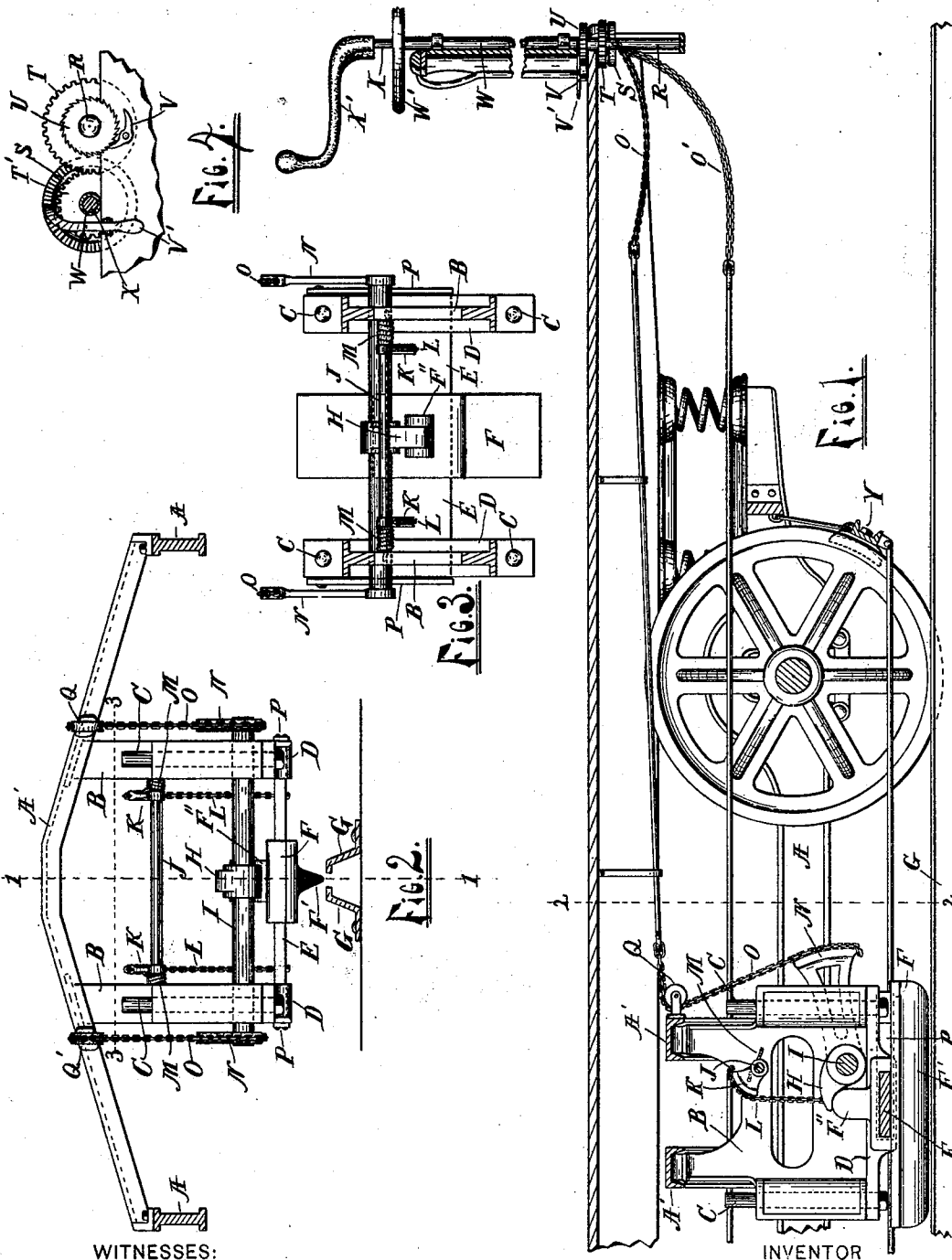


(No Model.)

W. CURTISS.
CAR BRAKE.

No. 513,672.

Patented Jan. 30, 1894.



WITNESSES:

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WILLARD CURTISS, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF ONE-HALF
TO WILLIAM T. POWERS AND WILLIAM H. POWERS, OF SAME PLACE.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 513,672, dated January 30, 1894.

Application filed September 19, 1893. Serial No. 485,740. (No model.)

To all whom it may concern:

Be it known that I, WILLARD CURTISS, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Brakes for Street-Cars; 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 an improved brake for street cars, and its object is to provide the same with certain new and useful features, hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section on the line 1—1 of Fig. 2, of a device embodying my invention; Fig. 2 a front elevation of the same showing a section on the line 2—2 of Fig. 1; Fig. 3 a plan view of the same, showing a section on the line 3—3 of Fig. 2; and Fig. 4 a detail of a portion of the operating mechanism.

Like letters refer to like parts in all of the figures.

A, A, represent the sills of the car truck, to which are secured transverse beams A', to which beams are attached two frames B, B, arranged parallel to each other, and extending downward beneath said beams. In suitable openings in said frames are vertically movable posts C, to the lower ends of which posts are attached horizontal bars D, having openings near the middle, in which openings is a horizontally movable beam E, to which is attached a brake shoe F, having a downwardly projecting wedge shaped rib F', adapted to enter the slot or opening between the slot rails G, G, arranged between and parallel with the track. At the upper side of said brake shoe is an upwardly projecting lug F'', which is engaged by a laterally projecting arm H fixed on a rock shaft I. Said shaft is journaled in the frame B, and to the outer ends of this shaft are attached levers N, from which levers extend chains O, O, which chains pass upward over pulleys Q, Q, and thence to the respective operating mechanism at

each end of the car platform, one of which only is shown; a shaft J is also journaled in the upper part of the frame B, B, and provided with arms K, K, from which arms chains L extend downward and attach to the beam E. Springs M are also provided having one end secured to the shaft J, and the other to the frame, whereby said shaft is rotated and the brake shoe and vertically movable parts connected therewith are lifted and held suspended above the slot rails when not in action. Springs P are attached at one end to the bars D and engage the ends of the beams E at their free ends, whereby said beam is made to assume a middle position to bring the rib F' over the slot, and when the brake is in action said springs permit end movement of the beam to accommodate the relative side movement of the car due to irregularity in the lines of the track and slot rails. The mechanism to operate the brakes consists of a vertical shaft X, having a crank X' at the upper end, and a chain O' attached to and wound upon said shaft near the lower end thereof, which chain operates the wheel brakes Y in the usual manner.

To provide mechanism to operate the described rail brake, a sleeve W of suitable iron pipe surrounds the shaft X, and is provided at its upper end with a hand wheel W', and at its lower end with a pinion T' engaging a gear I, attached to a shaft R. Said shaft is suitably journaled parallel to the shaft X, and is provided with a suitable ratchet U, and pawl V, whereby it is held against the strain of the chain O, which chain is attached to and wound upon said shaft at one end and to the lever N at the other end. To hold the shaft X in like manner, a crown ratchet wheel T is attached to the same below the sleeve W, and a pawl V' is pivoted to the car platform and extends forward and downward to engage said crown ratchet.

The sleeve W is supported and journaled in suitable bearings on the end of the car and the shaft X is independently rotative within the sleeve. By turning the crank X', the chain O' will be wound upon its lower end and held and released by means of the crown ratchet and said pawl V' and by turning the wheel W' the chain O will be wound on the

shaft R, by means of the sleeve W, pinion T' and gear T, and held by the ratchet U and pawl V, which chain thus pulls upward on the lever N, turning the shaft I and forcing the rib F' between the slot rails. Thus the wheel brake or slot brake may be separately applied, or both simultaneously applied at pleasure. This device is especially useful on steep grades, where the slot brake can be applied at the top of the hill to partially hold the car, and thus render the wheel break easy of manipulation and less liable to breakage. So also should the wheels slide on the track the wheel brakes would afford no further resistance to the progress of the car, but the slot brake is not limited in this manner, but would operate with increasing efficiency, as additional pressure was applied. So also by use of two separate systems of brakes if one should fail or break the other would still remain to prevent accident.

What I claim is—

1. In combination with a car, and slot rails, a laterally and vertically movable bar having a brake shoe adapted to engage said slot rails, springs to maintain said bar in mid-position laterally, and means for vertically moving said bar, substantially as described.

2. In combination with a car, slot rails fixed to the road bed vertically movable posts on the car, a transverse beam connected to said posts, a brake shoe having a wedge shaped rib to engage the slot between said rails, and means for raising and lowering said shoe, substantially as described.

3. In combination with a car and slot rails fixed to the road bed, a brake shoe having a wedge shaped rib to engage the slot between said rails, a transversely and vertically movable beam to which said shoe is attached, springs engaging said beam to bring said rib over the slot, and mechanism for raising and lowering said beam, substantially as described.

4. In combination with a car, and slot rails fixed to the road bed, frames attached to the car truck, vertically movable posts in said frames, bars attached to the lower ends of said posts, having openings, a longitudinally movable beam in said openings, springs engaging said beam and attached to said bars, a brake shoe adapted to engage said slot rail and attached to said beam and means for raising and lowering said shoe, substantially as described.

5. In a brake mechanism, vertically movable posts, bars attached to the lower ends of said posts, having transverse openings, a lon-

gitudinally movable beam in said openings, a brake shoe attached to said beam, an upwardly projecting lug on said shoe, a rock shaft having an arm engaging said lug, a lever on said rock shaft, a chain extending from said lever winding mechanism connected to said chain, a spring connected to and supporting said beam and springs engaging the ends of said beam, substantially as described.

6. In combination with a car and slot rails, pendent frames attached to the truck frame of the car, vertically movable posts in said frames, bars having transverse openings attached to said posts, a beam longitudinally movable in said bars, a shoe on said beam having a wedge shaped rib to engage said rails, a lug on said shoe, a rock shaft having an arm engaging said lug, a lever on said rock shaft, a chain and winding mechanism connected to said lever, spring actuating shaft journaled in said frames and chains connecting said shaft and brake beam, substantially as described.

7. In combination with a rail brake and wheel brake and the operating chains thereof, a rotative shaft having one of said chains attached and means for turning and holding said shaft a second shaft having the other chain attached, means for holding said shaft, a rotative sleeve on the first named shaft, and gears connecting said sleeve and the other shaft, substantially as described.

8. In combination with the operating chains of a rail brake and a wheel brake, two shafts upon which the respective chains are wound, pawls and ratchets to hold said shafts, a rotative sleeve on one of said shafts, a wheel on said sleeve and a crank on said shaft and gears connecting said sleeve and the other shaft, substantially as described.

9. In combination with the wheel brake of a car having an operating shaft and means for turning and holding the same, a sleeve on said shaft, a wheel on said sleeve and means for independently turning and holding said sleeve, a vertically movable brake shoe adapted to engage a rail fixed to the road bed, a lug on said shoe, a rock shaft having an arm engaging said lug, a lever on said arm and a chain connected at one end to said lever and at the other end to winding mechanism actuated by said sleeve, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLARD CURTISS.

Witnesses:

WM. H. POWERS,

LUTHER V. MOULTON.