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# UNITED STATES PATENT OFFICE.

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## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 384,507, dated June 12, 1888.

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*To all whom it may concern:*

Be it known that I, JAMES H. BROWN, a citizen of the United States of America, residing at Richmond, in the county of Wayne and State of Indiana, 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in brakes for cars; and it consists in the novel construction and arrangement of the parts thereof, which will be more fully hereinafter described, and particularly pointed out in the claims.

The object of my invention is to provide a brake for use on cars which may be either automatic in its operation, by steam or compressed air, or by hand, as may be desired, the parts thereof being simple and effective in their construction and operation, strong and durable, easily handled, and readily understood. I attain this object by the construction illustrated in the accompanying drawings, wherein like letters of reference indicate similar parts in the several views, and in which—

Figure 1 is a side elevation of a portion of a car and truck, showing my improved form of brake applied in connection therewith. Fig. 2 is a top plan view of the truck and brake mechanism. Fig. 3 is a sectional view of one of the shoe-heads and the controlling-lever connected thereto.

W indicates the car, and T the truck. To the under side of the car, about midway between the ends thereof, suitable depending hangers, A, are secured, in which a rock-shaft, A<sup>2</sup>, has bearing at its ends and passes transversely under the car. To the central portion of said shaft A<sup>2</sup> a link, a, is secured, and to the bifurcated end of said link another link, a', is attached, and to the bifurcated end of the latter link a piston-rod, B', is connected, which has a piston-head, b, on the opposite end thereof, which has movement and is mounted

within a cylinder, B, secured to the under side of the car by suitable bolts. The opposite end of said cylinder B, forward of the piston-head b, has a pipe, B<sup>2</sup>, connected thereto, which runs to the engine, and may be coupled from car to car, as in the present form of construction. On each side of the central link, a, on the shaft A<sup>2</sup> suitable disks, A', are mounted and secured at opposite sides, which have rods a<sup>2</sup> a<sup>4</sup> secured near the periphery thereof, which are operated by the movement of the said disk A', as will be more fully hereinafter described. The rods a<sup>2</sup> extend backward under the car and are pivotally connected to the upper ends of levers C, which are fulcrumed to the truck at the points c and at their lower ends have rods C' secured thereto, which run to levers C<sup>2</sup>, secured to the shoe-heads C<sup>3</sup>. The levers C above the fulcrum-point c also have rods C<sup>4</sup> secured thereto, the opposite ends of which are secured to other levers, C<sup>2</sup>, acting in connection with and secured to the oppositely-situated shoe-heads C<sup>3</sup>. The levers C<sup>2</sup>, to which the rods C' and C<sup>4</sup> are secured, are pivoted at the points c<sup>2</sup> on the side beams of the truck and are bolted by means of bolts c<sup>3</sup> to the shoe-heads C<sup>3</sup>.

The shoe-heads C<sup>3</sup> are formed with recesses and openings c<sup>5</sup>, c<sup>6</sup>, and c<sup>4</sup> for the reception of the head of the bolt c<sup>3</sup> and a portion of the lever C<sup>2</sup> and of a spring, S, which surrounds the bolt c<sup>3</sup> and is seated at one end in a recess formed in the lever C<sup>2</sup>. The shoe-head is further supported in position by a link-rod, D, which extends downward on an incline from the top of the truck and is attached to the shoe-head by any preferred means. The rods connected to the levers C<sup>2</sup> being drawn thereagainst will force the brake-shoe against the face of the wheel, and the coil-spring S, surrounding the bolt c<sup>3</sup>, will allow the shoe and shoe-head to give backward, and the design of the springs is to overcome the sliding of the wheels should the brakes take hold of one wheel before the others. The spring can be used between the shoe-head and brake-beam now in use. When this movement takes place, the levers C<sup>2</sup> will move in recesses c<sup>4</sup> in the rear of the shoe-head. The levers C<sup>2</sup> are further secured in connection with the truck by means of chains c<sup>7</sup>, which are fully shown



and will be readily understood. On the left of the disks  $A'$  similar rods,  $a'$ , are secured, which connect with similarly-arranged brake-operating mechanism on the other truck of the car.

The intention of my brake is to prevent applying the brakes too strong and a sliding of the wheels owing to the admission of too great a quantity of steam or air to the brake-cylinder B, and it is so constructed that each wheel is acted on independently of the others in order that should one or two of the independent brakes be disabled the truck would still be under control of the brake mechanism.

By my improved construction I entirely dispense with the use of a continuous brake-beam, which causes, in many instances, disastrous results.

The operation of my improved brake is as follows: Steam or compressed air, being forced through the pipe  $B^2$ , enters the cylinder B, and, pressing against the cylinder-head  $b$ , forces the piston-rod  $B'$  outwardly from said cylinder B and the links  $a$  and  $a'$  over in the direction of the shaft  $A^2$ , turning said shaft and the disks  $A'$  in the direction of the arrow. The rods  $a^2$  are then drawn toward the shaft  $A^2$  by the rotation of disks A in the direction of the arrow, and draw the lever C forward, which acts upon the rods connected thereto and upon levers  $C^2$  and the shoe heads, as hereinbefore described.

I do not confine myself to the use of either steam or compressed air, or of any other power which may be used in connection with the cylinder B, and if, through accident or otherwise, the pipe connection or cylinder should become impaired, I can readily use the brake by means of the hand-wheels upon the platform of the car connected by means of the ordinary lever and chains with the upper ends of the brake-levers C.

It will be understood that the shoe-heads will be provided with hard metallic shoes or any other cover desired upon that side which engages with the face of the wheel.

I claim--

1. In a car-brake, the combination, with the truck, of independent brake-supporting levers  $C^2$ , fulcrumed on the side sills of the truck-

frame, shoe-heads secured to said levers, brake-operating levers C, pivoted to rigid supports at opposite sides of the frame, connecting-rods secured at their inner ends to the operating-levers at opposite sides of and equidistant from said pivot, and devices for connecting the upper ends of the operating-levers with the power, substantially as described.

2. In a car-brake, the combination, with the brake-cylinder and its piston, of a rock-shaft provided centrally with a crank-arm which is connected with the piston and at its ends with arms or disks, the trucks provided at the side with rigid supports, brake-operating levers pivoted on said supports, independent brake-supporting levers fulcrumed in the side sills of the truck-frame and carrying shoe-heads, rods connecting the ends of the supporting-levers with the operating-levers at the opposite sides of their pivots, and rods connecting the upper ends of the operating-levers with the arms or disks on the rock-shaft.

3. In a car-brake, the combination, substantially as described, of the truck, the brake-operating lever mounted on fixed pivots, the independent brake-supporting levers fulcrumed in the side sills of the truck and each connected independently with the operating-lever, the shoe-heads secured to their supporting-levers, a spring interposed between each shoe-head and its supporting-lever, and means for connecting the brake operating levers with the power.

4. In a car-brake, the combination, substantially as described, of the brake-supporting levers provided each with a circular recess, the shoe-heads provided each with a slot,  $c'$ , to receive the lever, and a recess,  $c''$ , a connecting-bolt passing centrally through the recesses of the shoe-head and its lever, a coiled spring encircling said bolt and seated at its opposite ends in said recesses, and means for connecting the supporting-levers with brake-operating mechanism.

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

JAMES H. BROWN.

Witnesses:

L. K. HARRIS,  
J. W. NEWMAN.