

J. GROVE.
Car-Brakes.

No. 148,820.

Patented March 24, 1874.

Fig 1.

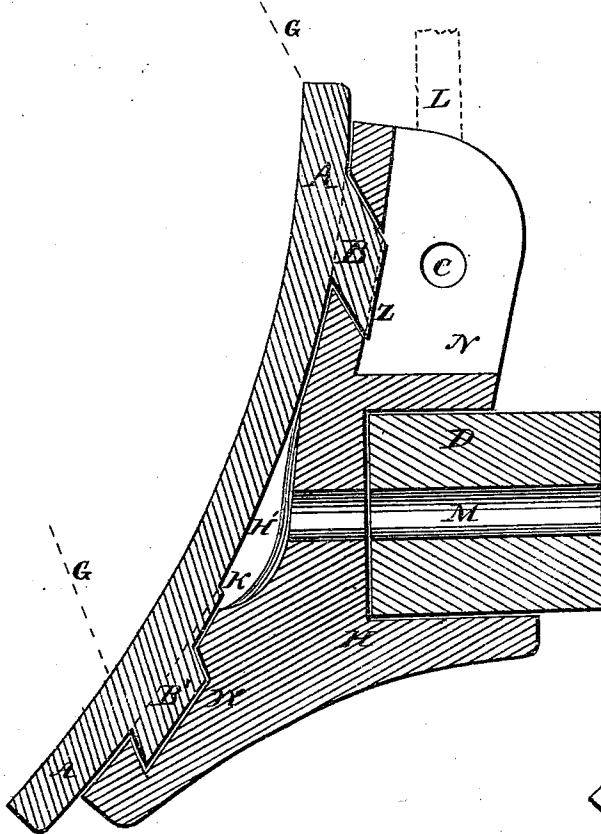
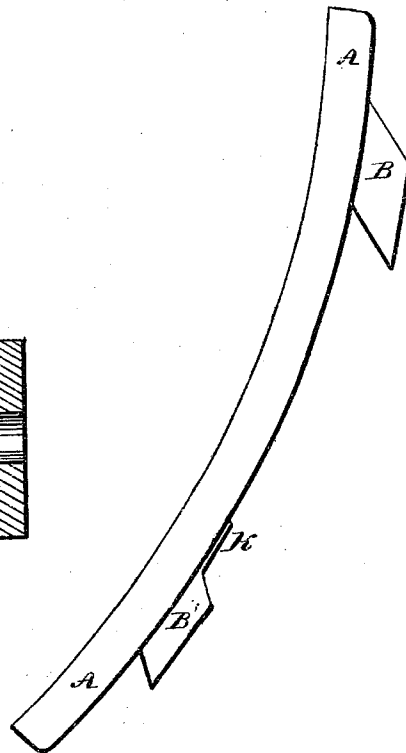


Fig 2.



Witnesses
Theophilus Weaver.
Peter Stucker.

Inventor.
John Grove.

UNITED STATES PATENT OFFICE.

JOHN GROVE, OF HARRISBURG, PENNSYLVANIA.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **148,820**, dated March 24, 1874; application filed December 23, 1873.

To all whom it may concern:

Be it known that I, JOHN GROVE, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Brake-Shoes for Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is a vertical sectional view of the holder and the liner in proper position thereon. Fig. 2 represents an edge view of the liner.

The object of my invention is to make the attachment of the liner to the holder dependent simply on insertion, and to hold it securely in place after insertion, by the peculiarities of construction in the interlocking or contiguous parts without the use of bolts and nuts, or latches and lock-bars, or any equivalent means whatsoever, and to reduce the act of detachment to a simple, obliquely forwardly directed vertical lift of the liner from its seat in the holder, as hereinafter set forth.

In the following description, A A represent the tire of the liner, and B B' the tenons thereon. N H represent the holder. Z W represent the mortises or seats made in the holder conformably to the outline of the respective irreversible liner-tenons. D represents the brake-bar. L represents the link or clevis, which, in the eyes C in the sides N of the box-form top of the holder, connect it to the truck-log. (Not shown.) H represents the under step of the holder, or the "instep," if the term "shoe" is still allowable, which is so made to present the liner A A measurably beneath the wheel, insomuch that its top may be below the level of the wheel center, thus attaining not only proper brake action, but also receiving the full benefit of gravity to insert the liner, in the manner hereinafter set forth.

The efficiency of my liner and holder union without extraneous connecting devices is contingent upon careful construction of the tenons and mortises, in the following peculiar manner: The tenon B' is the shorter of the two, measured from the back of the liner, and tenon B is the shorter of the two, measured vertically. They are rhomboidal blocks formed on the vertical middle of the liner-back, occu-

pying about one-fourth of its breadth, and their upper and under faces are obliquely inclined to the liner-back, so as to make acute angles beneath the tenons and obtuse angles above the tenons, with the imaginary tangents to the curve of the liner-back at the points of tangency, and the oblique sides of the tenons are parallel as paired, and indicated by the dotted lines C c C c. The tenon B' is provided with a shallow step or ledge, K, same gage as the tenon, which is employed as a guide in a groove made for it in the holder, a retreat, H', in the holder, about the brake-bar bolt-head, being made to lead to said groove by beads on the sides of the seat for the bolt-head. This beaded way and groove in the holder are designed to readily direct the tenon B' to its mortise in the holder in the act of insertion. The mortises Z W in the holder are made to conform to the cross-section of the tenons B and B', respectively, and mortise Z cuts through the holder-wall into the top boxing N. It is so made that the tenon may be approached from the rear to drive it from its position, should it from any cause become wedged in too tightly to be removed by a simple hand-lift, which may rarely occur. The tenon B' is made shorter laterally than tenon B, in order that in the act of disengagement the liner-top may be swung away from the holder, like the leaf of a hinge, the lower ends of the liner and holder acting as the hinge-pintle about the tenon B', which, if made long, would hinder its extraction from the mortise W, which, as stated, is made shallow on its upper side by the groove, thus serving not only as a guide or way for the insertion of the tenon, but also as a release of the bite of the tenon in the act of detachment. This is deemed to be the common way of detachment: Simply swing the top of liner to free tenon B of its hold and lift the liner; but it is evident that if both ends of the liner be equally and simultaneously shifted in the direction as indicated by the lines C c C c, the detachment may be freely made without canting the liner.

It is plainly evident that direct or forward tension by friction on the liner tends to make it hug the holder securely. Secure retention of the liner on the holder during reverse brake action is attained by the following elements of

construction and arrangements of parts: First, the liner is located wholly below the level of the wheel center. Second, the instep of the holder about H is large, and the pitch of the upper side of tenon B' and mortise W in relation thereto is retentive when the liner is engaged. Third, the direction of the resistance from friction being from the lower end, the liner must be lifted from the holder, forward below, which is impossible without a fracture of the tenons.

During the disengagement of the brake the liner is kept seated on the holder by gravitation, and any vertical concussion of the parts is reacted by the resolution of said force by the oblique direction of the interlocking parts, concussion in all other directions being met by the swing of the brake-hangers, which may be any ordinary hangers now in use.

The attachment of the liner to the holder is effected by vertically presenting the tenon B' to the grooved and beaded way K H', and by resting tenon B against the upper end of the holder, and letting the liner fall to place.

The advantages of my improved brake-shoe are simplicity and cheapness of construction,

durability and convenience of use, readiness and completeness for attachment and detachment anywhere on the railroad without tools or extra materials, and safety to employes, as no work need detain them under trucks where lives and limbs are risked.

Having thus fully described my invention, what I regard as new and useful, and what I desire to secure by Letters Patent of the United States, is—

The brake-shoe composed of the liner A A, provided with the rhomboidal tenons B B', and the holder N H, provided with the rhomboidal mortises W Z, instep H, and beaded way H' K, all constructed and combined to operate conjointly in the manner as and for the purpose substantially as set forth.

In testimony that I claim the foregoing as my invention I have hereunto set my hand this 19th day of December, 1873.

JOHN GROVE.

Witnesses:

THEOPHILUS WEAVER,
PETER STUCKER.