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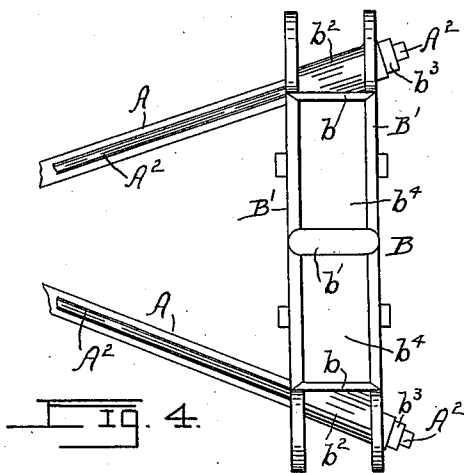
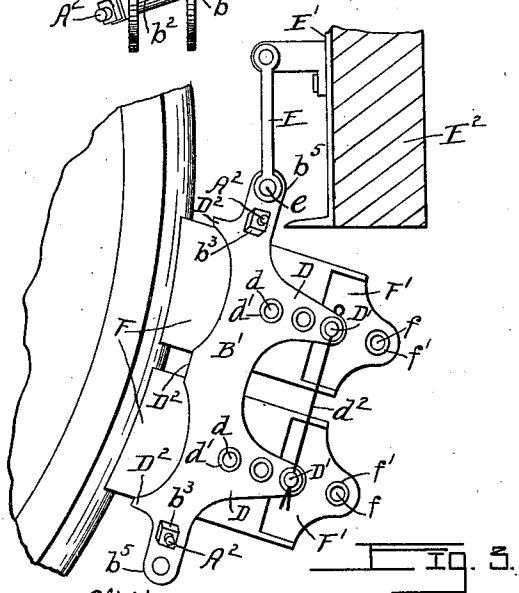
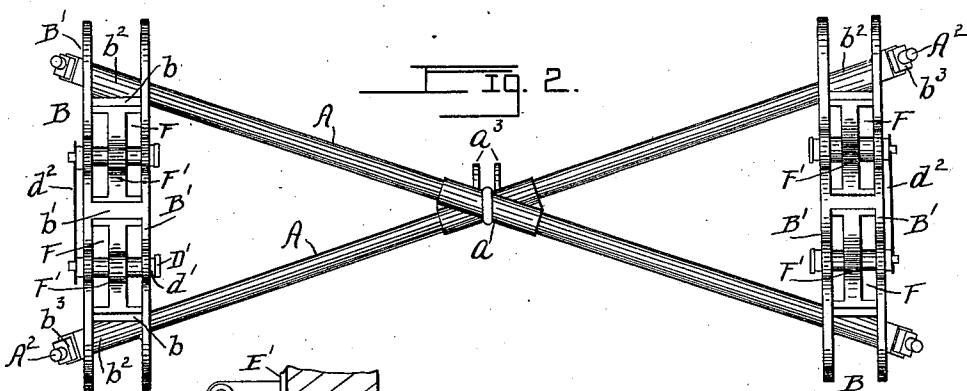
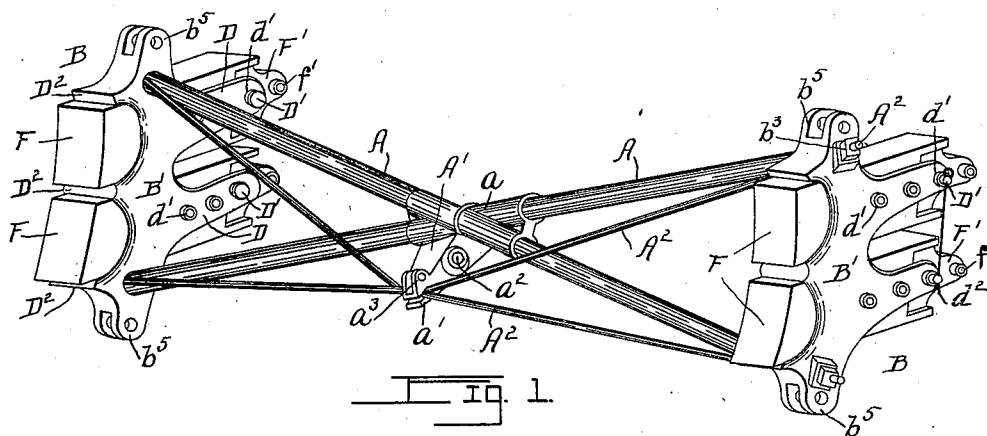
Patented Jan. 17, 1899.

C. V. ROTE.  
CAR BRAKE.

(Application filed Jan. 12, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

W. M. Hall.

C. G. Bassler.

Inventor.

Charles V. Rote.

By Attorney  
Wm. R. Gerhardt

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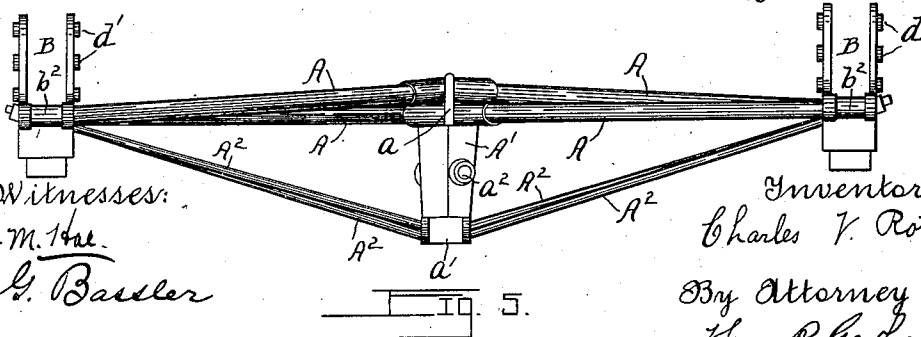
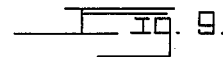
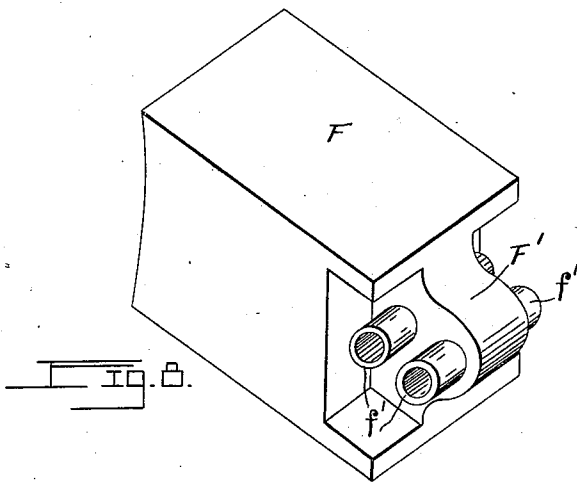
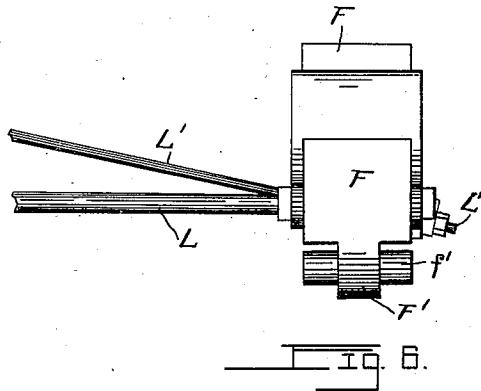
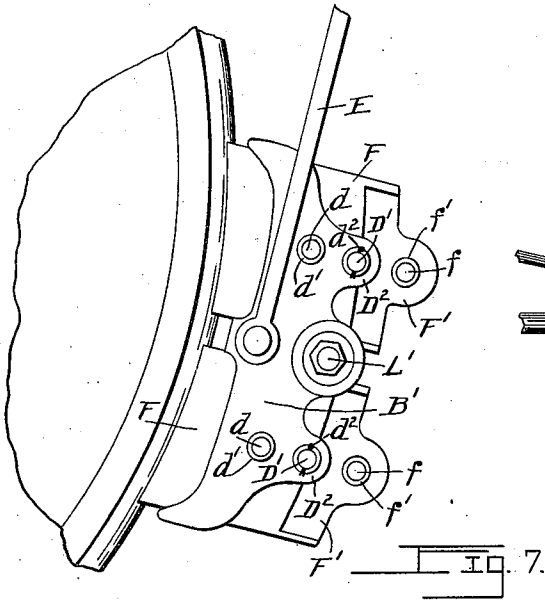
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(Application filed Jan. 12, 1898.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:  
*N. M. Hae.*  
*C. G. Bassler*

Inventor:  
*Charles V. Rote.*  
 By Attorney  
*Wm. R. Gerhardt*

# UNITED STATES PATENT OFFICE.

CHARLES V. ROTE, OF LANCASTER, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO BERNARD J. McGRANN, OF SAME PLACE.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 617,773, dated January 17, 1899.

Application filed January 12, 1898. Serial No. 866,409. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES V. ROTE, a citizen of the United States, residing at Lancaster, county of Lancaster, State of Pennsylvania, have invented certain Improvements in Car-Brakes, of which the following is a specification.

This invention relates to improvements in that class of brake-shoes or rubbers, brake-blocks, and brake-beams employed on railway-cars; and the objects of my improvements are, first, to lengthen the life of the shoe, and thus save the labor and inconvenience of frequently replacing the same in the brake-block; second, to reduce the amount of metal wasted with the shoe by increasing the relative amount therein that can be applied to the wheel as a rubber; third, to so construct the shoe as to prevent the breaking of the same; fourth, to facilitate the attachment of the shoe to the brake-block; fifth, to construct a brake-block the efficiency of which will not be destroyed by the wearing away of parts thereof from accidental engagement with the car-wheel; sixth, to provide a brake-beam having two points of connection with the brake-block, and, seventh, to strengthen the construction of the brake-beam.

In the present construction of those parts the brake-block is secured at its center to the brake-beam, and the brake-shoe is also secured centrally to the brake-block, the ends of the brake-block having ribs on the ends thereof that bear against the back of the ends of the brake-shoe. By this construction the shoe is not pressed evenly against the wheel, and consequently one end of the shoe wears away much sooner than the other. In putting in a new shoe the same must be inserted between the brake-block and the wheel, and the work of securing the two together must be done in the limited space between the brake-block and the wheel, which is inconvenient and consumes much time. By reason of the central pivotal connection between the brake-beam and the brake-block when the brakes are off of the wheels the ends of the shoe are held at unequal distances from

the wheel, so that as the brakes are applied 50 the end of the shoe nearest the wheel is first engaged therewith and then the other portion of the shoe is brought up against the wheel with a sharp flap, which when the shoe is thin or of imperfect material or when the weather is very cold is apt to break the shoe. 55 There is frequent loss of these shoes also, because the brake-block by reason of its construction bears unequally thereon. The shoe is relatively thin, and it must be cast aside 60 when about two-thirds of the same are worn away to avoid the risk of wearing them through and grinding off more or less of the projections on the inner face of the brake-block, for as soon as that is done the brake- 65 block must also be replaced, as when one of those projections is partly ground off the brake-block will no longer bear properly against the back of a shoe, so that for this reason about one-third of each shoe is lost or 70 wasted. This breaking of the shoes is a source of great loss, delay, and expense. In constructions where the brake-block and the shoe are formed together the shoe or rubber portion is relatively thin, and when worn through 75 the brake-block portion is worthless for further use. My improvements overcome the objections to the ordinary brake-block and brake-shoe.

My invention consists, first, in the construction 80 and in the manner of applying the brake-shoe; second, in the construction of the brake-block; third, in the construction of the brake-beam, and, finally, my invention consists in the combination of the various parts, as hereinafter fully described, and then pointed out 85 in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a perspective view of the brake-shoes, the brake- 90 blocks, and the brake-beam properly assembled and seen from the side on which said shoes are applied to the wheels. Fig. 2 is a rear elevation; Fig. 3, a side elevation; Fig. 4, an inner edge view of one of the brake- 95 blocks, showing the shoes removed; and Fig. 5 is a top plan view of one of the brake-beams and of the brake-blocks attached thereto.

Fig. 6 is a top view of one end of a "National" brake-beam with a modified form of my improved brake-block attached thereto, and Fig. 7 a side elevation of said brake-block.

5 Fig. 8 is a perspective outer end view of one of my brake-shoes, shown detached. Fig. 9 is a side elevation of an ordinary brake-block, shown attached to one of my improved brake-beams.

10 Similar letters indicate like parts throughout the several views.

My improved brake-beam and the brake-blocks employed therewith are illustrated in Figs. 1, 2, 3, 4, and 5. The brake-beam comprises two diagonally-arranged tubular bars A A, which intersect each other at their centers, where they engage the head  $a$  of a horizontally-disposed strut A'. The ends of each bar A are connected by a tie-rod A<sup>2</sup>, the two tie-rods intersecting each other at and engaging the end  $a'$  of strut A'. Each of these beams is constructed substantially as the ordinary trussed tubular beams used for the same purpose; but my beam comprises two trussed bars arranged as described. In strut A' is a perforation  $a^2$ , adapted to be engaged by the ordinary brake-lever, (not shown,) and on the inner end of said strut are two perforated lips  $a^3$ , whereby a support for said end of the strut is secured thereto, as is usual.

30 B B indicate the brake-blocks employed with my improved brake-beam. These blocks are formed of two upright side plates or cheeks B', set far enough apart for the purpose to be described, and these cheeks B' are united at the top and bottom by horizontal plates  $b$  and at the center by horizontal plates  $b'$ . They are further united at the top and bottom by diagonally-disposed sockets  $b^2$ , located outside of end plates  $b$  and engaged by rods A and through which pass tie-rods A<sup>2</sup>, said brake-beams being held in engagement with the brake-blocks by nuts  $b^3$  on the outer ends of the tie-rods and bearing against bosses on the outer faces of said brake-block, as is usual.

45 In each brake-block are two openings  $b^4$ , located between the two end plates  $b$  and the center plate  $b'$ , in which openings are secured the brake-shoes. On the outer edge of each cheek B' are two outwardly-extending tongues D, the tongues on the opposite cheeks being located opposite the centers of openings  $b^4$ , thus forming a continuation of the sides of said openings. In tongues D are oppositely-located holes or perforations  $d$ , surrounded on the outside of the cheeks by rims or annular flanges  $d'$ , and through these holes the shoes are secured in the blocks by bolts D', held in place by a split key or keys  $d^2$ . On the ends and the center of the inner edges of cheeks B' are inwardly-extending tongues D<sup>2</sup>. The tongues on both the outer and inner edges of said cheeks are separated by curved recesses, said recesses serving to reduce the weight of the brake-blocks, and at the same

time the tongues afford a lengthened bearing for the shoes.

The brake-blocks are supported by the usual hangers E, attached to said blocks at  $e$  and to the channel-iron E' of the truck-bolster E<sup>2</sup>, said hangers engaging between ears  $b^5$ . These ears are formed on both ends of cheeks B', so that hangers E may be attached to either end of the brake-blocks.

The shoe comprises an elongated block F, which is inserted lengthwise from the outer side of the brake-block through openings  $b^4$ , and the inner end of which engages the wheel. The outer end of the shoe is reduced in thickness and in width, as shown at F', to lessen its weight and the amount of metal that must be cast aside when the shoe is worn out. Through the shoe are holes or perforations  $f$ , adapted to be ranged with the holes  $d$  in the cheeks of the brake-block. The ends of the holes in the reduced end F' of the shoe are surrounded by a rim or annular flange  $f'$  to give that end of the shoe a bearing against the sides of openings  $b^4$ .

The shoes are inserted through openings  $b^4$  from the outer edge of the brake-blocks, and for this purpose the hangers E are made somewhat longer than those used with the ordinary brake-block, so that the upper openings in said blocks may be located below channel-iron E'. As they are worn away the shoes are moved inward and then secured in their new positions by withdrawing pins D' and then again inserting them through registering holes  $f$  and  $d$ , respectively, in the shoe and in the cheeks of the brake-block. The shoes can be made of such length as may be desirable, and in any event the amount of metal at the reduced end thereof that must be cast aside after the shoe is worn out will be relatively small. The shape and disposition of the shoe also prevent the same from being broken, and it will by the construction shown and described always be applied to the wheel at the same angle. Should the shoes accidentally be worn down too far, so that the ends of inwardly-extending tongues D<sup>2</sup> of the brake-blocks are ground off more or less, the efficiency of said blocks will not be destroyed. As will be observed, the brake-blocks are rigidly secured at both ends to the brake-beam, which is so adjusted on the brake-lever that when properly set and the brakes are applied both the brake-shoes are simultaneously engaged with the wheel. This double connection between the brake-beam and the brake-shoe applies uniform pressure throughout the entire length of said shoe against the wheel.

Figs. 6 and 7 illustrate a modification in the construction of the brake-block which is adapted for use with a National brake-beam. In this construction the brake-beam comprises a single bar L and a single tie-rod L', which are attached to the centers of the brake-

blocks in the same manner as the brake-beam is attached to the ordinary brake-block. Otherwise the brake-block and the brake-shoes are constructed as first described, excepting that there is somewhat more distance between the shoe-openings of the brake-block to allow for the passage between said shoes of the end of the brake-beam.

In Fig. 9 is shown in side elevation the application of my new brake-beam to a brake-block of the ordinary construction. The brake-block M has perforated ears *m* formed on its ends, through which said shoe is secured to the double or forked end of my brake-beam.

I do not limit myself to the particular construction of the brake-shoe, the brake-block, or the brake-beam herein shown and described, as it is obvious that many alterations may be made therein without departing from the principle and scope of my invention.

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

1. A brake-block having an opening through the same from front to back and provided with series of perforations in both sides between said front and back, in combination with a brake-shoe having a perforation adapted to range with any of the opposite perforations of said series, and a bolt constructed to engage the perforation in the brake-shoe and perforations ranging therewith in the sides of the brake-block, for the purpose specified.

2. A brake-block having an opening through the same from front to back and constructed of separated plates or cheeks, and tongues on the outer edges of the cheeks and forming an extension of the sides of the opening, in combination with a brake-shoe in engagement with said opening, and a bolt adapted to engage perforations in said tongues and a perforation in the brake-shoe, for the purpose specified.

3. A brake-block having an opening through the same from front to back and provided with series of perforations in both sides between said front and back, in combination with a brake-shoe having a reduced outer end with a perforation through the same, rims around the ends of the perforations in the brake-shoe, and a bolt adapted to engage the perforations in said brake-shoe and perforations ranging therewith in the sides of the brake-block, for the purpose specified.

4. A brake-block having an opening through the same from front to back and formed by separated plates or cheeks, and tongues on the outer edges of the cheeks and forming an extension of the sides of the opening, the sides of the opening having series of holes therein arranged lengthwise of said opening, in combination with a brake-shoe in endwise engagement with the opening and having therein a hole adapted to be ranged with any of the holes of said series by endwise movement of

the brake-shoe, and a pin adapted to engage the holes in the sides of the opening and the hole in the brake-shoe, for the purpose specified.

5. A brake-block having an opening through the same from front to back and formed by separate plates or cheeks, and tongues on the outer edges of the cheeks and forming an extension of the sides of the opening, the sides of the opening having series of holes therein arranged lengthwise of said opening, in combination with a brake-shoe in endwise engagement with the opening and having a reduced outer end, said outer end having a hole therein adapted to be ranged with any of the holes of said series by an endwise movement of the brake-shoe, and a pin adapted to engage the holes in the sides of the opening and the hole through the reduced end of the brake-shoe, for the purpose specified.

6. A brake-block having two openings through the same from front to back and formed by separated plates or cheeks, tongues on the outer edges of the cheeks and forming extensions of the sides of the openings, the sides of the openings having series of holes therein arranged lengthwise of said openings, and tongues at the ends and center of the inner edges of said cheeks, in combination with brake-shoes in endwise engagement with the openings and having reduced outer ends, the brake-shoes having series of holes through the same and arranged lengthwise thereof, and pins adapted to engage the holes through the sides of the openings and those through the brake-shoes, for the purpose specified.

7. A brake-beam comprising diagonally-disposed bars intersecting at the center and engaging at said point of intersection with the end of a strut, and tie-rods connecting the ends of each of said bars, said tie-rods intersecting at, and being engaged with, the other end of the strut.

8. A brake-beam comprising diagonally-disposed bars intersecting at the center and engaging at said point of intersection with the end of a strut, and tie-rods connecting the ends of each of said bars, said tie-rods intersecting at, and being engaged with, the other end of the strut, in combination with brake-blocks secured to the forked extremities of the brake-beam, each of said brake-blocks having an opening through the same extending from back to front, brake-shoes engaging said openings and adapted to be adjusted therein in the direction of the length of the openings, and means for securing the brake-shoes in an adjusted position, for the purpose specified.

9. A brake-beam comprising diagonally-disposed bars intersecting at the center and engaging at said point of intersection with the end of a strut, and tie-rods connecting the ends of each of said bars, said tie-rods intersecting at, and being engaged with, the other end of the strut, in combination with brake-

blocks, each brake-block having both ends secured to one of the forked extremities of the brake-beam, the brake-blocks being provided with openings extending through the same from back to front, brake-shoes in end-wise engagement with said openings and adapted to be adjusted therein in the direction of the length of the openings, and means

for securing the brake-shoes in adjusted positions in the openings, substantially as and for the purpose specified.

CHARLES V. ROTE.

Witnesses:  
C. G. BASSLER,  
WM. R. GERHART.