

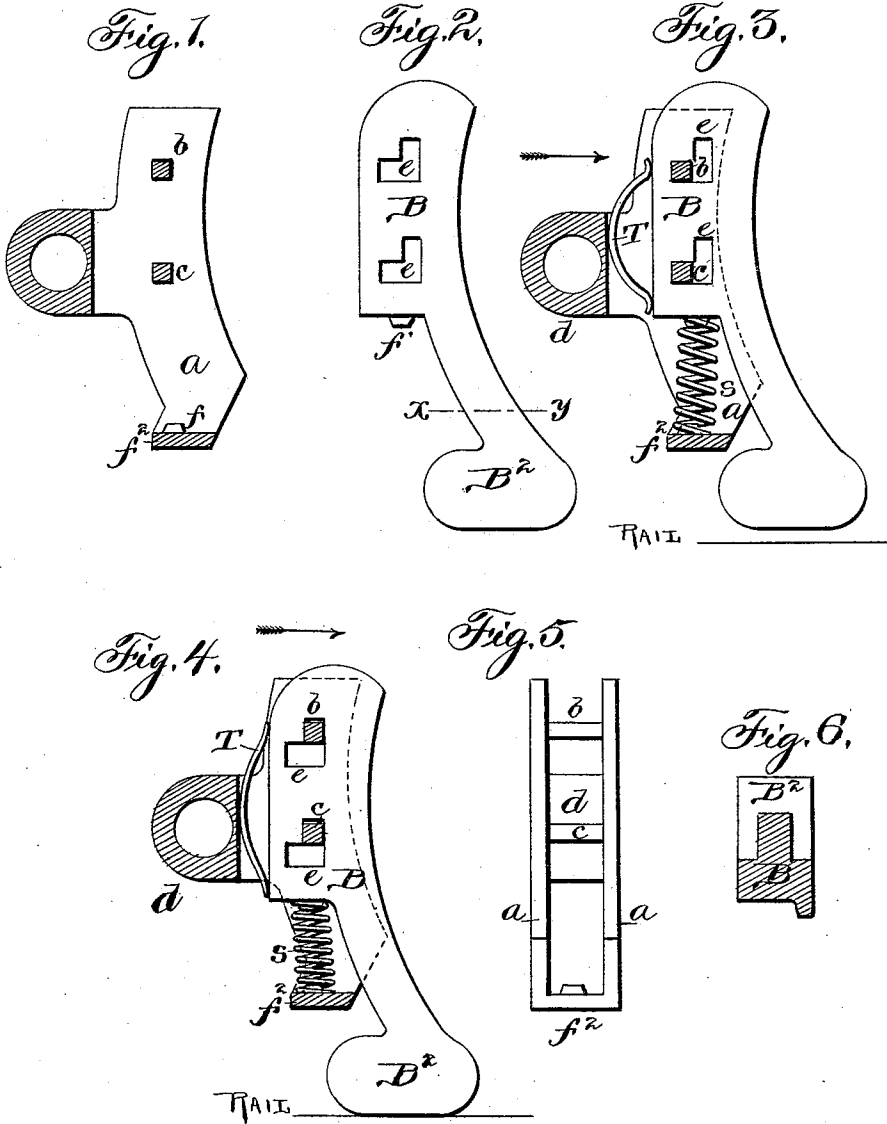
(No Model.)

2 Sheets—Sheet 1.

G. SANDS.  
RAIL BRAKE.

No. 526,001.

Patented Sept. 11, 1894.



Witnesses  
*Chas. W. LaPorte;*  
*W. B. May*

Inventor  
*George Sands*  
 by  
*H. H. Bliss* Attorney

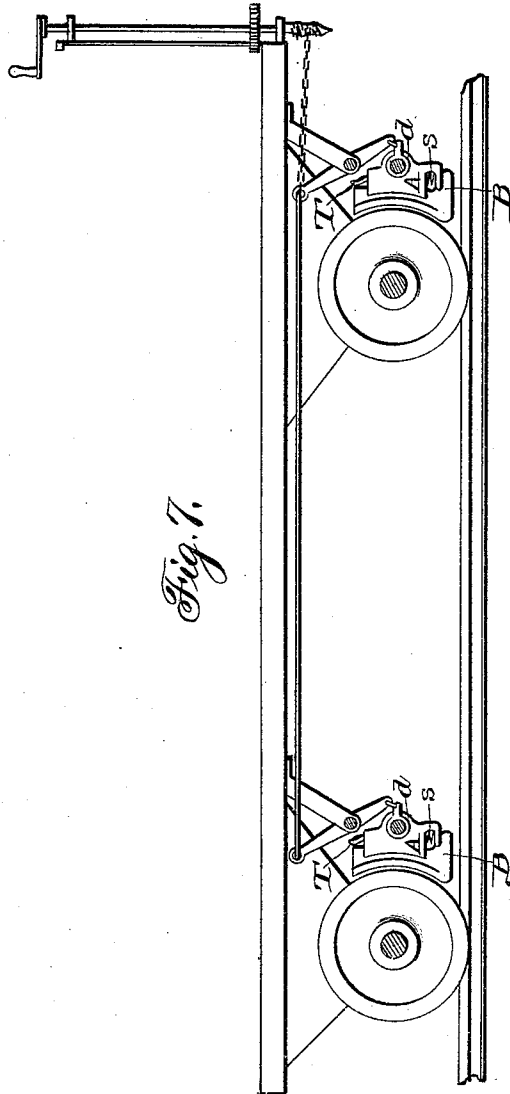
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*Fig. 7.*

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# UNITED STATES PATENT OFFICE.

GEORGE SANDS, OF BEAVER FALLS, PENNSYLVANIA.

## RAIL-BRAKE.

SPECIFICATION forming part of Letters Patent No. 526,001, dated September 11, 1894.

Application filed February 27, 1894. Serial No. 501,721. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE SANDS, a citizen of the United States, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in car brakes and especially to an improved form of the car-brake for which Letters Patent of the United States No. 472,955 were granted to George Sands April 12, 1892, and is directed to the organization of that form of brake which may be at once a brake for ordinary service or an emergency brake: the operation being the same in either case, and the improvements I have made therein consist, first, in the construction of the clog of the ordinary brake with parallel sides, between which the web of a rubber or shoe may have vertical motion, and the joining together of these sides by horizontal guides for the support and direction of said shoe, and of springs for the elastic support of said shoe in the said clog; second, in the construction of a rubber or shoe to fit within said clog having rectangular openings in its web engaged upon the cross-pieces of the clog and supported within and upon said clog by a spring.

In the accompanying drawings, Figure 1 is a vertical cross section of my improved clog; Fig. 2, a like view of the improved shoe or rubber; Fig. 3, a view of the shoe and clog in place, the shoe up as for ordinary braking; Fig. 4, the same with the shoe or rubber down upon the rail as an emergency brake. Fig. 5 is a front view of the clog, and Fig. 6 a horizontal cross section of the shoe. Fig. 7 is a vertical longitudinal section of the bed of a car, showing the attachment of the device to the operating mechanism.

I cast of gray iron or of malleable iron a clog A, having a projection *d* for attachment to any ordinary brake bar, and having the parallel sides *a, a*, joined together by the said

brake bar connection, by two square guides *b* and *c* and by the bottom plate *f*<sup>2</sup> having its upper side provided with the projection *f*. The clog so made may be attached to the ordinary brake bar and operated in the ordinary way, by means of a chain passing around a crank shaft, controlled by the brakeman, motorman or driver.

In a similar manner I cast a shoe or rubber B having a web which moves easily between the parallel sides *a, a*, of the clog A, said web being perforated, as shown at *e, e*, in Figs. 2, 3, and 4, for the admission of the square guides *c, b*, and a projection *f'* for the reception of a helical spring and having its heel enlarged and rounded as at B<sup>2</sup> in the drawings.

A shoe B is placed within the clog A and a leaf spring T, bearing against its rear and is supported, by the projection *d* between the parallel sides of the clog A. A stiff spiral spring S surrounds the projections *f'* and *f* within the clog and sustains the weight of said shoe.

When it is desired to apply the brake in the ordinary manner the crank or wheel is turned and the brake bar drawn in the direction of the arrow, Figs. 3 and 4. The spring S sustains the shoe B in its normal position and the spring T gives an elastic pressure of the shoe against the tread of the wheel as shown in Fig. 3.

When it is used as an emergency brake, the crank or wheel is turned to a greater extent and the guides *b, c*, are forced beyond the shoulder of the openings *e, e*, in the shoe A, the shoe being brought down against the resistance of the spring S until the heel B<sup>2</sup> bears upon the rail, and the car is stopped. The release of the brake, by the operator, loosens the shoe B from the wheel and the spring S returns it to its normal position.

It will be seen that the invention may be applied to any ordinary form of brake now in use and that the method of applying the brake need not be modified, as the use, either, as an ordinary, or as an emergency brake depends solely upon the force of the application.

It will be seen that the part A, referred to as a clog, performs the function of a carrier for the shoe, it being provided with means for holding the shoe positively against verti-

cal movement, or movement around the center of the wheel, but which can permit this last described movement when the pressure transmitted through the spring T is sufficiently great. This holding of the shoe positively is accomplished by interposing between it and its carrier or clog a guide or support as at *b c* and providing therefor a guide way the initial part of which is approximately radial, as to the wheel, or approximately horizontal, and the remainder of which is vertical or approximately tangential as to the center of the wheel; this guide being shown as of the sort above described, namely as a slot having two parts which are at an angle to each other approximating a right angle. It will be also seen that the support, (considered as a whole) interposed between the shoe and its carrier or clog comprises two parts, one part, as at *b c*, being rigid or fixed as to the clog or carrier, and the other part, as the spring *s*, being yielding so as to permit a downward movement of the shoe after it has been moved away from the fixed support at *b c*.

I am aware of the fact that a brake has been heretofore constructed, or proposed, having a shoe and a carrier, the two connected together by a slot and pin, and the carrier being pivoted to the car frame; but in the earlier device referred to it was not possible to have the two well defined paths of motion of the shoe which are possibly incident to the shoe in the present construction at every braking action; inasmuch as in the earlier construction the shoe commenced to move downward around the wheel immediately on touching the wheel unless the guide pin was set tightly in the slot, and in that case the device could be used only for the ordinary peripheral frictional action.

With the present construction, as above described I can provide for first an ordinary friction braking, and then for a positive blocking of the wheel, without any alteration in the adjustment of the parts.

In my own earlier patent, above referred to, No. 472,955, I provided a swinging carrier in conjunction with a shoe, a pin-and-slot guide, and a returning spring. But in that case the shoe began to move downwardly the instant it touched the wheel. In the construction herein I employ two springs one acting vertically or tangentially, and the other acting horizontally or radially, together with a guide or holder which causes the above described movements of the shoe as to its carrier.

It will be understood that there can be modifications with respect to the features of construction and arrangement shown without departing from the essential matters of the invention.

I claim as my invention—

1. A car brake comprising a clog having its sides parallel and joined by guides, a shoe having slots riding upon said guides, a concave face to bear against the wheel, a bulbous

heel to bear upon the rail, a spring to support said shoe within said clog, and a spring between the back of said shoe and the front of the brake bar, as shown and described.

2. In a car brake mechanism, the combination of a brake shoe, a clog or carrier for the shoe, means for moving the shoe relatively to the carrier and toward the car wheel, and means for supporting the shoe against vertical movement while bearing against the car wheel, said shoe being adapted to be released from the support to permit it to move downward around the wheel, substantially as set forth.

3. In a car brake mechanism, the combination with the brake shoe and the clog or carrier for the shoe, of a holder for the shoe fixed or rigidly secured to the carrier to prevent vertical movement of the shoe relatively to the carrier, and a second yielding holder interposed between the shoe and the carrier, the shoe being movable from the fixed holder to the yielding holder, substantially as set forth.

4. The combination with the clog or carrier, of the shoe therein adapted to move relatively to the carrier both toward and around the center of the wheel, of means for supporting the shoe vertically, a spring bearing radially against the shoe, and means for increasing the pressure of said spring, substantially as set forth.

5. In a car brake mechanism, the combination of the clog or carrier, the shoe mounted thereon and movable both horizontally and vertically in relation thereto, and two springs one bearing vertically against the shoe and one bearing horizontally against it, substantially as set forth.

6. The combination of the carrier or clog moving toward and from the wheel, the shoe supported therein and adapted to move downward around the wheel, the guide for the shoe, and the way for said guide having the initial part thereof formed on a substantially straight, horizontal line, as set forth.

7. The combination of the carrier or clog, the shoe mounted thereon, the guide or holder for the shoe and the way for said guide or holder, having its initial part approximately horizontal and the remainder more nearly vertical than said initial part, substantially as set forth.

8. The combination of the shoe adapted to move both toward and around the center of the wheel, the carrier for the shoe, a guide or holder interposed between the carrier and the shoe, and a way for said guide having two parts, substantially at right angles to each other, substantially as set forth.

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

GEORGE SANDS.

Witnesses:

H. C. ISEMAN,  
G. L. EBERHART.