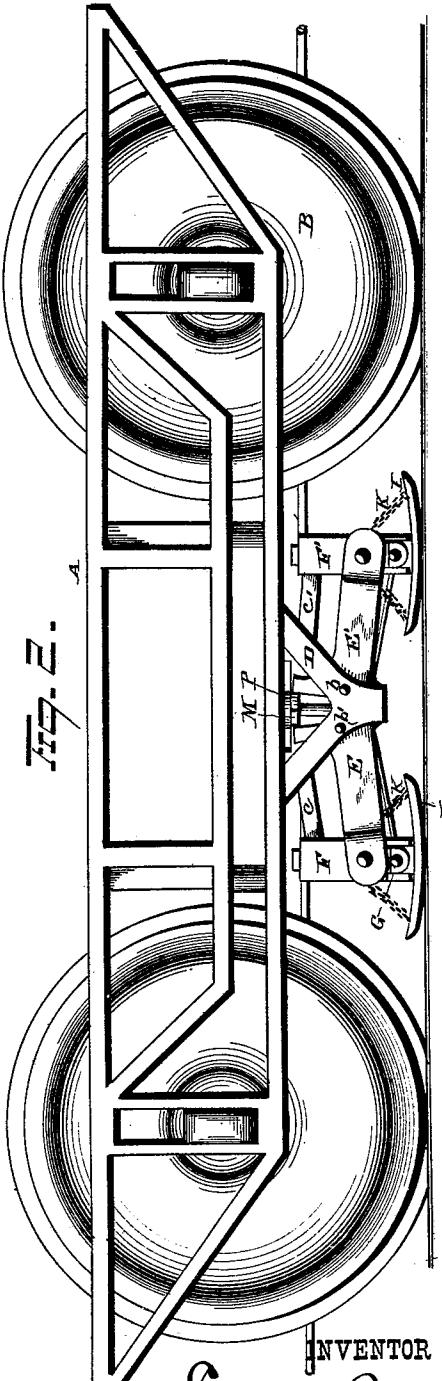
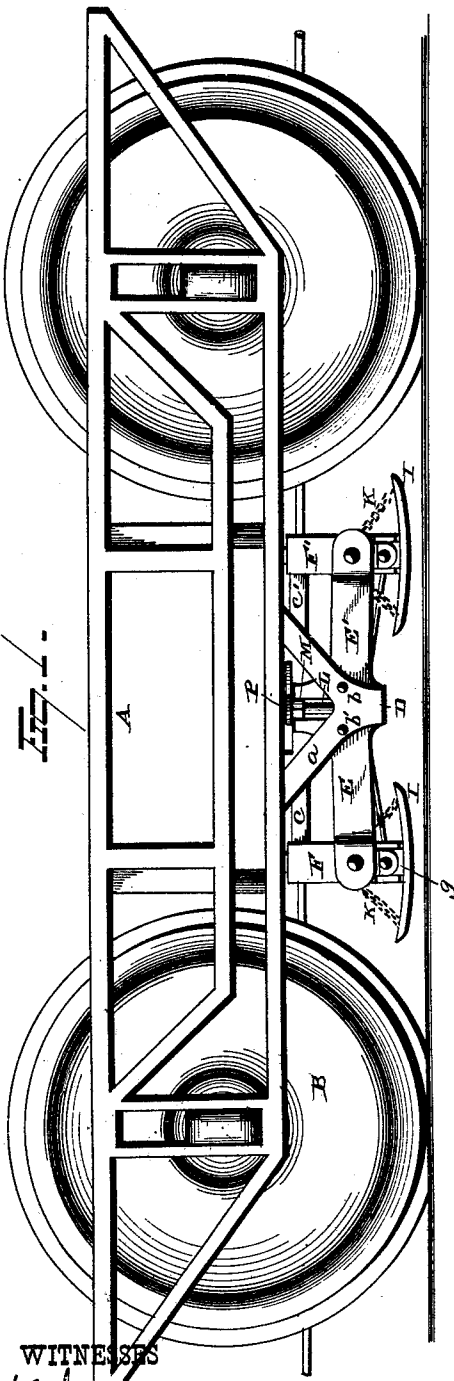


G. D. PAUL.
Car Brake.

No. 229,747.

Patented July 6, 1880.



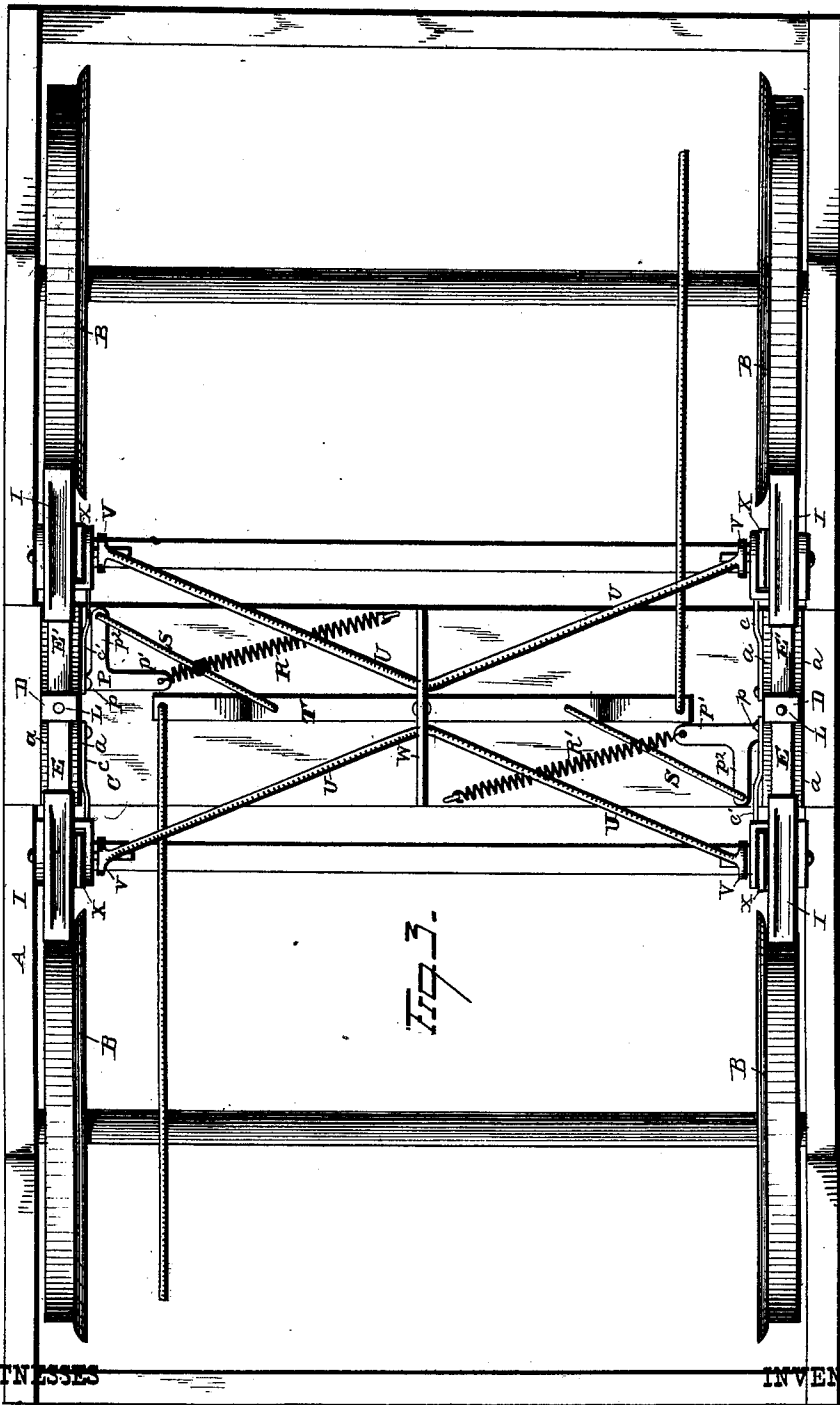
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FIG. 4

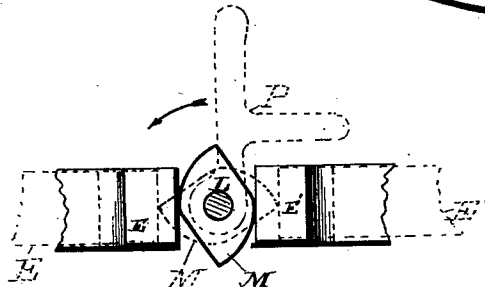
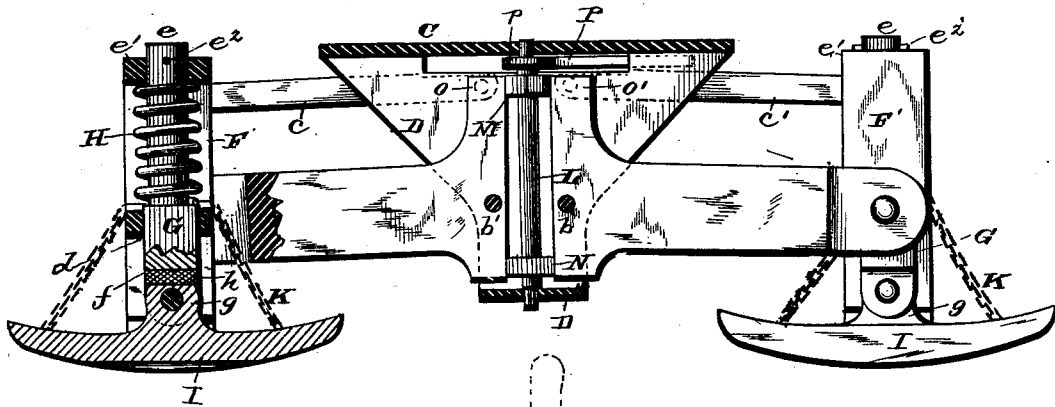
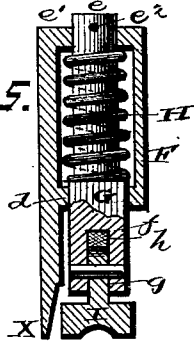


FIG. 5



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UNITED STATES PATENT OFFICE.

GEORGE D. PAUL, OF NEW YORK, ASSIGNOR TO HIMSELF, HERMAN C. MERSEREAU, AND WILLIAM LISLE, JR., OF BROOKLYN, N. Y.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 229,747, dated July 6, 1880.

Application filed December 13, 1879.

To all whom it may concern:

Be it known that I, GEORGE D. PAUL, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Railway-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 of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in railway-car brakes.

In car-brakes of ordinary construction the brake-shoes are applied directly to the treads of the wheels, which plan is objectionable for several reasons, among which may be mentioned the following: Severe strain brought against the periphery of the car-wheels, and at practically right angles to the axle, operates, in many instances, to weaken and break the axle. Again, the car-wheels are often flattened by the application of brake-shoes to their peripheries, and this objection causes annoyance and even danger to the traveling public. Further, in the ordinary brakes no provision is made for supporting the truck should the wheel or axle break, and many accidents and great loss of life and property occur by reason of the truck dropping upon the track, owing to a broken wheel or axle, thus wrecking an entire train.

The object of my invention is to obviate the difficulties and defects incident to the use of car-brakes of ordinary construction, as above referred to, and to provide a railway-car brake of such construction that the brake-shoes may be brought into direct frictional contact with the treads of the rails of the track and serve to check the motion of the train, and also serve to support and automatically stop the movement of the car by its weight should accident happen by a breakage of a wheel or axle of the truck; and to this end my invention consists in a car-brake, embodying certain novel features of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of the improved truck, showing the position of parts when the brakes are off. Fig. 2 is a similar view, showing the brake when applied. Fig. 3 is a plan view of the under side of the truck, and Fig. 4 is an enlarged detached view of a pair of the brake arms, shoes, and actuating-eccentrics. Fig. 5 is a vertical transverse section of one of the brake-shoes and supporting-box.

A represents a truck-frame, and B the car-wheels. C is the truck-bolster, provided at opposite ends with brackets D. Between the plates or frames *a a* of each bracket are pivoted, at *b b'*, the inner ends of the brake-levers E E', the outer ends of the latter having the boxes F F' pivoted thereto, said boxes being retained in a vertical position by means of the links *c c'*, which latter are pivoted at their outer ends to the upper ends of said boxes and pivoted at their inner ends to the brackets D. Within each of the boxes F F' is placed a vertically-movable block, G, which is of angular form in transverse section, and fits within an opening in the partition *d* of the box, thus preventing the block from turning within the box. The upper end of the block is provided with a shank, *e*, which extends upward through the top *e'* of the box, and is provided with a pin or bolt, *e''*, to prevent it from falling out. A spiral or other spring, H, encircles the shank *e*, the lower end of the spring resting upon a shoulder or seat formed on the upper end of the block G, while the upper end of the spring rests against the under surface of the box, whereby the block is allowed to yield against the force exerted by the spring.

The lower end of the block G is formed with a slot, *f*, within which is pivoted the flat-sided lug *g*, formed on the rear or upper side of the brake-shoe I, while between the lug and block is inserted a rubber-buffer, *h*. The brake-shoe I is curved upwardly at its opposite ends, to prevent it from catching on the ends of the rails, and is preferably made concave or grooved transversely, that it may fit snugly the tread of the rail.

K is a guard-chain, which extends over the lower portion of the box, and has its opposite ends attached to the brake-shoes, to prevent the

latter, or parts thereof, from falling beneath the wheels should the shoe become displaced or broken while the cars are in motion. Between the inner and adjacent ends of the brake-levers is journaled a shaft, L, having eccentrics or cams M N on its upper and lower end. These cams or eccentrics are so constructed and arranged that the upper eccentric, M, will impart a positive movement to the brake-levers in depressing the brake-shoes and forcing them in contact with the rails, while a reverse rotation of the shaft causes the lower eccentrics, N, to raise the brake-shoes from contact with the rails. This operation is effected by forming upper and lower projections, O O', on the inner ends of each brake-lever, the eccentrics operating against said projections and on opposite sides of the longitudinal center of the brake-levers.

To the end of the eccentric-shaft L is secured the arm p of the lever P, the latter being pivoted to the truck-bolster at Q. Spiral springs R R' are secured at their inner ends to the central portion of the bolster and at their outer ends to the arms p' of the levers P, while to the arms p'' are secured the ends of links S, the opposite ends of which are pivoted to the opposite end of the swinging bar or rod T. Brake-rods are attached to the ends of rod T, said rods having chains secured to their ends, which are attached to the drums or shafts of the ordinary brake-wheel shafts of the car.

U U are braces having their ends attached to plates V V, pivoted to the outer ends of the brake-levers and their central portions supported in a depending plate, W, or suitable posts or lugs attached to the under side of the bolster.

The inner sides of the boxes extend down below the wearing-faces of the brake-shoes, forming independent flanges X, which prevent any lateral displacement of the shoes and retain the latter on the tread of the track when used to brake the train, and, further, prevent the truck from leaving the rails should the wheel or axle break.

Having fully described the construction and arrangements of the several parts of my improved car-brake, I will briefly describe its operation.

When the brakes are off the brake-shoes are upheld by means of the spiral spring acting on the three-armed lever to hold the eccentric-shaft in such position that the lower eccentric shall serve to force apart the projections on the lower sides of the brake-levers, and thus uphold the brake-levers.

When it is desired to apply the brakes, the brake-chains are tightened in the ordinary manner, thus operating, through the medium of the intervening levers hereinbefore described, to rotate the eccentric-shaft, and depress the outer ends of the levers, and force the brake-shoes against the treads of the rail.

The springs connected with the blocks to which the brake-shoes are pivoted allow the

shoes to yield as the brakes are applied, and thus prevent any sudden shock to the train as the brakes are applied. The upturned or curved ends of the brake-shoes allow the latter to slide along on the rails without danger of engaging with the ends of the rails, and the yielding rocking movement of the brake-shoes enables them to fit the rails closely, notwithstanding slight irregularities of the treads.

The inner flanges, projecting below the brake-shoes, serve to insure safety to the train, as they will retain the shoes on the rails even should the wheel or axle break while the train is in motion, and in the latter event the weight of the car would be transferred to the rails through the brake-shoes, producing sufficient friction to automatically stop the train.

It is evident that many slight changes in the construction and arrangement of the various parts of my improved brake might be resorted to without departing from the spirit of my invention, and hence I would have it understood that I do not limit myself to the exact construction shown and described; but,

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

1. In a railway-car brake, the combination, with swinging levers and mechanism interposed between their inner and adjacent ends for raising and lowering the outer ends of said levers, of vertically yielding and rocking brake-shoes connected with the outer ends of said levers, substantially as set forth.

2. In a railway-car brake, the combination, with a suitable bracket, of brake-levers having their inner and adjacent ends pivoted thereon and an eccentric-shaft located between the adjacent ends of said brake-levers, substantially as set forth.

3. In a railway-car brake, the combination, with a pair of brake-levers, of a shaft located between the adjacent ends of said levers, the shaft provided with two cams or eccentrics, one of which is adapted to raise the levers and the other to depress the outer ends, substantially as set forth.

4. In a railway-car brake, the combination, with swinging levers and mechanism interposed between their inner and adjacent ends for raising and lowering the outer ends of said levers, of brake-shoe boxes pivoted to the outer ends of the swinging levers, vertically yielding blocks located within the brake-shoe boxes, and brake-shoes pivoted to said blocks so as to have a rocking movement, substantially as set forth.

5. In a railway-car brake, the combination, with swinging levers and mechanism interposed between their inner and adjacent ends for raising and lowering the outer ends of said levers, of brake-shoe boxes pivoted to the outer ends of said swinging levers, each of said boxes having a vertically-movable block provided with a shank and a spring encircling said shank, a brake-shoe pivoted to the lower end

of said block, and rubber or an equivalent spring interposed between the brake-shoe and block, substantially as set forth.

5 6. In a railway-car brake, the combination, with swinging levers and mechanism interposed between their inner and adjacent ends for raising and lowering the outer ends of said levers, of brake-shoe boxes pivoted to the outer ends of said levers, yielding blocks located
10 within said boxes, brake-shoes pivoted to the lower ends of said blocks, and guard-chains attached to the opposite ends of the brake-shoes and supported by the brake-shoe box or guide-frame, substantially as set forth.

15 7. In a railway-car brake, the combination, with swinging levers and a shaft provided with cams or eccentrics journaled between the inner and adjacent ends of said swinging levers, of a pivoted bar or rod connected with
20 the brake-shafts by suitable rods and chains, and intervening mechanism for rotating said eccentric-shaft for raising and lowering the brake-levers, substantially as set forth.

25 8. In a railway-car brake, the combination, with swinging levers and mechanism interposed between their inner and adjacent ends for raising and lowering their outer ends, of brake-shoe boxes pivoted to the outer ends of said levers, and links pivoted at one end to
30 the bolster and at the other end to the upper ends of the brake-shoe boxes, substantially as set forth.

9. In a railway-car brake, the combination, with a swinging lever and a brake-shoe box

pivoted to the outer end of said lever, said
35 box provided with a downwardly-projecting flange, of a brake-shoe pivoted to a vertically-yielding block located within said brake-shoe box, substantially as set forth.

10. In a railway-car brake, the combination,
40 with two brake-levers pivoted to a bracket or support, said levers having T-shaped inner ends, of an eccentric-shaft journaled between the inner ends of said levers, the eccentrics being arranged and adapted to operate on the
45 projecting portions of said levers, substantially as set forth.

11. In a railway-car brake, the combination, with swinging levers and mechanism for raising and lowering their outer ends, of brake-
50 shoe boxes pivoted to the outer ends of said levers, and transverse braces, the opposite ends of which are connected with the brake-shoe boxes on opposite sides of the truck, substantially as set forth.

12. In a railway-car brake, the combination,
55 with the brake-levers and shaft provided with eccentrics or cams, as described, of a lever attached to said shaft, and link for connecting said lever with a swinging bar or rod pivoted to the bolster, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of
60 December, 1879.

GEORGE D. PAUL.

Witnesses:

BURRITT S. STONE,
E. O. DONFE.