(No Model.) 2 Sheets—Sheet 1.

A. SHEDLOCK.

CAR BRAKE.

No. 601,450. Patented Mar. 29, 1898.

Fig. 1.

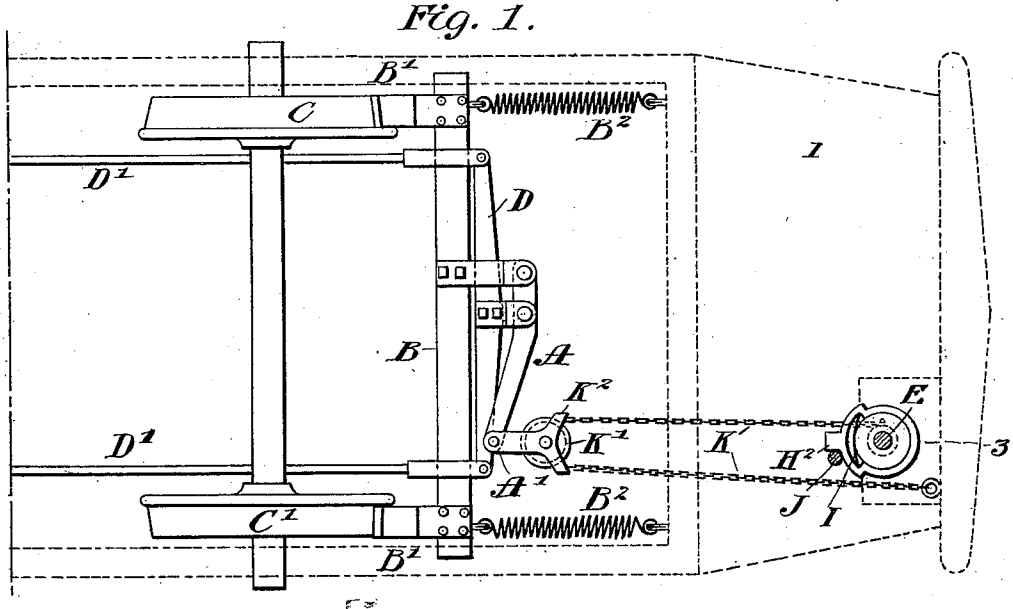


Fig. 2.

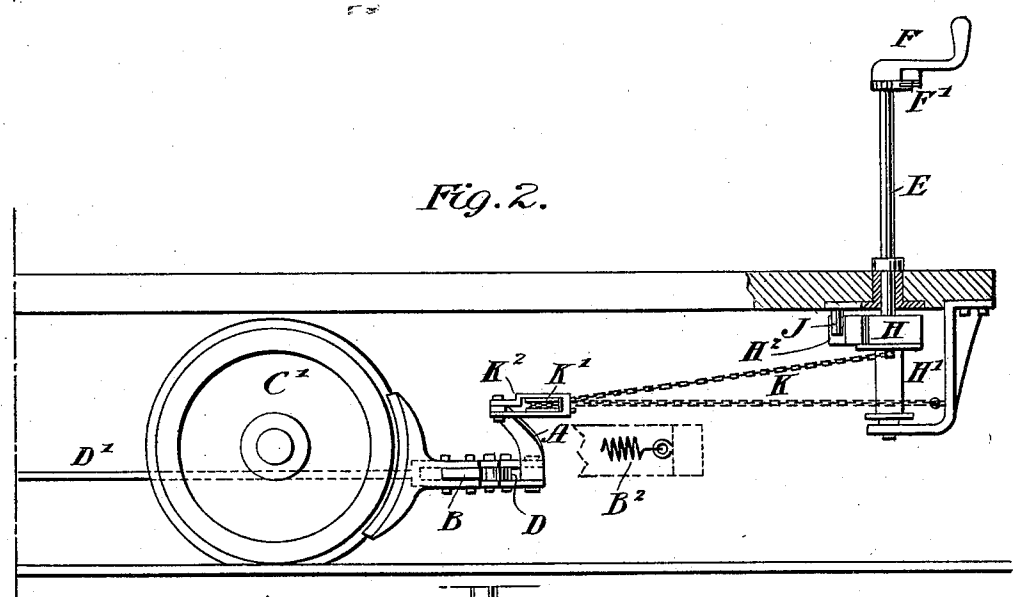
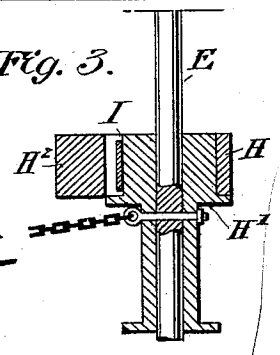


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

A. SHEDLOCK.

CAR BRAKE.

No. 601,450. Patented Mar. 29, 1898.

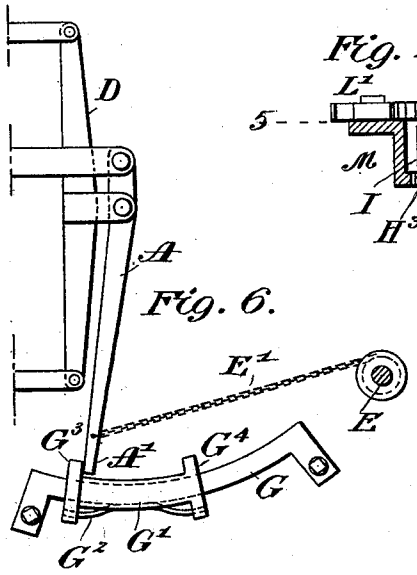


Fig. 6.

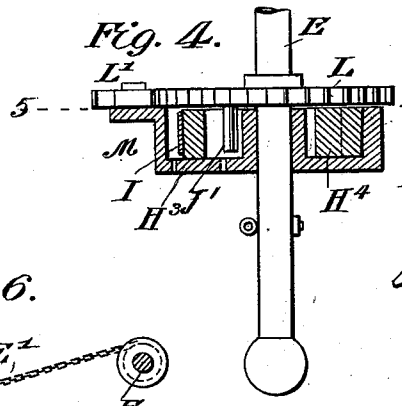


Fig. 4.

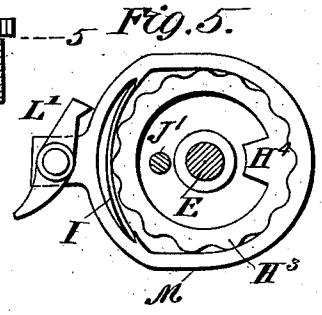


Fig. 5.

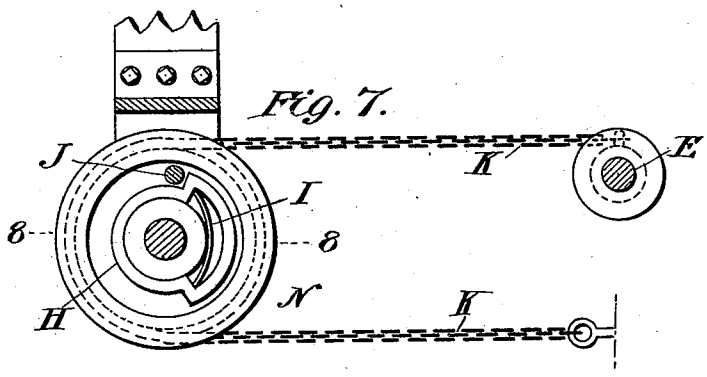


Fig. 7.

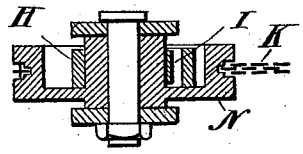


Fig. 8.

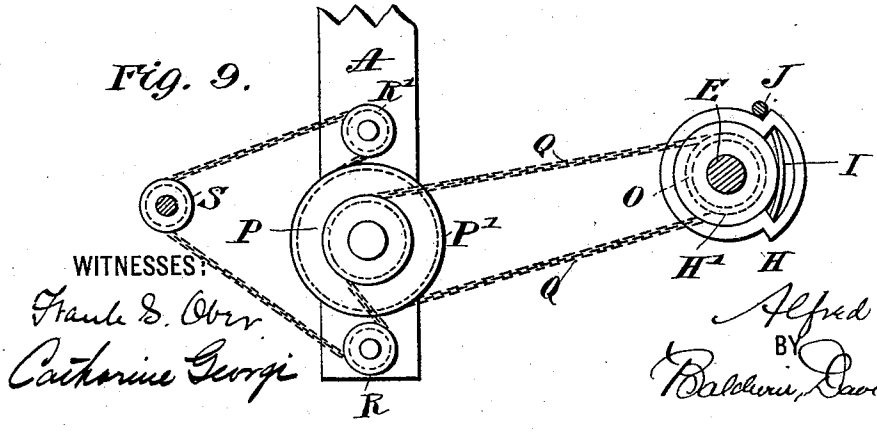


Fig. 9.

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UNITED STATES PATENT OFFICE.

ALFRED SHEDLOCK, OF JERSEY CITY, NEW JERSEY.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 601,450, dated March 29, 1898.

Application filed April 16, 1896. Serial No. 587,839. (No model.)

To all whom it may concern:

Be it known that I, ALFRED SHEDLOCK, a citizen of the United States, and a resident of Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Car-Brakes, of which the following is a specification.

This invention has for its object to increase the efficiency of manual-power or mechanical car-brakes; and it consists of a progressive resistance-stop device for limiting the movement of the shoes away from the wheels and of the arrangement of chain-gearing for increasing the braking power of the brake system.

This invention is adapted to be applied to and used in conjunction with the car-brakes as now made without necessitating any changes in the systems of brake-levers, and where it is desired to employ the improved stop device only then such device is applied as an adjunct to the brake system and preferably attached to a rotative part located between the hand-lever and the main brake-lever, and the compounding of the gearing calls for simple changes in chain connection between the main brake-lever and the vertical brake-shaft.

The device for preventing the shoes receding beyond a determined distance from the wheels far enough only for proper clearance, irrespective of how much or how fast the shoes wear away, consists simply of a friction-controlled stop carried by a brake-shaft or actuated thereby, the resistance of which is sufficient to hold the stop against the action of the brake-releasing springs where used, but not sufficient to prevent its progressive forward movement proportional to or commensurate with the wearing away of the shoes by the power applied to the hand-brake when the shoes are forced home against the wheels.

To more fully describe the said invention, I will now refer to the accompanying drawings, in which—

Figure 1 is a plan view of a part of a brake system, showing my improved power-applying and brake-controlling device applied thereto, the frame of the truck and car-body being illustrated by dotted lines. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged sectional view of the progressive resistance-stop secured to the end of the vertical power-applying shaft, taken on line 3 3, Fig. 1. Fig. 4 is a sectional elevation of a modification of the progressive resistance-stop. Fig. 5 is a plan of the same, taken on the line 5 5, Fig. 4. Fig. 6 shows another application of the progressive resistance-stop, illustrative of its principle of operation. Fig. 7 shows the progressive resistance-stop applied to a pulley carried on the main lever of the brake system. Fig. 8 is a sectional view taken on the line 8 8, Fig. 7; and Fig. 9 shows a positive-acting brake device embodying a differential chain system along with my improved progressive resistance-stop.

The brake-lever system shown in Figs. 1 and 2 of an ordinary construction comprises the main lever A, pivotally connected to the brake-beam B, which carries the shoes B′ B′, arranged at the sides of the wheels C C′, and to the bar D, which is by the rods D′ D′ connected to a similar bar arranged to act against a brake-beam similar to the beam B at the other end of the car.

B^2 B^2 are the releasing-springs for drawing the shoes away from the wheels.

The brake-applying power acts on the free end A′ of the main lever to draw it toward the end of the car, thereby forcing the shoes carried by the beam B against the wheels C C′ and drawing the shoes at the other end of the car against their wheels through the medium of the bar D and connecting-rod D′ D′.

The brake-shaft E and its handle F are also of the usual construction, the said handle being provided with a ratchet-grip device F′, as is now often used, which permits the handle being moved backward without turning the shaft E, so that it may be set in position most convenient to the operator while forcing the shoes home against the wheels.

Now my improved progressive resistance-stop, whose function is to prevent the shoes moving farther away from the wheels than is necessary to afford good clearance and so avoid slackness in the operating parts of the brake system as the shoes wear away, is adapted to be interposed between the main brake-lever and the brake-handle or to control these parts, thus making its application feasible and at little expense to cars without material change in the existing brake mechanism. A simple form of stop and one by the

sketch of which, Fig. 6, its operation may be readily understood consists of a curved guide-bar G, arranged in front of the end A′ of the main lever A and attached to the car-body or truck-frame, and a sliding stop-piece G′, fitted to slide on the bar G, but held with considerable friction thereon by means of the spring G^2. Projecting from the piece G are the two lugs G^3 G^4, between which the end of the lever A plays and which determine the movement of said lever. The lever A in this case is connected to the brake-shaft E by the chain E′ in the ordinary manner. The parts occupying the positions shown, the brake is supposed to be open—that is, the shoes are clear of the wheels, the end of the lever A resting against the lug G^3, the frictional grip of the slide on the bar G being sufficient to hold the lever A against the retractile energy of the brake-shoe-releasing springs. The space between the stop-lugs G^3 G^4 is equal to the movement of the end of the lever A, corresponding or equivalent to the movement of the shoes necessary for them to freely clear the wheels. Now when the chain E′ is wound upon the shaft E and the shoes caused to bear on the wheels the end of the lever A then touches the other lug G^4, and as the shoes wear away, necessitating a further winding up of the chain E′, the said resistance-stop piece is moved with the end of the lever A and the stop-lug G^3 progressively also moved to an extent commensurate with the wearing away of the shoes and by arresting the lever A stops the shoes at a fixed determined distance away from the wheels when the brake is released. The brake-handle thus needs only to be turned the distance necessary to move the shoes their short clearance distance during the whole lifetime of the shoes. This is the principle of operation of this part of the invention shown in all of the other views of the drawings and therefore applies to all of them, the preferred construction of the progressive resistance-stop being of a rotative character and applied to or operated by some rotating part of the brake system. As shown in Figs. 1, 2, and 3 it consists of a ring or collar H, fitted to rotate on the upper end of the drum H′, which is secured to the lower end of the shaft E. The interior face of this ring or collar is partly cut away, forming a pocket or recess in which a flat spring I is placed, so that its central part presses against the bearing of the drum embraced by the ring H, causing the requisite amount of friction between the ring and its bearing to resist the retractile energy of the brake-releasing springs. A lug H^2 on the collar H determines the rotative movement of the collar by contact with a projection J, secured to the car-body frame or other suitable part. To the drum H′ is attached one end of the chain K, which passes around the pulley K′, pivoted in the guide-frame K^2, attached to the end A′ of the main lever, the other end of the chain being secured to the car-frame or a bracket pendent therefrom. By this arrangement the braking power of the operator is increased. Any other compounding arrangement may be used or the lower part of the drum H′ omitted, the chain then being wound upon the lower end of the shaft E, as usual. Another feature of the progressive resistance-stop is, when it is to be used in conjunction with a ratchet-handle, that the resistance caused by spring I to the sliding of the collar H on its bearing shall be greater than the resistance of the ratchet device F′ of the handle, so that the handle F may be turned backward to set it in position desired without causing the bearing of the drum H′ to turn in the collar H after the collar H has been stopped by the projection J.

In the modification shown at Figs. 4 and 5 the progressive resistance-stop is shown applied to an old form of brake-shaft E, with its stop ratchet-wheel L and dog or pawl L′. In this case the lower bearing-plate M of the shaft E is formed hollow and the stop-ring H^3 fitted therein, the spring I bearing against the periphery of the ring, as shown, and the interior of the ring provided with the stop-lug H^4, against which the pin J′, secured in the face of the ratchet-wheel L, acts to limit the rotation of the shaft E. The bearing-faces of the ring H^3 and plate M are shown correspondingly roughened or corrugated to offer more resistance to their relative movement. This in some cases may be desirable and may be used in any of the forms of stops shown.

The progressive resistance-stop in the form of a ring H and spring I, as shown in Figs. 1 and 2, is shown in Figs. 7 and 8 applied to the hub of a chain sprocket-pulley N, fitted to rotate on the end of the main lever A of a brake system. The pin J, secured to the lever or to the upper side of the forked end of the lever, stops the pulley from rotating when the lever A is moved back by the releasing-springs of the brake and so holds the lever from further movement after the shoes have moved a proper distance from the wheels. The chain K in this case is by one of its ends wound upon the shaft E, the other end, after the chain passes around the pulley N, being secured to any suitable fixed part of the car.

In the differential chain system shown in Fig. 9 the progressive resistance-stop H H′ I J is constructed and applied to the brake-applying shaft E in the manner illustrated in Figs. 1 and 2 and operates to determine the movement of the shoes away from the wheels in the same way; but, as by the arrangement of the chain shown, the shoes may be retracted by the backward movement of the brake-handle, avoiding the necessity of using the brake-releasing springs, the distance the handle need be set back will be indicated by the projection on the ring H coming in contact with the pin or projection J. Below the stop device H H′ on the shaft E is secured the sprocket-chain pulley O, and on the end of the main brake-lever A is pivoted the double sprocket-chain pulley, comprising a small and

a large pulley P and P'. The chain Q is endless and passes around the pulley O. One part of it, which is the power-applying part, passes around the smaller pulley P, over the guide-pulley R, carried by the lever A, to and around the pulley S, which will be attached to some fixed part of the car or truck, and maintains fixed position relatively to the shaft E. From said pulley S the chain passes over the guide-pulley R', also carried by the lever A, and thence around the large sprocket-pulley P' back by its other part to the pulley O. The braking power due to this arrangement will be determined by the relative sizes of the pulleys P and P' and also by the size of the pulley O, and these may be varied as desired. The operation will be readily understood, the lever A remaining in whatever position it may be set in by the rotation of the shaft E, and it will also be seen that the lever A will be moved toward the shaft E if the chain instead of being endless be secured by its ends to the two parts P P' of the double pulley after passing around them, when the shaft E is turned to draw on the part of the chain leading from the smaller pulley P, in which case the guide-pulleys R, R', and S would be unnecessary.

I claim as my invention—

1. In a car-brake, the combination with the brake-lever system, the shoes and the wheels, of a progressive resistance-stop device arranged to resist by friction the backward movement of the brake mechanism, so as to hold the shoes at a determined clearance away from the wheels at all times, and adapted to be progressively set forward by the brake mechanism, when operated, to force the shoes against the wheels in proportion to and to compensate for the wearing away of the shoes.

2. In a car-brake, the combination with the brake-lever system, the shoes and the wheels, of a progressive resistance-stop device interposed in the system between the power-applying lever or handle and the main brake-lever, the frictional inertia of said stop device being such as to oppose the retraction of the shoes beyond a determined clearance at all times but to be overcome directly by the operating power when applied to force the shoes against the wheels and thereby moved forward a distance in proportion to and to compensate for the wearing away of the shoes.

3. A stop for car-brakes constructed and operated to be moved progressively forward proportional to the wear of the shoes directly by the operating power when applied to force the shoes against the wheels to compensate for the wearing away of the shoes, and to be set and held in such position relative to the bearing-faces of the shoes as to prevent the bearing-faces of the shoes receding beyond a fixed determined distance away from the wheels at all times.

4. In a car-brake, the combination of the brake-lever system, the shoes, the wheels and a ratchet-actuated power-applying lever or handle, of a progressive frictionally-held resistance-stop, interposed in the system between the ratchet lever or handle and the main brake-lever, said stop by frictional inertia holding the shoes a determined distance away from the wheels, at all times, but adapted to be moved progressively forward directly by the operating power when applied to force the shoes against the wheels and yet offering sufficient resistance to cause the ratchet of the handle to slip when the handle is turned back beyond the limit of the stop movement.

5. A progressive resistance-stop for car-brakes interposed between the main brake-beam and the power-applying lever or handle, consisting of the ring, provided with a stop projection, a rotative drum or hub embraced by the ring, a spring applied between the ring and drum or hub to cause frictional contact between them, and a fixed lug for engaging with the stop projection of the ring.

6. A progressive resistance-stop for car-brakes interposed between the main brake-beam and the power-applying lever or handle, consisting of the ring provided with a stop projection, a rotative drum or hub embraced by the ring, a spring applied between the ring and drum or hub to cause frictional contact between them, and a fixed lug for engaging with the stop projection of the ring, in combination with a pulley attached to the main brake-lever, the vertical power-applying shaft and a chain passed around the pulley, secured at one end to the frame of the car, and at the other end to the vertical shaft to be wound thereon.

7. A progressive resistance-stop for car-brakes interposed between the main brake-beam and the power-applying lever or handle, consisting of a ring, provided with a stop projection, a rotative drum or hub embraced by the ring, a spring applied between the ring and drum or hub to cause frictional contact between them, and a fixed lug for engaging with the stop projection of the ring, in combination with a system of differential pulleys between the handle and the main brake-lever, and a chain passing around and connecting the differential pulleys.

8. A progressive resistance-stop for car-brakes interposed between the main brake-beam and the power-applying lever or handle, consisting of a ring, provided with a stop projection, a rotative drum or hub embraced by the ring, a spring applied between the ring and drum or hub to cause frictional contact between them, and a fixed lug for engaging with the stop projection of the ring, in combination with a double two-sized pulley on the end of the main brake-lever, a pulley on the power-applying shaft, two guide-pulleys on the main brake-lever, a pulley pivoted on a fixed part of the frame of the car, and a chain passing around the pulleys.

9. In a car-brake, in combination, a vertical shaft provided with a handle at its upper

end, a drum or hub secured to the lower part of the shaft, a collar having a stop projection embracing the drum or hub, a spring interposed between the drum or hub and the collar, a fixed lug for engagement with the stop, and a chain connection between the lower end of the shaft and the main lever of the brake system.

10. A progressive resistance-stop for car-brakes interposed between the main brake-beam and the power-applying shaft, consisting of a rotating part, a part frictionally attached thereto and caused to rotate therewith, and a fixed stop for engaging said frictionally-attached part and limiting its movement in one direction, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 15th day of April, 1896.

ALFRED SHEDLOCK.

Witnesses:
FRANK S. OBER,
EDWARD C. DAVIDSON.