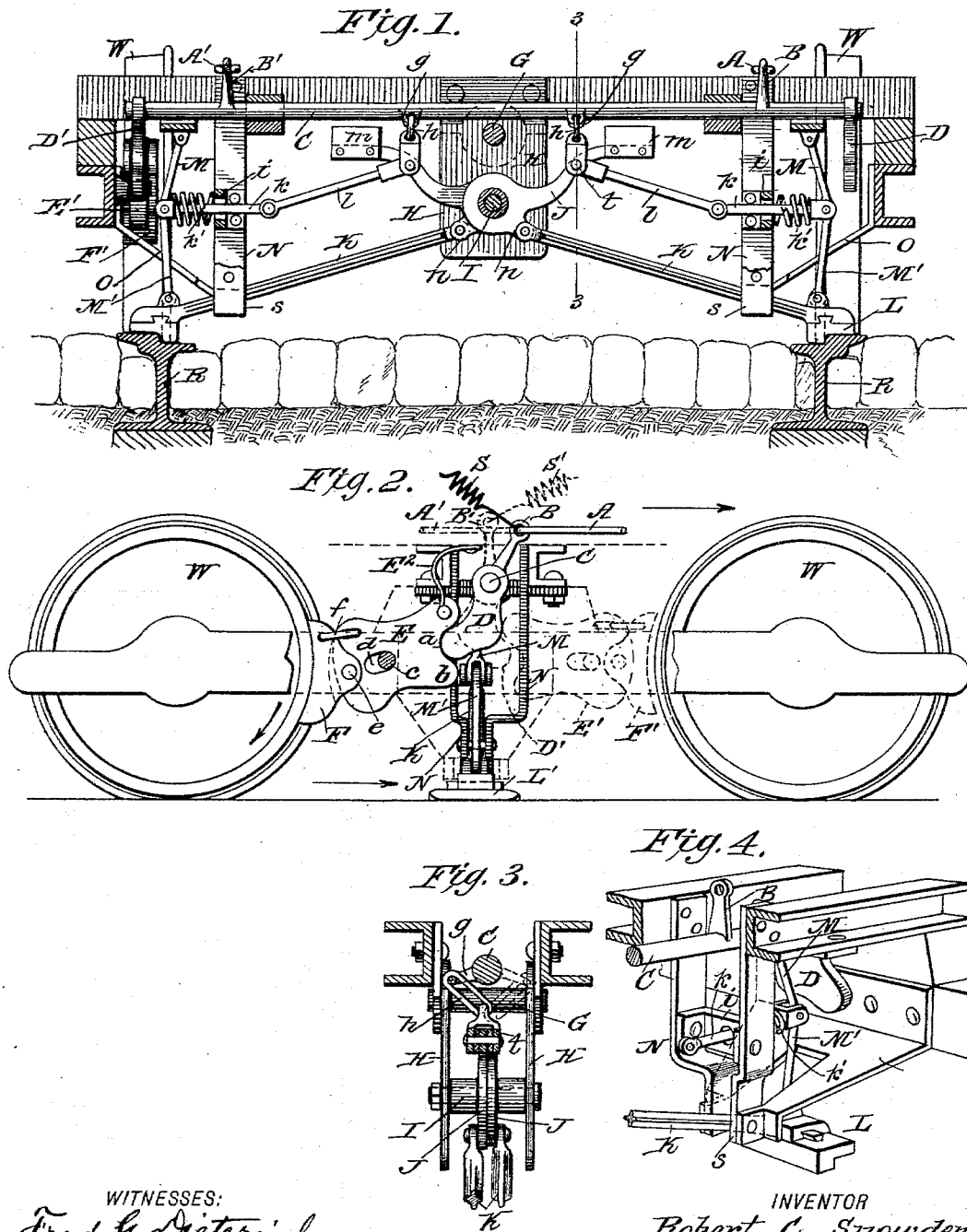


(No Model.)

R. C. SNOWDEN.
CAR BRAKE.

No. 533,830.

Patented Feb. 5, 1895.



WITNESSES:
Fred G. Dietrich
Edw. W. Byrne

INVENTOR
Robert C. Snowden
BY *Mann L*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ROBERT C. SNOWDEN, OF McKEESPORT, PENNSYLVANIA,

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 533,830, dated February 5, 1895.

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To all whom it may concern:

Be it known that I, ROBERT C. SNOWDEN, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Car-Brakes, of which the following is a specification.

My invention is in the nature of an improved car brake designed mainly for street cars but applicable to other cars, and in which the braking effect is started or initiated by hand through a hand wheel to apply a brake shoe to one of the wheels, and which brake shoe in turn acts in a secondary manner to cause the friction of this brake shoe and the momentum of the car to apply a brake shoe to the track rails, which furnishes a very positive and effective means of stopping the car in the shortest space of time.

It consists in the peculiar construction and arrangement of the mechanism for accomplishing the above result, and for doing this without regard to the direction of motion of the car—i. e., for applying the brakes in the above manner no matter whether the car is going forward or backward.

Figure 1 is a vertical transverse section taken through the running gear of a car and showing the application of my devices. Fig. 2 is a side view partly in section and Fig. 3 is a vertical section through line 3—3 of Fig. 1. Fig. 4 is a perspective view of the brace frame N O.

In the drawings, Fig. 2, A and A' are two pull rods through which the brakes are applied. These run respectively to the opposite ends of the car and are connected in the usual way through a chain to a vertical shaft and hand wheel not shown. The rod A runs to one end of the car and furnishes means for applying the brakes when the car is moving in the direction of the arrows, and A' runs to the opposite end of the car and furnishes means for applying the brakes when the car is running in the opposite direction. These rods connect with vertical arms B B' on a rock shaft C which is arranged in bearings crosswise the car and beneath the same. On one end of this shaft is rigidly keyed an abutment arm D whose lower end is bent to one side and made to enter a curved seat a in a shoe carrier E that bears at its opposite end a rocking brake shoe F pivoted at e, that is

adapted to bear against the periphery of the car wheel. This brake shoe is guided and held in its oscillation about its pivot by a link and slot f connecting it with the shoe carrier. This shoe carrier is connected to the truck frame by a pivot bolt c and has a longitudinal slot d embracing said pivot bolt, which permits the shoe carrier to have a longitudinal sliding motion over its pivot bolt, and also a rotary or oscillating motion thereon as a pivot or fulcrum. Now when a pull is made on the rod A it deflects arm B, rocks the shaft C, and throws the abutment arm D to the rear. The lower end of the abutment arm enters the recess or seat a in the brake shoe carrier and shoves the said brake shoe and carrier to the rear against the car wheel, this movement being permitted by the slot d. This is as far as the brakes are applied by hand. When the brake shoe comes in frictional contact with the wheel it is thrown downwardly by said frictional contact, carrying that end of its carrier and lifting the opposite end. As the said opposite end of the carrier rises a toe b just below the seat a catches against the end of the abutment arm D and continues to strain it in the same direction in which it was started by hand through pull rod A. This final portion of the rocking movement of shaft C, furnished by the friction of the car wheel and the momentum of the car, serves to apply the track brake or brakes that engage with the rails of the track as follows: Referring now to Figs. 1 and 3, the rock shaft C has rigidly attached to it near the middle two pendent arms g which when the brakes are not applied stand vertical. As these have a similar connection on each side of the car, it will be only necessary to describe one side. Each arm is attached loosely to a link h, which at its lower end is loosely connected to an elbow lever J, and a tension rod l, a single bolt t preferably being used to make such connection. The elbow lever J is hung upon an axial bolt I between two parallel plates H H hung vertically beneath the car upon a hanger bolt G, and loosely suspended thereon so as to swing laterally in accommodating themselves to curves in the road. Each elbow lever J has at its lower side a short arm n that is jointed to a thrust bar K which at its outer

and lower end, bears a brake shoe L conforming in outline to the track rail and adapted to bear against the same. Just above this brake shoe and connected to it is a vertical toggle, the lower one of whose arms M' connects with the brake shoe, and the upper one of which is jointed to the frame work of the car. The middle joint is connected to a stem *k* that is jointed to the tension bar *l*, and this stem *k* passes through a guide *i* in a brace N, and has a spiral spring *k'* wound about it between the guide *i* and the toggle, that serves to flex or shorten the toggle after it has been drawn inwardly by the tension bar *l*.

Now assuming that brakes F have been applied to the wheels by hand as heretofore described, it will be seen that in the last part of the rocking movement of shaft C, caused by toe *b* of shoe carrier E acting on arm D of the shaft, the arm *g* lifts the elbow lever J and makes a pull on rod *l* which straightens the toggle and forces the brake shoe L against the rail. Simultaneously with this action the lift of elbow lever J through its lower arm *n* causes the bar K to move outwardly and thrust the brake shoe tightly against the shoulder of the track rail. The rail brake shoe is thus tightly applied to the rails through the last part of the movement of the rock shaft, the power for which effect is furnished by the momentum of the car itself, thereby quickly and effectively stopping the car.

N and O are parts of a brace frame which at *s* straddle the thrust bar K and cause the drag strain of the rail shoe to be imparted to the car so as to stop it. This brace frame is rigidly connected to and suspended from the car timbers above and is best shown in Fig. 4.

When the brakes are released, the spring *k'* flexes the toggle and lifts the brake shoe L, and a counterweight *m* pulls the bar K and shoe L laterally away from the rail.

To restore the arm B to its normal vertical position a spring S serves to pull it in the opposite direction from which it is moved by pull rod A, and to throw down the inner end of brake shoe carrier E when the brakes are released, a curved spring E² is connected to the top of the inner end of said carrier and is fastened above to the frame work of the car.

For traveling in one direction, *i. e.* the direction shown by the arrows, the brakes are applied from the car wheels through the arm brake shoe and carrier D E F which engage with the front side of the rear car wheel. For traveling in the opposite direction the brakes are applied by a corresponding brake shoe carrier and arm shown in dotted lines at F' E' and D' which are on the opposite side of the rock shaft C and also on the opposite side of the car.

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

1. A car brake comprising a wheel-brake shoe, a carrier for the same having both a sliding and an oscillating movement, a rock shaft with abutment arm acting against the brake shoe carrier to move it longitudinally and be in turn deflected by it, means for rocking said shaft initially by hand, and a rail-brake mechanism connected to said rock shaft and arranged to be applied by the last part of the rocking motion of the shaft by the power derived from the wheel-brake, substantially as shown and described.

2. The combination with the rail-brake; of a set of toggle arms arranged immediately above and connected to the rail-brake, thrust bars also connected to the rail-brake and extending inwardly, and means for operating the toggle arms and thrust bars simultaneously to apply the brake to the rails by both a vertical and lateral thrust substantially as shown and described.

3. The combination with the wheel brake shoe F; of the shoe carrier E slotted and hung upon a stationary fulcrum pin and having a recess or seat *a* with a projection *b* below it, and a rock shaft C with abutment arm D adapted to enter said seat and thrust the brake shoe against the wheel, and be in turn projected to a further deflection by the wheel-brake shoe to apply another brake substantially as shown and described.

4. The combination of the rock shaft C having arms B and D and *g*, the brake shoe F, and shoe carrier E having both a sliding and oscillating motion, the hanger plates H H having axial pin I, elbow levers J, and tension bars *l* connected to arms *g*, thrust bars K connected at one end to the elbow levers and bearing a rail-brake at the other, the toggle arms M M', and stem *k* with spring *k'* connecting the toggle to the tension bars, substantially as shown and described.

5. A car brake consisting of the combination of a wheel brake shoe F and shoe carrier E arranged to operate upon the inside of one pair of wheels, and another wheel brake shoe F' and carrier E' arranged to operate on the inside of the other pair of wheels, a rock shaft C arranged between and having abutment arms D and D' arranged upon opposite sides and opposite ends of the rock shaft to operate against the two shoe carriers alternately, means for rocking the shaft in opposite directions, and a rail brake also connected to the rock shaft and arranged to be applied when said rock shaft is turned in either direction substantially as shown and described.

ROBERT C. SNOWDEN.

Witnesses:

EDWD. W. BYRN,
SOLON C. KEMON.