

(No Model.)

W. S. WHITNEY.
CAR BRAKE.

No. 553,973.

Patented Feb. 4, 1896.

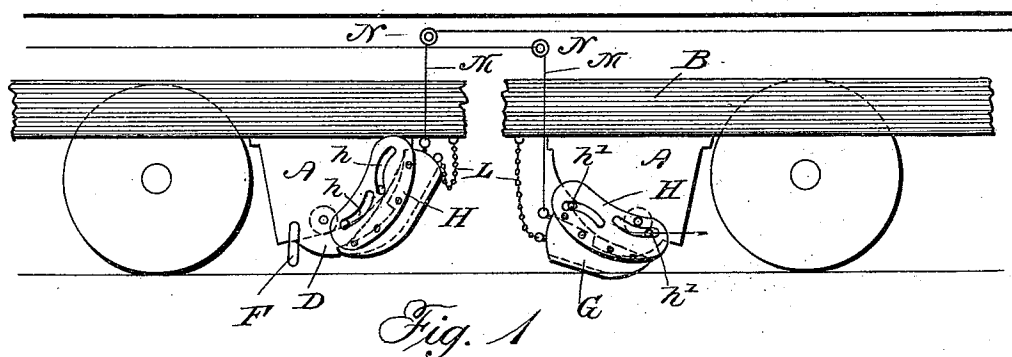


Fig. 2

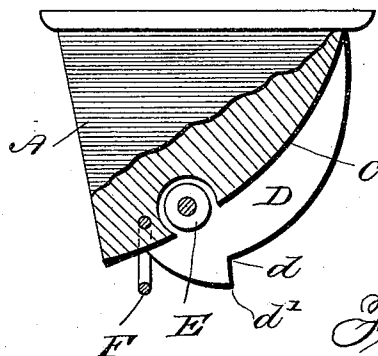


Fig. 3

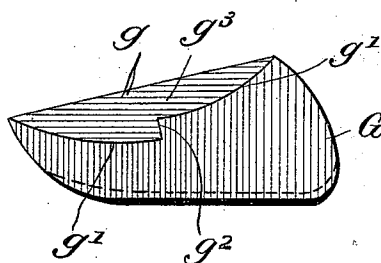
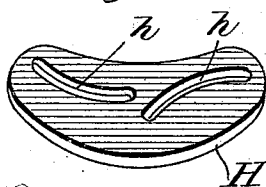


Fig. 4



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CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 553,973, dated February 4, 1896.

Application filed September 11, 1895. Serial No. 562,140. (No model.)

To all whom it may concern:

Be it known that I, WALTER SCOTT WHITNEY, a citizen of the United States, and a resident of Glens Falls, in the county of Warren and State of New York, have invented certain new and useful Improvements in Car-Brakes, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts.

This invention relates to car-brakes, and the object thereof is to provide a device of this class which operates upon the track or the rails thereof, and by means of which a car may be quickly checked or stopped regardless of the speed at which it may be moving or the grade of the track.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a side view of a section of a car-frame or the trucks thereof, showing the application of my improved brake; and Figs. 2, 3, and 4 represent details of the construction.

In the accompanying drawings I have shown my invention as applied to an ordinary tramway-car, the wheels on one side of the car being shown, together with the frame or trucks in which they are mounted.

In the practice of my invention I provide a cam-block A, which is secured to the truck-frame B directly over the rails of the track, and, as shown in the drawings, my improved brake is arranged so that it may be operated regardless of the direction in which the car is moving, a separate brake being provided for each set of wheels.

The cam-block A is of the form and construction shown in Fig. 2, the outer or inclined cam-surface of which is shown at C. The block A is also provided with wings D, but one of which is shown in Fig. 2, the other being broken away to better show the construction. The side wings D are of the form shown in Fig. 2, the outer portion thereof being curved from the top downwardly and backwardly, so as to correspond in general form to the cam-surface C of the block, and each of said side wings D is also provided with a notch or recess *d*, by means of which

a shoulder *d'* is formed thereon. Each block is also provided near the lower end of the cam-surface C with a roller E, and pivotally connected with the lower portion thereof is a link F, for which a hood may be substituted, if desired.

The side wings D may be formed separately and bolted to the blocks A, if desired, or said block and wings may be formed integrally and the cam-surface C be formed by cutting a groove in the outer side thereof, as will be readily understood.

I also provide a brake-shoe G, which is of the general form shown in Fig. 3, said general form being approximately that of a wedge, the upper side being straight, but inclined, as shown at *g*, and the sides thereof being cut away to form curved surfaces *g'* on each side, which correspond in general form to the curved surfaces of the side wings D of the cam-block, and said surfaces *g'* are also each provided with a shoulder or projection *g''*, which corresponds with the shoulders or projections *d'* on the side wings D.

Secured to each side of the brake-shoe G are segmental plates H, which are of the general form shown in Fig. 4, each of which is provided with segmental reversely-curved slots *h*, through which pass pins *h'*, secured to or formed on the segmental block.

When the shoes are placed in position, as shown in Fig. 1, the wider ends thereof are directed upward and the wedge-shaped end downward, and the side plates H inclose the sides of the cam-block, and said shoes are free to slide on said block, in which movement the inclined tongue or flange *g* rests upon the cam-surface C, and the curved sides *g'* rest upon the curved sides of the side wings D, as will be readily understood, and the downward movement of the shoes in the operation of braking or stopping the car is limited by the shoulders *g''*, formed on the sides thereof, and the shoulders *d'* formed on the side wings D of the cam-blocks.

As will be understood, the brake-shoes are held in position on the cam-blocks by means of the pins *h'*, which extend through the slots *h*, and said brake-shoes are also provided with chains L, by which they are connected with the truck, and which may also serve to limit the movement thereof.

Connected with each of the brake-shoes is a cord or chain or similar device M, each of which passes over a pulley N, and one of which is carried to each end of the car and is under the control of the motorman or the operator of the car.

The operation will be readily understood from the foregoing description, when taken in connection with the accompanying drawings. In the normal position of the parts the brake-shoes are held above the tracks and out of operation by means of the cords M, and whenever it is desired to lower the brake-shoes and allow them to operate said cords are operated or released and the shoes at once drop into the position shown at the right of Fig. 1. In this operation the inclined surface *g* of the brake-shoes slides downward under the roller E and the curved cam-surface C of the cam-block and is wedged between the rail of the track and the cam-block, and this operation is such that if the car is under considerable momentum the entire truck may be raised from the track and the car be gradually but quickly stopped. The operation of the cam-surface C of the cam-block and the roller E on the inclined surface *g* of the shoe is such that when the car has been stopped it will move backward, and the truck-shoes when released may be again raised to the position shown at the left of Fig. 1. In this operation the movement of the brake-shoes downwardly is limited by the shoulders *g*² formed thereon and the shoulders *d*¹ formed on the side wings of the blocks, and the link F, which is pivotally connected with the block, may also be used for this purpose.

The rollers E in the cam-blocks, as will be readily understood, facilitate the operation of the brake-shoes hereinbefore described, and by means of these rollers the car is forced to move backward, so as to relieve the brake-shoes if the truck should be raised from the track in the operation thereof, this operation being effected by the weight of the car and the operation of gravity.

In practice I prefer to form the brake-shoes of a single piece and to form the inclined surface *g* by cutting out the sides, so as to form a spline *g*³, and on the outer side of which is formed the inclined surface *g*, and by thus cutting out the sides the curved surfaces *g*¹ are formed thereon, as are also the shoulder *g*², and the side plates H may be secured thereto in any desired manner. I may, however, form said brake-shoes of three pieces, as will be readily understood, the side pieces being bolted or secured to the central piece which constitutes the spline *g*³, on which is formed the inclined surface *g*.

The cam-blocks A may also be similarly constructed and may be formed of one piece or three, as may be desired.

My invention is not limited to the exact form, construction and arrangement of parts shown and described, and I therefore reserve

the right to make all such alterations therein as fairly come within the scope of the invention.

I prefer to form the bottom of the brake-shoes so that they will correspond in cross-section with the form of the rails, and, as will be understood, the principle of the operation of my improved brake is that of the wedge, and the power exerted thereby is much greater than is possible with any of the existing forms of brakes.

The chains L are supposed to be taut when the shoes are in operation, and, as will be readily understood, the shoes may be raised out of the operative position by the cords N and lowered thereby into the operative position whenever desired.

In place of the rollers or wheels E a ball-bearing may be provided, and many other changes in the construction herein shown and described will readily suggest themselves. My improved brake is applicable to any kind or class of cars, as will be readily understood.

It will be understood, of course, that the brake is reversible and may be applied to either side of the wheels by turning the entire apparatus on its supports or bearings and providing suitable securing devices therefor, and it will also be understood that other means may be provided for limiting the backward and downward movement of the shoes, such as dowels or similar devices. The rollers or wheels A may also be placed at other points in the cam-blocks, and the friction-surface of the shoes can be reduced, if desired, by cutting out the bottoms between the ends thereof, and the same can be increased by making the shoes longer, if desired.

The chief forces involved in the operation of my improved brake are momentum, gravitation and friction, and all that is necessary to set these forces in operation is to release the brake-shoes, as hereinbefore described, after which the operation of the brakes is automatic, and my improved brake is the first device of the kind which is operative in this manner.

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

1. A brake for cars, comprising cam-blocks secured to the truck in vertical line with the rails of the track, said cam-blocks being provided with cam-surfaces and with side wings or projections as D, and brake-shoes as G, connected therewith and adapted to slide thereon, said brake-shoes being provided with an inclined surface as *g*, which are adapted to bear upon the cam-surfaces of the cam-blocks, substantially as shown and described.

2. A brake for cars, comprising cam-blocks connected with the truck in vertical line with the rails of the track, said cam-blocks being provided with cam-surfaces as C, and with side wings as D, which are also provided with curved cam-surfaces and brake-shoes as G,

said brake-shoes being provided with inclined surfaces as *g*, and adapted to operate in connection with the cam-surfaces of the cam-blocks, and curved cam-surfaces at each side thereof as *g'*, which are adapted to operate upon or in connection with the curved cam-surfaces of the side wings of the cam-blocks, said cam-blocks and said brake-shoes being combined and arranged, substantially as shown and described.

3. A brake for cars, comprising cam-blocks as *A*, secured to the trucks in vertical line with the rails, brake-shoes as *G*, connected therewith, and provided with inclined surfaces as *g*, said brake-shoes being also provided with side plates in which are formed reversely-curved segmental slots, through which pass pins secured to or formed on the cam-blocks, substantially as shown and described.

4. A car-brake, comprising cam-blocks as *A*, which are secured to the truck or frame in vertical line with the rails of the track, said cam-blocks being provided with curved cam-surfaces and with side wings as *D*, which are also provided with curved cam surfaces and projections, or shoulders as *d*, and brake-shoes as *G*, which are wedge-shaped in form, and adapted to operate between the cam-blocks and the rails of the track, said brake-

shoes being provided with inclined surfaces as *g*, and with side curved cam-surfaces as *g'*, on which are formed shoulders or projections *g''*, said brake-shoes being also provided with side plates as *H*, in which are formed reversely-curved segmental slots through which pass pins or projections secured to or formed on the cam-blocks, substantially as shown and described.

5. A car-brake, which is designed to operate in connection with the rails of the track, comprising a cam-block secured to the truck or frame of the car and a brake-shoe mounted thereon which is wedge-shaped in form and provided with an inclined surface or bearing, said cam-block being also provided with a roller or rollers in connection with which the brake-shoe also operates, said brake-shoe being adapted to operate between the cam-block and a rail of the track, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of subscribing witnesses, this 9th day of September, 1895.

WALTER SCOTT WHITNEY.

Witnesses:

WILLIAM H. STEWART,
WALTER DIX.