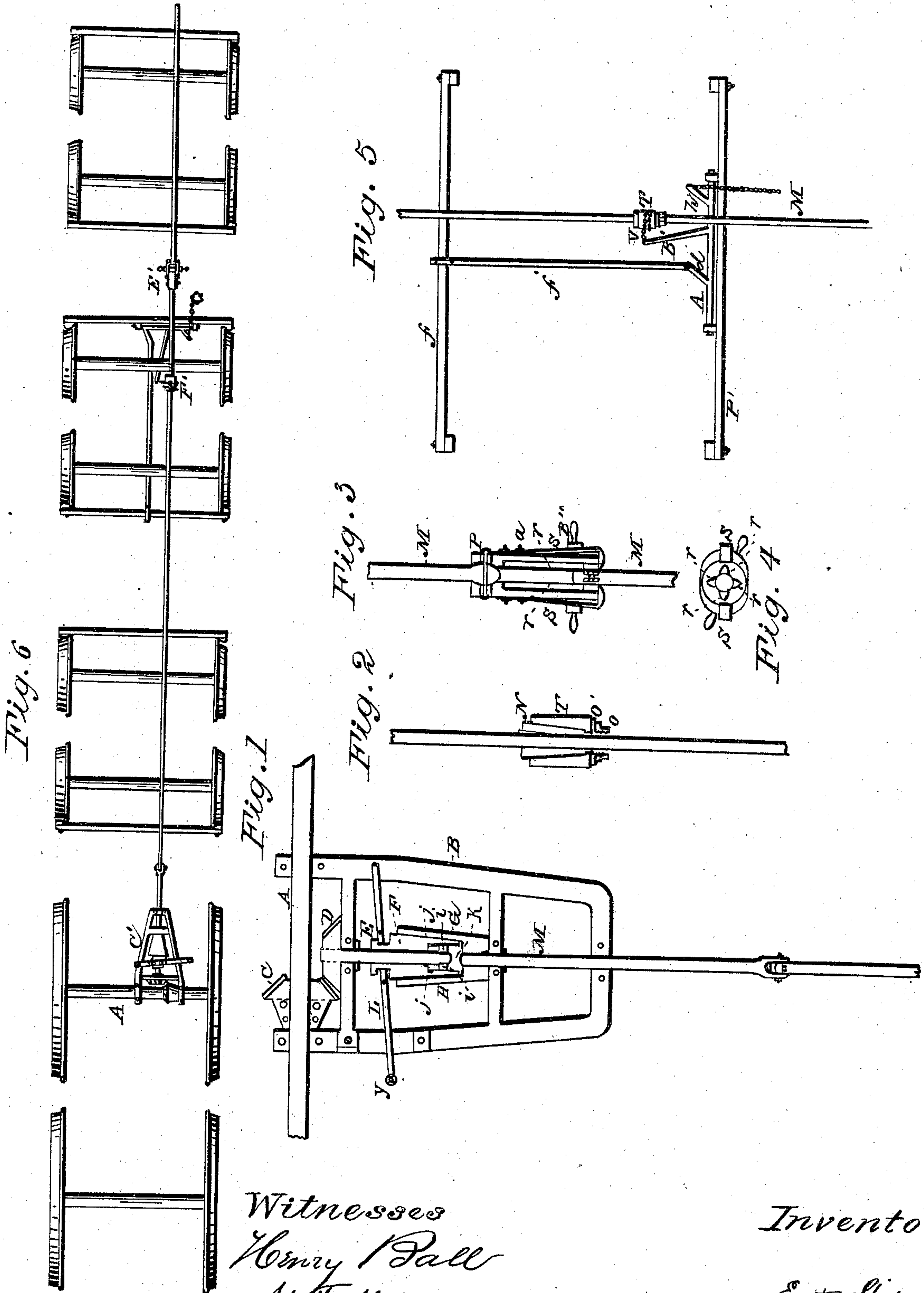


E. SLATER.

Car Brake.

No. 98,716.

Patented Jan. 11, 1870.



Witnesses  
Henry Ball  
M. F. McIner

Inventor  
Erastus Slater



# United States Patent Office.

ERASTUS SLATER, OF GIRARD, PENNSYLVANIA.

Letters Patent No. 98,716, dated January 11, 1870.

## IMPROVED RAILWAY-CAR BRAKE.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern :*

Be it known that I, ERASTUS SLATER, of the borough of Girard, in the county of Erie, and the State of Pennsylvania, have invented a new and useful Improvement in Car-Brakes; and I do declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making a part of this specification.

The nature of my invention consists in providing a railway-train with an apparatus whereby the brakes on the whole train can be set or unset by the engineer, from the cab of the locomotive.

I accomplish this by attaching to the hind axle of the drive-wheels of the locomotive, a bevel-gear wheel, which gears into a similar wheel placed on the end of a shaft which runs the whole length of the train, at right angles to the several car-axes. This main shaft is coupled between the several cars, and can be uncoupled at the same time the cars are coupled.

The following is a more full description of my invention, reference being had to the accompanying drawings:

Figure 1 is a transverse sectional view of that portion of my invention which is attached to the locomotive drive-wheel axle.

Figure 2 is a transverse sectional view of the drum on the line-shaft, and around which the chain from the brakes is wound.

Figure 3 is a transverse sectional view of the line-shaft coupling.

Figure 4 is a vertical sectional view of the same.

Figure 5 is a perspective view of the brake proper, showing the drum on the shaft and the brake-chain in position.

Figure 6 is a vertical or top view of a series of car-trucks, showing the position of my invention.

The manner in which my invention is constructed and operated, is as follows:

I first attach to the hind axle of the locomotive drive-wheels, a bevel-gear, C.

I then hang upon the said axle A, a frame, B.

In this frame I place a short shaft, E, on which is a bevel-gear, D, which gears with the gear C on the axle A. Hence, it will be seen, that as the locomotive moves, the shaft E will be revolved.

I also hang in the frame B, another shaft, M, which is coupled with the shaft E, by a conical or friction-clutch, F G.

This clutch is thrown in and out of gear by the lever Y, which is connected to the conical iron F by the yoke L, which fits the neck of the same.

The cone F revolves only when in gear; it is then revolved by the wings *i i* on the end of the shaft E slipping into the grooves *j j* in the chamber *k*, in

the cone F. It will, therefore, be seen, that when the lever Y is drawn back, the shaft E, only revolves; but when it is drawn up, the clutch F G communicates the motion to the shaft M, which shaft traverses the whole length of the train, and is coupled between cars in such a manner as to allow of the vibrating motion of the cars.

This I accomplish in the following manner, reference being had to figs. 3 and 4.

I construct a box, *a*, one end of which is a ball-and-socket joint, P, and is securely attached to one end of a section of shafting.

The other end of the box *a* is a chamber, with four grooves, *r r r r*, in its sides. On the end of the section of shafting to which this is to couple, are four wings, to correspond with the four grooves *r r r r*, and slide in them.

On the sides of the box *a* are two springs, S S, which, when compressed by the turning of the eccentric collar B", hook over the end of the box *a*, and grasp the shaft M back of the wings *e e*, &c., which are slipped into the grooves *r r r r*, and hold the shaft into the box *a*. When it is desired to uncouple, it is done by turning the eccentric rim B", so as to allow the springs S S to spring up. On the shaft M, where it is desired to attach a brake-chain, I attach a friction-drum, around which the brake-chain is wound. This I construct so that it will sustain a certain desired amount of strain, and when more is applied, it will slip.

It is constructed as follows, (see fig. 2:)

N is a conical-shaped iron, which is wedged or keyed tight to the shaft.

T is a cylinder, fitting on to N.

N, at its smaller end, has a screw cut on it; and O is a burr, which screws on to it, and as it is screwed down, it shoves the cylinder down harder on to the cone N, producing, of course, more friction. Hence, this device can be set to sustain more or less strain.

O is a washer, to prevent the burr gigging back when the cylinder T revolves.

Fig. 5 shows the manner in which the brakes are operated. P' and *f* are the brake-beams, on one of which, P', is attached the rock-shaft A', out of which extend the arms B', *d*, and *h*.

The brake-beam *f* is connected with the rock-shaft A', by the connecting-bar *f'*. From the arm B', the brake-chain V is attached to the drum T on the line-shaft M. Now, as the shaft M is made to revolve, by the action of the mechanism shown in fig. 1, the brake-chain V is wound around the drum T, and the arm B' is drawn up, thereby tipping the rock-shaft A'; and by the arm *d* and connecting-bar *f'* the brake-bars *f* and P' are drawn together, and when the full tension is exerted on the brakes that the drum T is set to, it

will slip on the cone N, before described. As the portion shown in fig. 1 is under the cab of the locomotive, it will be seen, that a lever, extending from the lever Y up into the cab, will enable the engineer to operate the whole machine.

I do not claim a longitudinal shaft, nor the arrangement of bevel-gears, nor the method of connecting the revolving shaft with the brake-levers; but

What I do claim, and desire to secure by Letters Patent, is—

1. The shaft M, extending by coupling through the train, connected by the clutch F G, with its operat-

ing-lever, to the shaft E, which carries the bevel-gear, as set forth.

2. On the shaft M, thus operated, the friction-clutch drum, arranged and operating in the described connections, as set forth.

3. The coupling-device, constructed of the described parts, arranged and operating as set forth.

ERASTUS SLATER.

Witnesses:

HENRY BALL,  
M. F. McINTYRE.