No. 630,742.

Patented Aug. 8, 1899.

W. D. ROSS.

BRAKE.

(Application filed Apr. 20, 1899.)

(No Model.)

fig. 1.

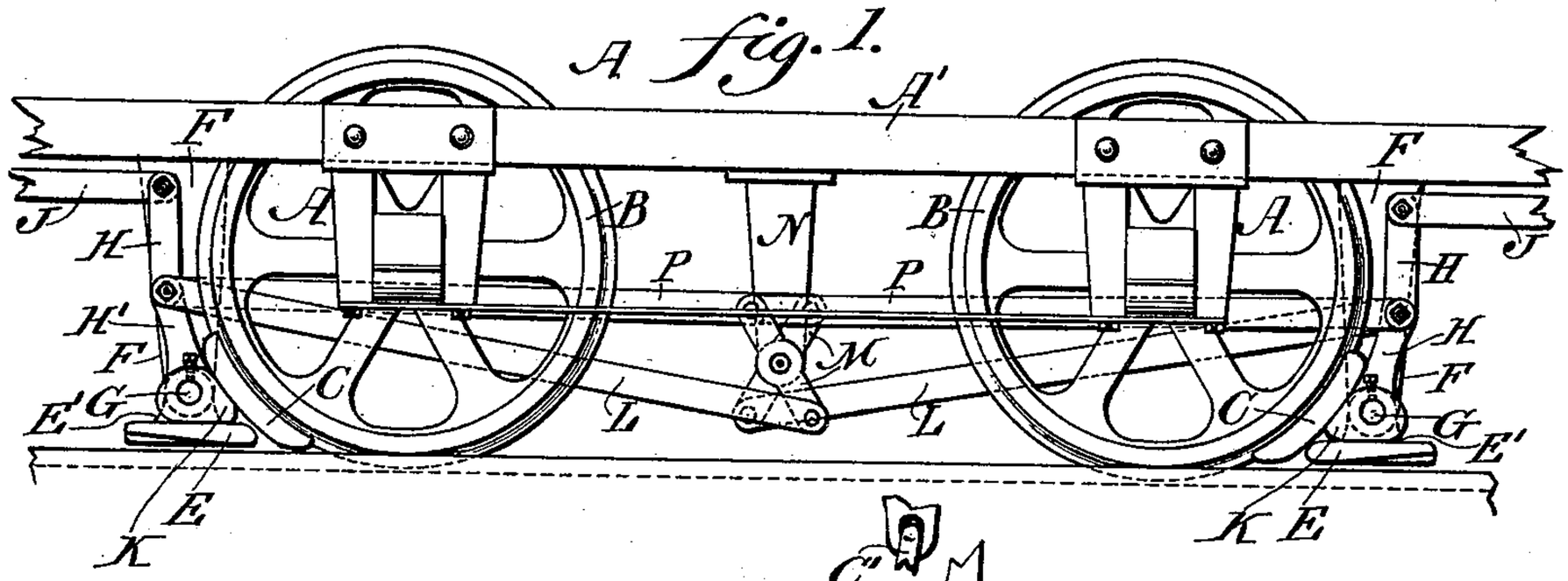


fig. 2.

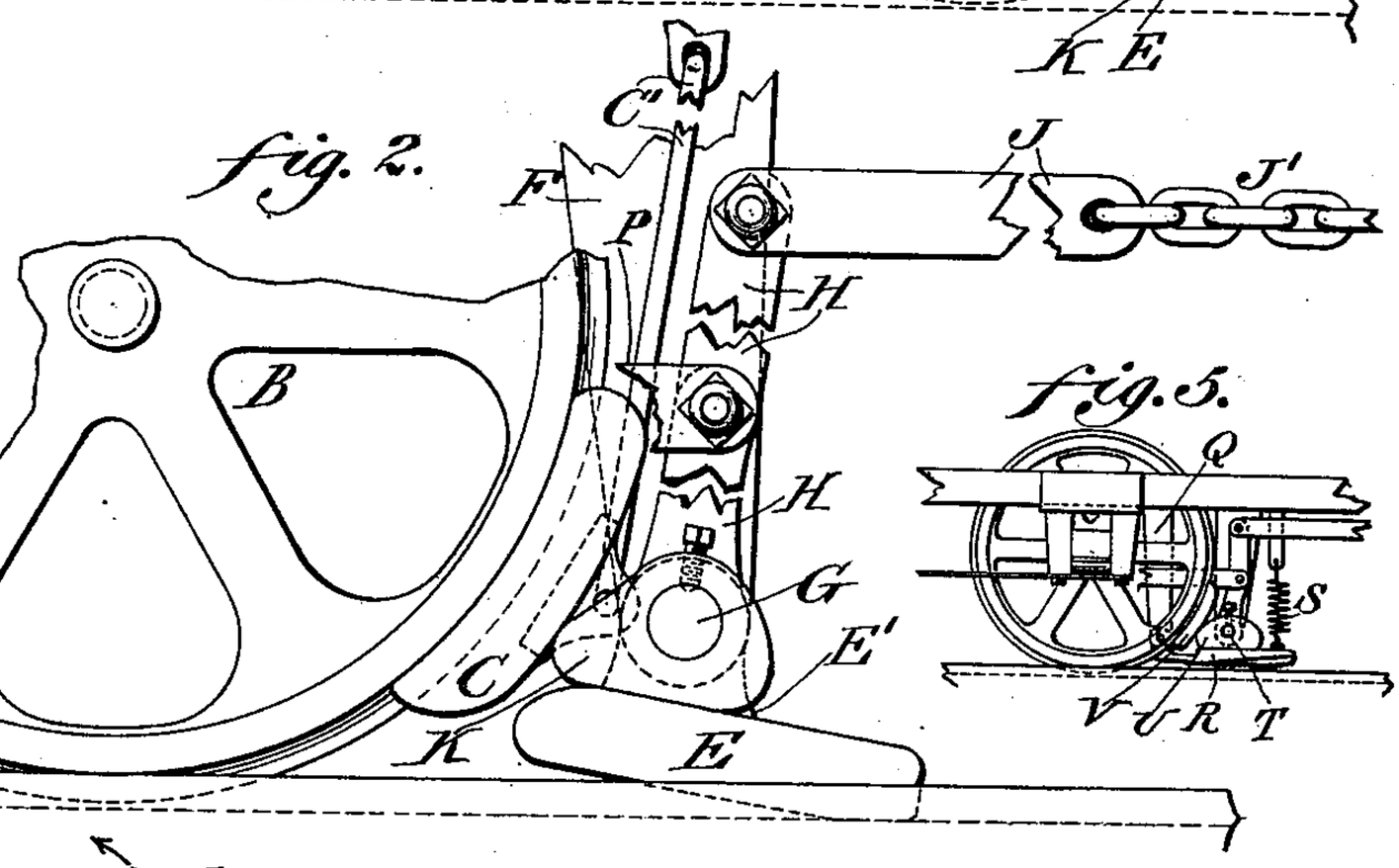


fig. 5.

fig. 4.

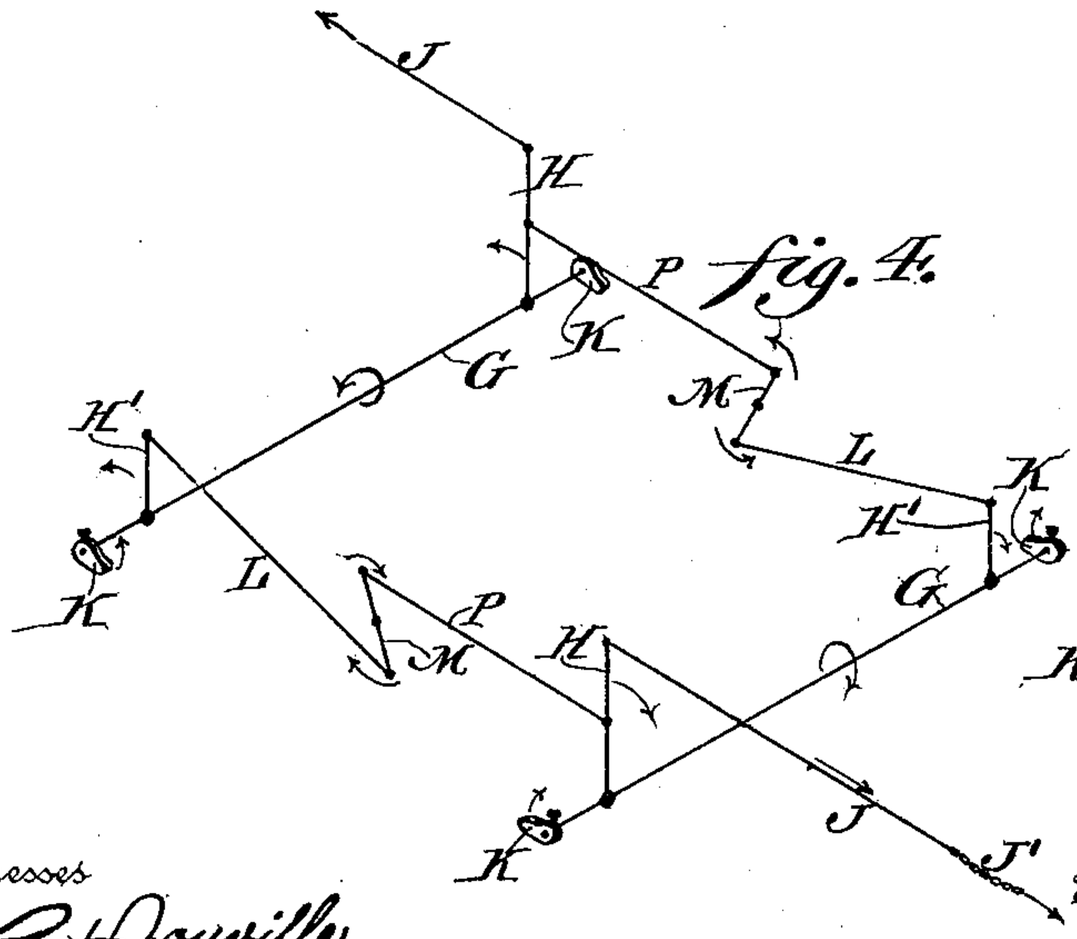
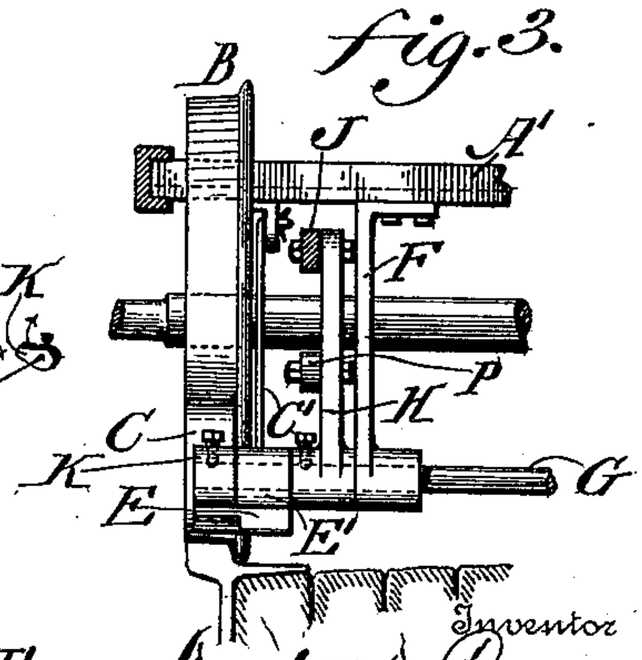


fig. 3.



Witnesses

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BRAKE.

SPECIFICATION forming part of Letters Patent No. 630,742, dated August 8, 1899.

Application filed April 20, 1899. Serial No. 713,715. (No model.)

To all whom it may concern:

Be it known that I, WALTER D. ROSS, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Brakes, which improvement is fully set forth in the following specification and accompanying drawings.

The brake mechanism for cars forming the subject of this invention consists of both wheel and rail brake shoes and of novel means for operating the same simultaneously, the rail-brake shoes when applied being made to sustain a portion of the weight of the car to reduce the friction between the wheels and the rails and thereby lessen the liability of injury to the wheels by "flattening" if the latter are locked by the wheel-brakes.

The invention further consists in the details of construction hereinafter fully described and specifically claimed.

Figure 1 is a side elevation of a portion of the running-gear of a street-car provided with my brake mechanism. Fig. 2 is a view, on an enlarged scale, in side elevation, of a portion of one wheel and accompanying brake mechanism. Fig. 3 is an end elevation of a wheel and its brake mechanism. Fig. 4 is a diagram illustrating the mechanism for operating the brake and the mechanical movements involved. Fig. 5 is a side elevation, on a reduced scale, of another embodiment of my invention.

Similar letters of reference indicate corresponding parts in the figures.

In accordance with the principle involved by my invention I provide a car-truck with both wheel and rail brake shoes and also with means for applying the same simultaneously. The rail-brake by impinging with considerable force upon the rail sustains a portion of the weight of the car, and thus reduces the friction between the wheels and the rails, so that the wheel-brake shoes can be applied with sufficient force to lock the wheels without danger of flattening the wheels by sliding on the rail.

In Figs. 1 to 3 I have shown one embodiment of this invention in which the rail-brake shoe is mounted upon and turns with a rock-shaft hung from the truck-frame, the parts being so constructed and arranged that a slight rocking movement of the rock-shaft is sufficient to throw the shoe in contact with or withdraw it from the rail.

In Fig. 5 the wheel-brake shoe is hung and operated in the same manner as in the other figures, but the rail-brake shoe is supported independently of the rock-shaft and is pivoted at one end to a bracket upon the truck-frame, is held normally above the rail by a spring, and is applied by means of a cam upon said rock-shaft.

Except as regards the rail-brake shoe the two embodiments of my invention are similar, and consequently a detailed description and illustration of one form is sufficient.

Referring now specifically to Figs. 1 to 4, A indicates a portion of the running-gear of a car, comprising the truck-frame A′ and the wheels B of ordinary construction. The wheel-brake shoes C are hung in the usual manner by links C′, as shown in Figs. 2 and 3. The means for applying both the wheel and rail brake shoes C and E are sustained by brackets or hangers F on the truck-frame, situated adjacent to the wheels, as shown. One of these brackets or hangers F is situated at each side of the truck, and in the lower ends thereof is mounted a transverse rock-shaft G. This shaft G is rocked by means of an upright lever H, connected at its upper end to the brake-operating devices—for instance, the link J and the chain J′, (shown in Fig. 2,) that are usually employed on street-cars. The wheel-brake shoes C are applied by means of cams K, rigid upon the rock-shaft G and situated adjacent one side of the truck, it being noted that when the upper end of the lever H is drawn outwardly by the brake-operating means the cams act upon the back of the brake-shoes C and throw them into forcible contact with the wheels, as shown in Fig. 2. The said rock-shaft G also carries the rail-brake shoes E, the same being rigidly mounted upon the rock-shaft and turning therewith. The particular connection between the rail-brake shoes and the rock-shaft is clearly illustrated in Figs. 2 and 4, it being noted that the brake-shoes E are provided with eye-lugs E′ to receive the shaft G and are mounted upon the latter adjacent the cams K, the lower face of each of said cams fitting against the upper flat face on a portion of the rail-brake shoe E, pro-

jecting laterally from the portion carrying the eye-lug E′, so as to be under said cam and to be held thereby rigidly relative to the rock-shaft, so as to turn therewith. The lower face of the rail-brake E is formed, as best illustrated in Fig. 2, so as to be thrown into operative engagement with the rail at the same time that the cams K apply the shoes C. It is seen that the active part stands above and at an angle to the face of the rail when the rock-shaft is in its normal position, as shown in Fig. 1, but is thrown downwardly and in operative engagement when the brake is applied, as shown in Fig. 2. The construction of this rail-brake further permits the shoe to be readily replaced when worn.

In Fig. 5 there is a hanger or bracket Q, to the lower end of which one end of the rail-brake shoe R is pivoted. The other end of the shoe R is sustained normally above the rail by a spring S, hung from the truck-frame. The rock-shaft T is hung as before described, being provided with a cam U to apply the wheel-brake shoes V. The cam U also contacts with the upper face of the shoe R and when it is turned by the shaft T forces the shoe R against the tension of the spring S upon the rail, as is obvious. Said spring of course restores the shoe to its normal position when the cam is withdrawn and ceases to act thereupon.

It is understood, of course, that the brakes can be applied to a single pair of wheels or to both pairs of the truck, as shown in Fig. 1, and when applied to both pairs of wheels they are connected together to operate simultaneously and from both ends of the car, as will be understood from Fig. 1 and the diagram of Fig. 4. Only one lever H is used at each end of the truck, being situated near one end of the rock-shaft, while near the other end of the rock-shaft is an arm H′, that is connected by a link L with a lever M, mounted upon a bracket N near the center of the truck, while connected with the other end of the lever M is a link P, that is connected with the lever H at the other end of the truck. Thus it will be seen that an outward movement of the upper end of said lever H causes the same movement on the part of both wheel and rail brake shoes at both ends of the car, it being understood, of course, that the links L and P, lever M, and brackets N are duplicated on both sides of the car.

The operation will be clearly understood from the diagram shown by Fig. 4, in which the different movements are indicated by arrows.

The operation is as follows: Fig. 1 shows the parts in their normal position—that is, with the wheel-brakes out of contact with the wheels and with their rear faces against the low and flat face of the cam K and the rail-brake above the track. A pull upon the devices J and J′ in the direction shown by the arrows in Fig. 4 swings the levers H accordingly and rocks the shaft G in the direction shown by the arrows also. The cams K, turning with the shaft G, throw the inclined active face of the rail-brake E in contact with the rail, while the high part of the cam, engaging the wheel-brake shoe C, forces the same against the wheel, the parts then assuming the position shown in Fig. 2. The manner in which both sets of brakes are operated simultaneously and from opposite ends of the truck is evident on Fig. 4. Both the wheel and rail brake shoes return by gravity to their normal position (shown in Fig. 1) when the devices J and J′ are released, the levers H, cam K, and shoe E swinging back to their normal upright position and the shoe C doing likewise when released by said cam K.

The operation of the form shown in Fig. 5 has been heretofore described and is clearly understood.

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

1. The combination with the truck-wheels, of sets of brakes for said wheels, each set comprising a wheel and a rail brake shoe, said brake-shoes being mounted independently of each other, a cam engaging the rear faces of each of said brake-shoes, and means for operating said cam.

2. The combination with the truck-wheels, of sets of brakes for said wheels, each set comprising a wheel and a rail brake shoe, said brake-shoes being mounted independently of each other, a cam situated between and in the rear of said brake-shoes and provided with a projection engaging the rear face of each, and means for operating said cam.

3. The combination with the truck-wheels, of sets of brakes for said wheels, each set comprising a wheel and a rail brake shoe, the latter being pivotally supported at one end, a spring supporting its other end, a cam engaging the rear faces of said brake-shoes, and means for operating said cam.

4. The combination with the truck-wheels, of sets of brakes for said wheels, each set comprising a wheel and a rail brake shoe, said brake-shoes being mounted independently of each other, a rock-shaft having cams situated to engage the rear faces of each of said brake-shoes, and a lever mounted upon said rock-shaft and connected with the brake-operating mechanism.

5. The combination with the pairs of truck-wheels, of sets of brakes for said wheels, each set comprising a wheel and rail brake shoe, said brake-shoes being mounted independently of each other, rock-shafts having cams situated to engage the rear faces of said brake-shoes, levers mounted upon said rock-shafts and connected with the brake-operating mechanism, and arms upon each of said rock-shafts geared to the lever of the other rock-shaft.

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