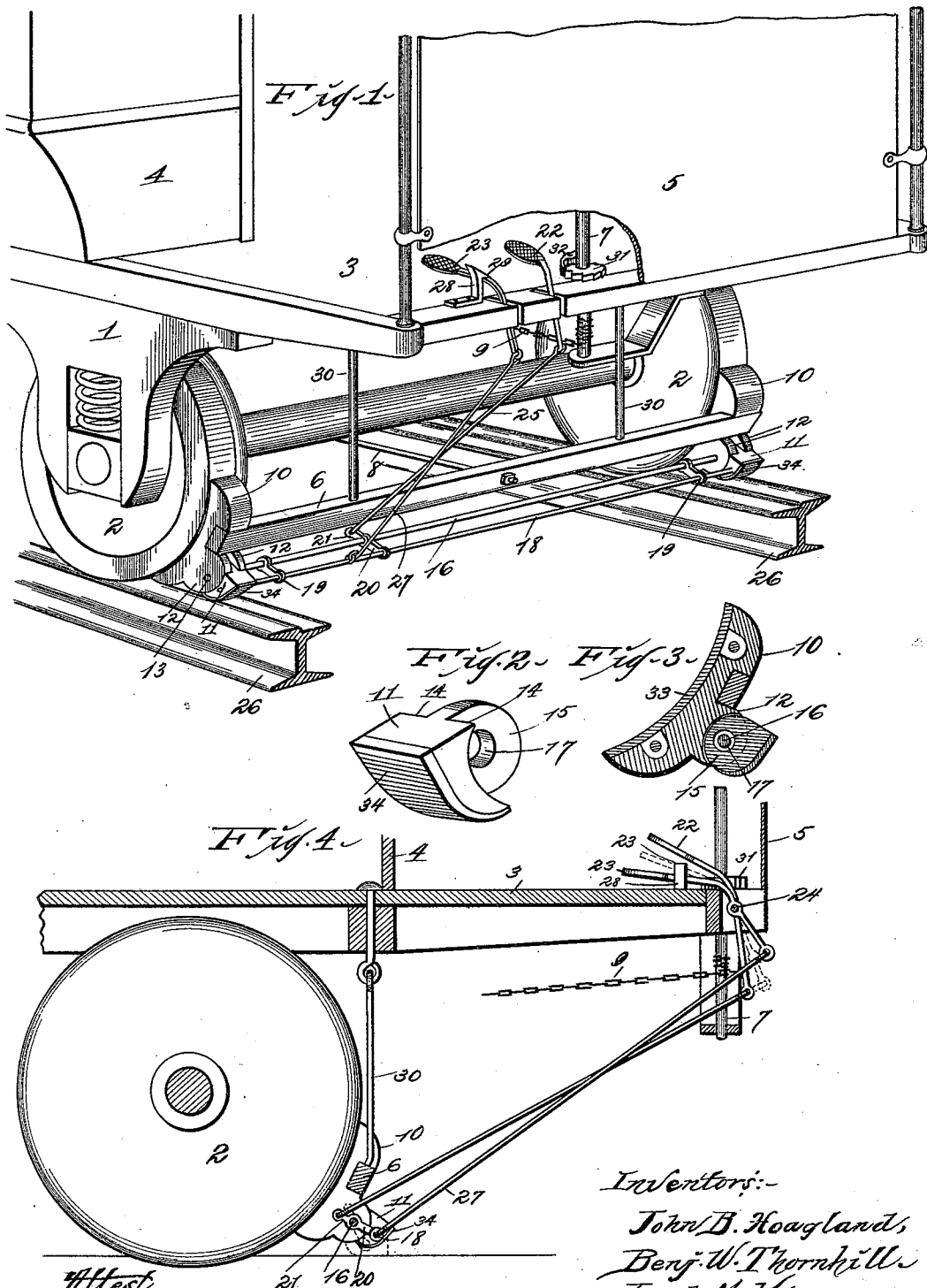


(No Model.)

J. B. HOAGLAND, B. W. THORNHILL & J. M. KINSEY.
COMBINED WHEEL AND RAIL BRAKE.

No. 544,302.

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COMBINED WHEEL AND RAIL BRAKE.

SPECIFICATION forming part of Letters Patent No. 544,302, dated August 13, 1895.

Application filed June 18, 1894. Serial No. 514,894. (No model.)

To all whom it may concern:

Be it known that we, JOHN B. HOAGLAND, BENJAMIN W. THORNHILL, and JACOB M. KINSEY, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in a Combined Automatic Wheel and Rail Brake, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to automatic brakes; and it consists in the novel construction, combination, and arrangement of parts hereinafter specified, and designated in the claim.

The object of our invention is to provide each end of a car with improved brake-applying devices and brake-shoes, which latter may simultaneously be made to engage the tread of the car-wheels and the head of the track-rails to bring the car to a standstill in the shortest possible space of time in case of emergencies, such as impending collisions with persons or vehicles at crossings or other places, whereby loss of life and limb and damage to property may be avoided.

In the drawings, Figure 1 is a perspective view of one end of a street-car with parts broken away and having our invention applied thereto. Fig. 2 is a detail view in perspective of one of the rail-shoes detached. Fig. 3 is a sectional side elevation of a wheel and rail shoe pivotally connected. Fig. 4 is a sectional side elevation of the devices shown in Fig. 1.

As the connections at both ends of a car are identical, we have deemed it unnecessary to illustrate a complete car.

1 indicates the truck-frame of the car; 2, the wheels thereof; 3, the floor of the front platform; 4, the body of the car, and 5 the usual dashboard thereof.

In carrying out our invention we make use of the usual brake-beam 6, which is connected to the brake-staff 7 by means of a horizontal rod 8, chain 9, and the usual intermediate connections now in use upon railway-cars. Wheel-shoes 10 are mounted upon the brake-beam 6 and may be applied to the wheels in the usual manner by manipulating the brake-staff 7 in making an ordinary stop. Our rail-shoes 11 are applied only to the wheel-shoes which are located in advance of the

wheels, as they would be of little or no service if applied in the rear of the wheels. To illustrate this we will state that the car shown in the drawings is arranged to move forward in a direction toward the right hand in Figs. 1 and 4.

As the wheel-shoes 10 and the rail-shoes 11 are all alike, we will limit our detail description to one of them. (See Figs. 2 and 3.)

The shoe 10 is provided with two integral ears 12, which project therefrom parallel with each other, so as to form a space between them. The outer peripheries of these ears conform to the arc of a circle having for its center a perforation 13, which is made in said ears. The curved outer surfaces of these ears form solid bearings for correspondingly-formed shoulders 14 of the rail-shoe 11. It will be noticed that the perforations 13 of said ears are located in a plane below the center of the car-wheels 2 for a purpose hereinafter mentioned.

The rail-shoe 11 is pivotally connected to the wheel-shoe by having a perforated ear 15 formed upon it and inserted in the space between the ears 12 of said wheel-shoe and secured in position by means of a pin or bolt 16, which is mounted in the perforations 13 of said ears and loosely engages the perforation 17 of the rail-shoe ear 15; but the hole or perforation 17 of said last-mentioned shoe is made considerably larger than the said pin or bolt, so that little or no strain will be thrown upon the latter, but will be thrown upon the shoulder 14 and the edges of the ears 12 during operation. This construction is very durable and by means of it all possibility of breaking the pin or bolt 16 is prevented, and at the same time the rail-shoe may be easily moved up and down in its bearings. The pin 16 is preferably in the form of a long rod or bar extending the full length of the brake-beam 6 between the two shoes 10, carried by said brake-beam. The two rail-shoes 11 are also connected by a transverse rod or bar 18, the ends of which are rigidly secured in said rail-shoes, and which rod or bar extends parallel to the rod 16.

19 19 indicate links which are perforated near their ends and mounted upon the rods or bars 16 and 18, one closely adjacent each of the wheel-shoes 10, whereby said rods or bars

are spaced a certain distance apart. The ends of the links which engage the rod or bar 18 are preferably fixed upon said rod or bar, while the ends of said links which engage the rod or bar 16 are preferably mounted loosely upon the latter, so that when the rail-shoes 11 are swung up and down said links will turn upon said rod or bar 16.

20 indicates a lever preferably in the form of a link and having perforations formed in it to fit over the rods or bars 16 and 18 in a manner similar to that in which the links 19 are mounted. This lever 20 is provided with a rearward and upward extension 21.

22 and 23, respectively, are foot-levers, which are pivoted intermediate of their ends to the forward portion of the truck-frame by means of pins or bolts 24, so that their upper ends will project convenient for operation by the motorman or driver's foot.

25 indicates a rod or similar connection, one end of which is connected to the lower end of the foot-lever 22, and the opposite end of which is connected to the free end of the extension 21 of the lever 20, whereby the rail-shoes 11 may be thrown downward into contact with the rails 26 of the railway-track.

27 indicates a rod or similar connection, the upper end of which is connected to the lower end of the foot-lever 23, and the opposite end of which is connected to the rod or bar 18 or some portion of the rail-shoes 11, whereby said shoes may be raised off of the rails 26.

The free end of the foot-lever 22 is normally elevated, as shown in Fig. 1; but the free end of the foot-lever 23 is normally depressed, as also shown in Fig. 1, and is held in such position by means of a bracket 28, fixed upon the upper surface of the truck-frame and provided with a horizontal hook 29, which extends over said foot-lever 23 and retains the same in normal position.

30 indicate the vertical rods upon which the brake-beam 6 and attached parts are hung, so that they may be bodily moved toward and away from the treads of the wheels during use. The upper ends of said rods or hangers 30 are pivotally connected to the truck-frame in any desired manner, such as that now in use.

The brake-staff 7 at each end of the car is of course provided with the usual ratchet-wheel 31 and foot dog or pawl 32.

The wheel-shoes 10 are provided with removable wear-shoes 33, which are attached thereto in any common manner to take the wear off of the said wheel-shoes, and the rail-shoes 11 have their faces provided with wear-shoes 34 for the same purpose.

The wear-shoes 34 preferably have their faces provided with teeth or are otherwise roughened to enable them to more readily take hold of the rails during use.

The operation is as follows: In making an ordinary stop the motorman or driver simply makes use of the brake-staff 7 and the usual connections in the usual manner and brings

the wear-shoes 33 carried by the wheel-shoes 10 into contact with the wheels; but should an emergency arise and a quick stop be called for the operator first sets the usual brakes in the manner above described, and then disengages the foot-lever 23 from beneath the hook 29 of the bracket 28, and then quickly depresses the other foot-lever 22, when the following-described action will occur: The weight of the rail-shoes 11 and attached parts will cause them to quickly drop downward into contact with the rails 26, and then a slight pressure of the foot upon the lever 22 will cause them to bite said rails, and as the forward movement of the car continues said rail-shoes will practically come to a standstill, and the weight of the car will push the wheels 2 into closer contact with the wear-shoes 33 of the wheel-shoes 10, and the rail-shoes 11 will turn upon their bearings until they occupy the position indicated by dotted lines in Fig. 4, and practically the entire weight of the front end of the car will be thrown upon said rail-shoes, and the car will thereby be very quickly brought to a standstill.

The rear ends of the faces of the rail-shoes 11 and wear-shoes 34 may be curved upward, as shown, so that they will act something like wheels and more readily roll under the wheel-shoes 10 during the action just above described.

What we claim is—

The combination with the car-frame, of a brake-beam 6 suspended from said frame, wheel-shoes 10 fixed on said beam and provided with perforated ears 12, rail-shoes pivoted to said ears at a point in a plane below the center of the car-wheels to contact with the track-rails, the rod or bar 16 extending the full length of said brake-beam and located in the perforations of said wheel-shoes and said rail-shoes, a transverse rod or bar 18 extending parallel with said rod or bar 16 and securely connecting said rail-shoes and movable therewith independently of movement of said wheel-shoes, a series of links 19 perforated near their ends and mounted upon the parallel rods or bars 16 and 18 to space them apart and form bearings for the same, a lever 20 connected to said parallel rods or bars and having a rearward and upward perforated extension 21, foot-levers pivoted to the front portion of the car, a rod 25 connecting a foot-lever to the perforated extension of the lever 20, and another rod 27 connecting a foot-lever to the rod or bar 18, substantially as herein specified.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN B. HOAGLAND.
BENJAMIN W. THORNHILL.
JACOB M. KINSEY.

Witnesses:
ALSTON L. RYLAND,
J. G. ROGERS.