(No Model.) 3 Sheets—Sheet 1.

G. W. BROWN.

RAILWAY AND RAILWAY VEHICLE.

No. 400,544. Patented Apr. 2, 1889.

Fig. 1.

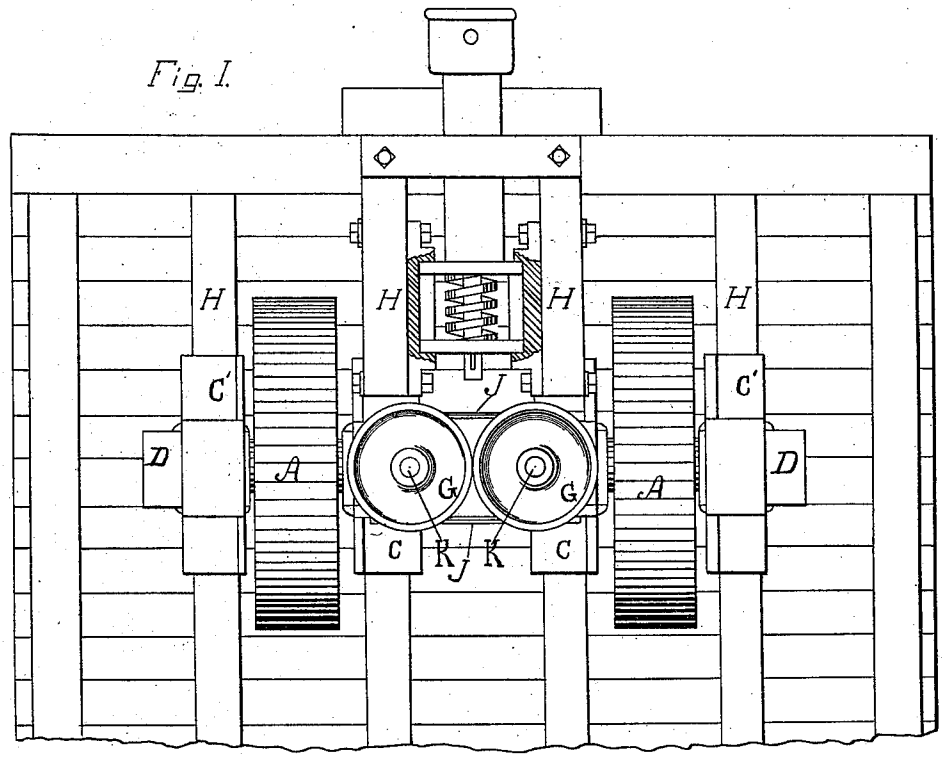


Fig. 2.

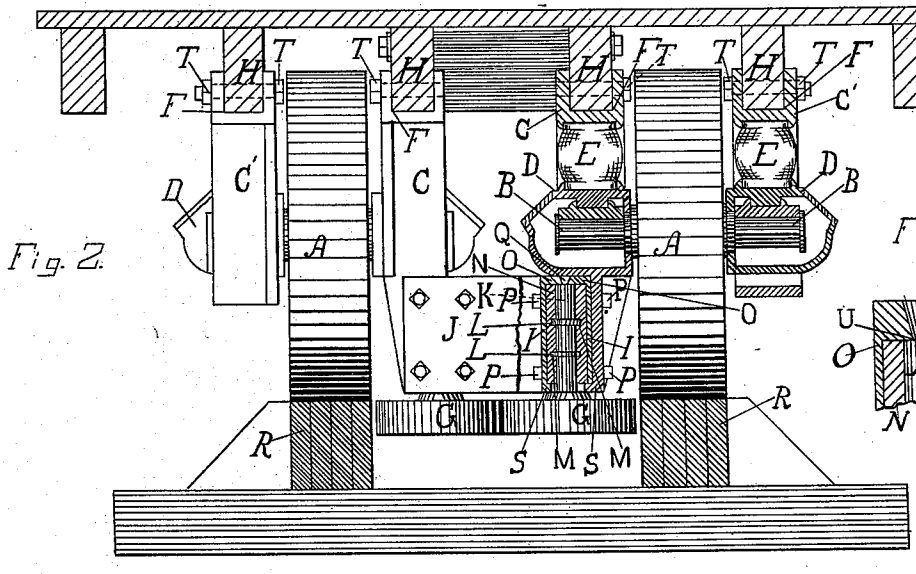
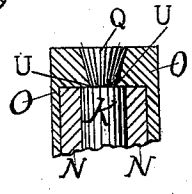


Fig. 10.



Witnesses,
W. C. Baker
L. R. Hill

Inventor,
Guy W. Brown

By his Attorneys
Hazard & Townsend.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

G. W. BROWN.

RAILWAY AND RAILWAY VEHICLE.

No. 400,544. Patented Apr. 2, 1889.

Fig. 3.

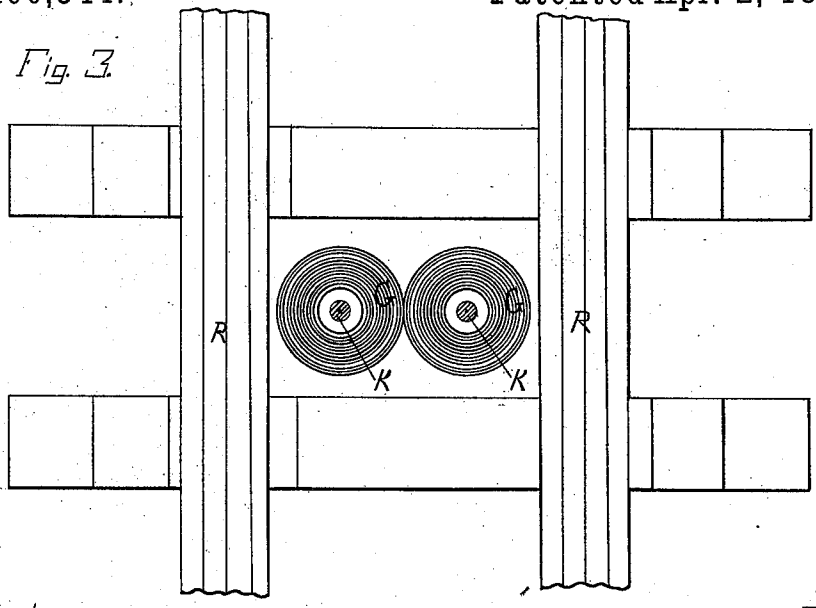


Fig. 4.

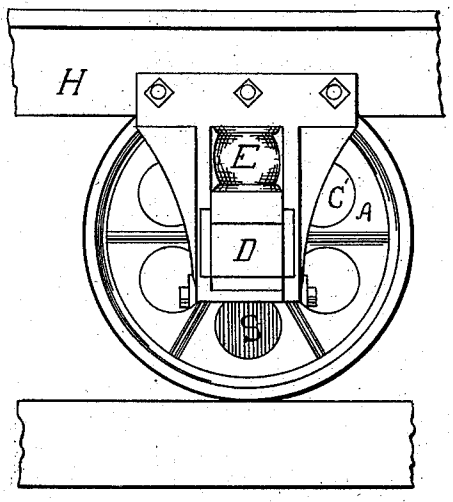


Fig. 5.

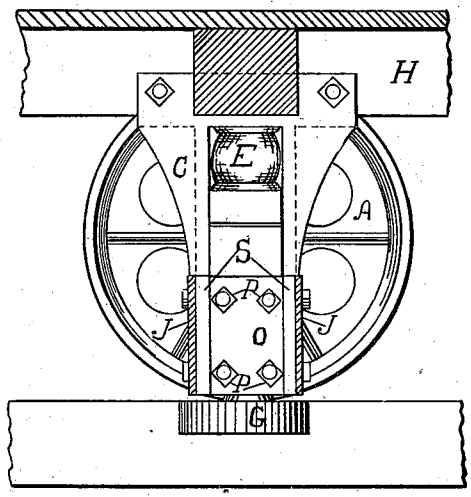
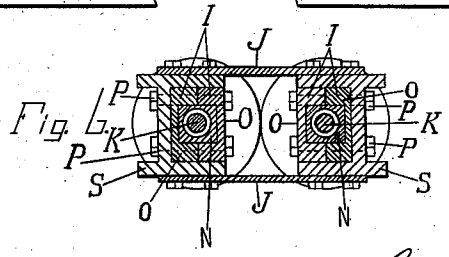


Fig. 6.



Witnesses,
M. C. Sealer.
L. R. Hill.

Inventor,
Gay W. Brown

By his Attorneys
Hazard & Townsend.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 3.

G. W. BROWN.

RAILWAY AND RAILWAY VEHICLE.

No. 400,544. Patented Apr. 2, 1889.

Fig. 7.

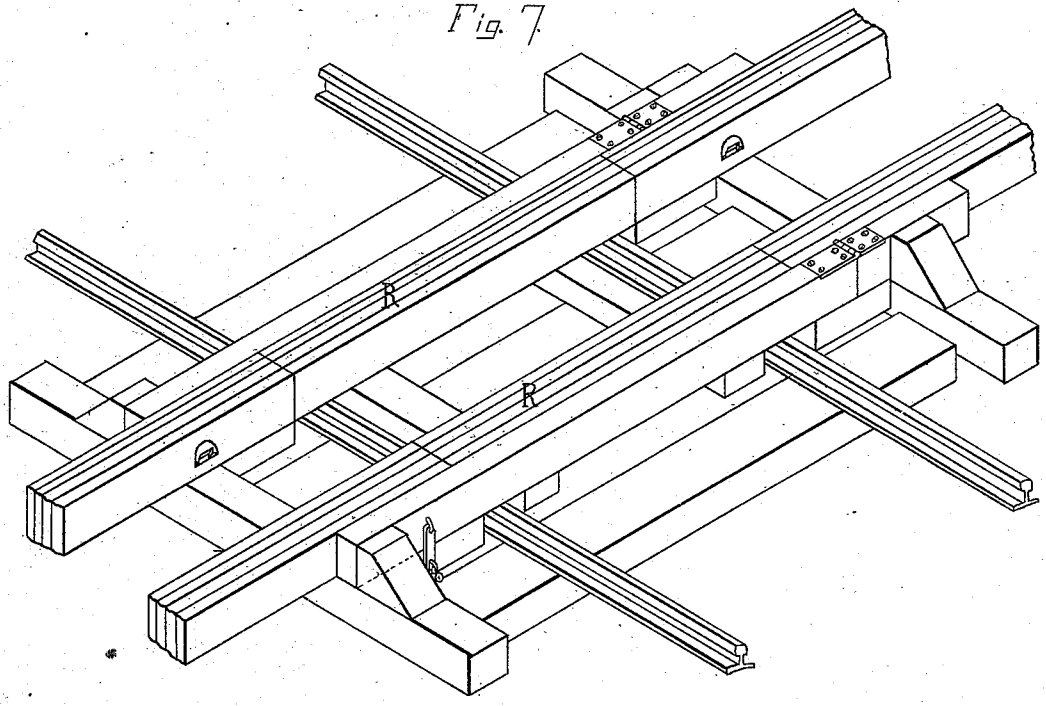


Fig. 8.

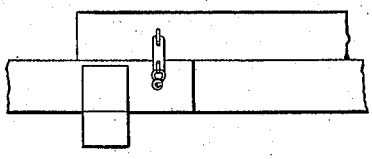
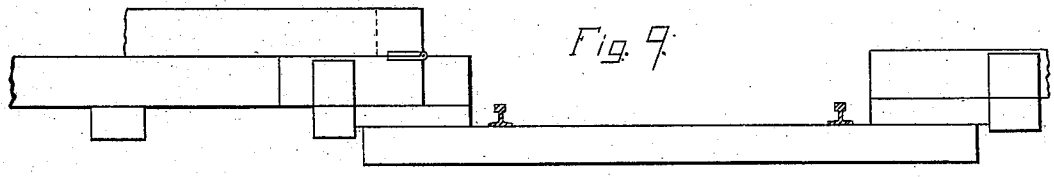


Fig. 9.



Witnesses,
M. C. Galer.
L. R. Hill

Inventor,
Geo. W. Brown
By his Attorneys
Hazard & Townsend

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

GAY W. BROWN, OF LOS ANGELES, CALIFORNIA.

RAILWAY AND RAILWAY-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 400,544, dated April 2, 1889.

Application filed August 1, 1888. Serial No. 281,711. (No model.)

To all whom it may concern:

Be it known that I, GAY W. BROWN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in the Construction of and Appliances for the Operation of Wooden Railways, of which the following is a specification.

The objects of my invention are the construction of certain improvements in railways which will render them useful in ascending extreme grades in mountainous localities, and will also reduce the cost of their construction. In carrying out these objects I dispense with the practice of using truck or carrying wheels upon metal rails of oval or rounded configuration, as such use does not permit of sufficient tractive coherence to enable trains of cars to ascend unusual ascending grades, which my improvements provide the means of doing within comparatively short distances. Heretofore this purpose could not be attained by railways using single pairs of wheels on the same axles with single pairs of rails, the former serving the double function of traction and carrying wheels, for the reason that the tractive coherence under such conditions would be insufficient to ascend extremely steep acclivities. Therefore my invention is distinguished by the use of broad flat-faced carrying and traction wheels journaled upon independent axles with independent trucks, in combination with broad flat-faced rails, on which the flangeless broad-track wheels run, and horizontally-arranged mutually-supporting guide-wheels to prevent derailment of the cars, and the combination of said tractive and carrying wheels, guide-wheels, and independent axles and trucks, with peculiarly-constructed mechanism for connecting them with the car, as herein more fully described.

Figure 1 is a view of the under side of one end of a car provided with trucks adapted for the operation of the railway. Fig. 2 is a cross-section of the car and an elevation of the trucks at one end of the car standing on the track. Fig. 3 is a view of a section of the track, showing the position of the guide-wheels between the rails. Fig. 4 is an elevation of one of the trucks, looking at it from the outside of the track. Fig. 5 is an elevation of the inner side of the truck. Fig. 6 is a cross-section on line x x, Fig. 2, showing the construction of the boxing which holds the guide-wheels. Fig. 7 illustrates the track where it crosses an ordinary railroad. Fig. 8 is a detail of the crossing-lock. Fig. 9 illustrates the position of the crossing-rails when they are thrown back to allow a train on the ordinary railway to pass. Fig. 10 is a detail of the top of the axle K and its boxing.

It is desirable in mountain railways that there be as much tractive surface for the wheels as is possible, so as to increase friction between the wheels and the track, in order that the train may be fully under the control of the train-hands when ascending or descending steep grades. It is also desirable that the train be adapted to turn short curves readily and with little friction.

The rails R of my railway are of wood, and are preferably constructed of four planks, two inches thick by eight inches broad, set upon edge and bolted or spiked together, breaking joints alternately, and laid upon cross-ties and secured thereto by lag-screws upon the inner sides of the rails, and cleats upon the outer sides. Single timbers of sufficient breadth and strength may be used for the rails instead, if desired. The tops of the rails are flat and plain, and are preferably painted with a coating of coal-tar.

In order that a wooden track of this description shall be durable, it must be protected from the wear of the wheels as much as possible. For this purpose, I provide broad flat-faced truck-wheels without flanges, adapted to run upon and cover transversely the entire width of the faces of the rails, and I provide two depending horizontal guide-wheels, G G, which are journaled side by side in boxing I, which are attached to the car and extend below the top of the rails, and are of such diameter that their peripheries touch each other midway between the truck-wheels and nearly come into contact with the inner side of the rails, so that a slight lateral movement in either direction will bring the outer rims of the guide-wheels against the rail. By this means the wooden rails are protected against wear, and the danger of derailment is avoided. The faces of the truck-wheels are

preferably equal in width to the top of the rail, so that their edges may not be crushed into the wood by the weight of the car.

The wheels G G are braced against lateral strain by their contact with each other and by the plates J.

Each of the truck-wheels A is provided with an independent axle, B, which projects a short distance upon each side of the wheel.

Each wheel is secured to the body of the car by two iron frames, C C′, in which the axle of the wheel is mounted by means of the boxes D and springs E.

Each truck-wheel, together with its frames, boxes, and springs, forms a separate truck, which may be removed at pleasure in case of a hot box or a break, and may be replaced by another truck. In order to facilitate this exchange of trucks, the frame C is provided on its upper side with a seat, F, which fits upon one of the sills H of the car-floor, and is secured thereto by bolts T, which may be removed when it is desired to substitute a new truck for a disabled one. Each wheel may be removed separately also, if desired.

The horizontal guide-wheels G G are of special use when curves of very short radius are to be passed, as the pressure ordinarily coming upon the flanges of car-wheels commonly in use is borne by the guide-wheels, and the great friction and wear between the flanges and rails are thus avoided.

The depending horizontal guide-wheels G are sustained by the boxes I, which are bolted to seats S, projecting from the frames C. The guide-wheels are retained in the boxes by their vertical axles K, having boss-rings L around them to fit into annular grooves M, cut in the packing N of the boxes.

Mounted on the top of the axle is a spindle, Q, the shape of the frustum of a cone having its base uppermost, which fits into the notches U in the halves O O of the case I, in which the packing N is mounted. The two halves of the case O O are secured together by bolts P, which pass therethrough and through the seat S, which is bolted to the plates J, and which is an arm or projection of the frame C.

The frusto-conical spindle Q will serve to sustain and steady the guide-wheels when the Babbitt-metal packing N becomes worn.

Having described my invention, I will here state that I am aware that railways have been described in which broad-tread truck-wheels without flanges were to be used in combination with the metal rails with rounded or oval-shaped bearing-surfaces of the usual kind, and guiding-rollers to work horizontally against the inner curved sides of the rails to prevent derailment of the cars, such structure being intended to avoid friction and wear of the wheels and rails; also, that an additional pair of flat-faced flangeless wheels and additional flat-faced rails to increase traction were to be employed in combination with the above combination of wheels and ordinary rails to operate railways on heavy grades. I do not claim either of these combinations of elements; but

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

1. The broad level-faced wooden rails R R, in combination with equally broad-tread traction carrying-wheels and the pendent guide-wheels running in contact with each other, supported in horizontally-grooved boxing secured on frame C, (represented in Fig. 6,) substantially as described.

2. The broad-tread traction carrying-wheels A A, provided with independent axles and trucks, in combination with the rails R R and the pendent guide-wheels running in contact with each other and connected to the car or locomotive by the mechanism, substantially as described.

3. The railway organized as specified, consisting of the combination of the single broad-tread flangeless wheels independently journaled on separate trucks, the pendent flat-faced guide-wheels in contact with each other, the mechanism described, and shown in Figs. 2, 6, and 10, for supporting the guide-wheels and connecting them to the car or locomotive, and a single pair of broad-faced rails, substantially as described.

GAY W. BROWN.

Witnesses:
JAMES R. TOWNSEND,
M. C. GALER.