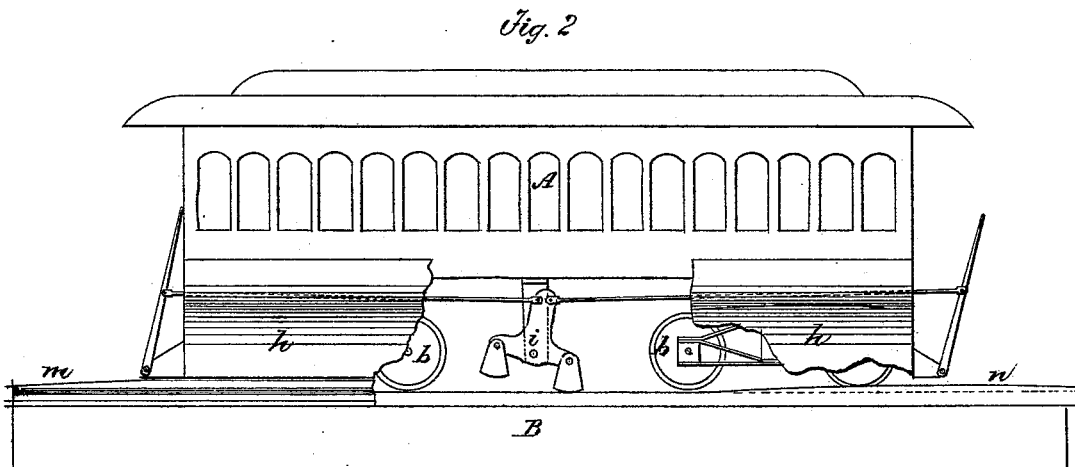
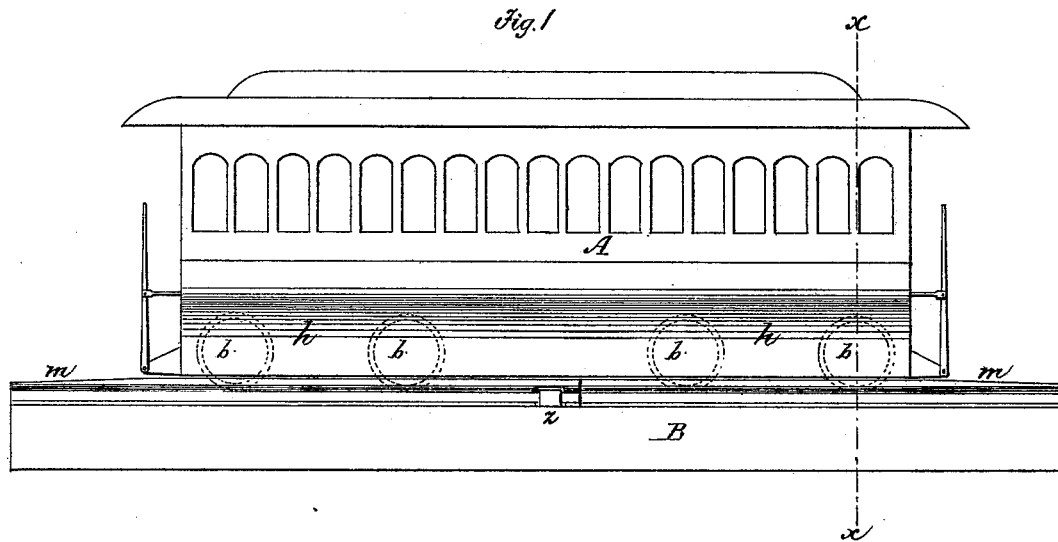


O. MACDANIEL.  
Railway-Track.

No. 215,010.

Patented May 6, 1879.



Witnesses  
*Charles T. Nash*  
*Henry Suydam*

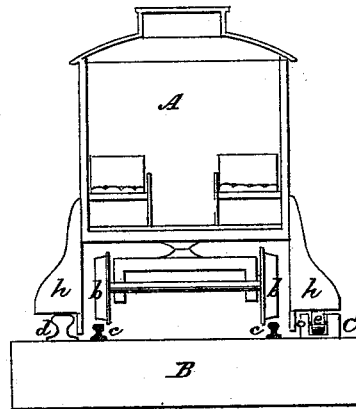
Inventor  
*Osborne MacDaniel*

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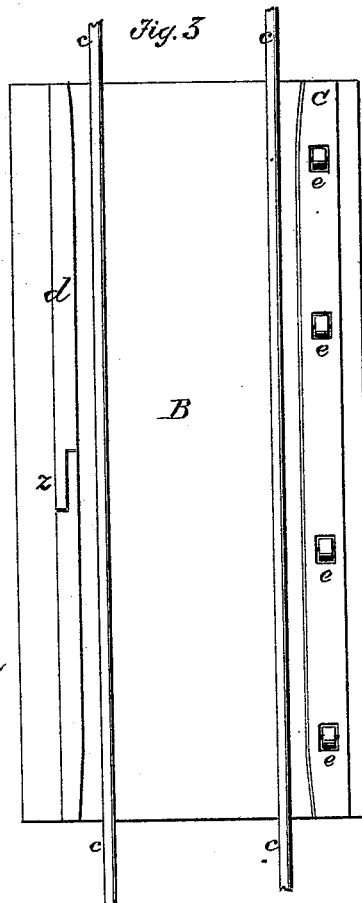
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*Fig. 4*



*Fig. 5*



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# UNITED STATES PATENT OFFICE.

OSBORNE MACDANIEL, OF NEW YORK, N. Y.

## IMPROVEMENT IN RAILWAY-TRACKS.

Specification forming part of Letters Patent No. 215,010, dated May 6, 1879; application filed August 13, 1878.

*To all whom it may concern:*

Be it known that I, OSBORNE MACDANIEL, of the city, county, and State of New York, have invented certain new and useful Improvements in Railways, which will be fully understood from the following specification, reference being made to the accompanying drawings, in which—

Figure 1, Sheet 1, represents a side elevation of a railway, with a passenger-car standing upon slide-rails and the car-wheels suspended clear of the traction-rails, as shown clearly in Fig. 4. Fig. 2, Sheet 1, is the same as Fig. 1, with a part of the side of the car broken away, showing the brake operating vertically on the traction-rails. Fig. 3, Sheet 2, is a plan of the railway. Fig. 4, Sheet 2, is a transverse section of the railway car and truck.

Similar letters of reference indicate corresponding parts.

This invention relates to an improvement in railways, that is particularly adapted to elevated street-roads, whereby the noise now made by the rolling of the car-wheels and the vibrations of the iron-work caused by said rolling may be greatly diminished.

It consists, mainly, in conveying passengers and freight by means of cars having (in addition to the ordinary wheels adapted to run on the rails commonly used) slides or runners, sliding or running over independent ways, which may be formed either of rails having a true surface, or a series of rollers supported by beams, girders, or other suitable means, arranged usually only on the straight portions of the railway; and it further consists in certain combinations of instrumentalities whereby the main feature of my invention is carried out.

An engine runs, as usual, on the traction-rails to draw the cars, which move upon wheels over the traction-rails at those points and places where the independent track of either slide-rails or rollers is not laid, and move over the independent track only on the runners or sliders. The movement of the cars from one to the other—that is, from wheels to sliders, or from sliders to wheels—is shifted by means of inclines, which operate automatically, without interrupting the movement of the cars.

In the case here presented, A is a passen-

ger-car, having wheels *b b* hung on trucks, as usual. B is the road-bed, on which the ordinary track of traction-rails *c c* is laid, upon which the engine runs to pull the cars on the railway. The independent track laid on parts of the road consists of slide-rails *d d*; or, as a modification thereof, I propose using rollers *e e*, set in line on a longitudinal beam, C, either of which plans for an independent track may be used for sliders *h h*, attached to the car A to move upon.

The slide-rails *d d* or the rollers *e e* are placed on the straight parts of a railway, but not where there are switches, sidings, and short curves; and the sliders *h h* run upon either one or the other of these independent tracks, formed of slide-rails or of rollers, as the case may be, while the car-wheels *b b* run, as usual, on the traction-rails *c c* at those points and places only where the independent track is not laid.

The slide-rails *d d* or the rollers *e e* are fixed at such an elevation above the road-bed that when the sliders *h h* rest upon either of them the wheels *b b*, attached to the car A, are suspended entirely clear of the traction-rails *c c*, as shown in Fig. 4.

Where the independent track of the slide-rails *d d* or of the rollers *e e* begins and terminates, single inclines *m* are placed at those points in line with them; or double inclines *n* are placed on the traction-rails *c c*, forming the ordinary track, for the purpose of shifting the movement of the cars automatically from that of sliders to that of wheels, and from that of wheels to that of sliders, without interrupting the movement of the cars.

The inclines *m* and *n* are very slight and gentle inclined planes, not necessarily exceeding a rise of an inch in ten or fifteen yards or more, in order to gradually raise the car-wheels *b b* clear of the traction-rails *c c*, and let them down in like manner.

The operation of shifting the motion of the cars with the single inclines *m* differs from that with the double inclines *n*. The sliders *h h* move on the single inclines to shift the movement of the cars, whereas the car-wheels *b b* move upon the double inclines to effect that object, ascending and descending for that purpose.

Either the single or double inclines may be

used for the purpose; but I prefer the single inclines.

Although I prefer inclines, yet any other method of transferring may be employed; or the use of transferring devices may be dispensed with entirely where fast speed is no great object, because in passing from the slide-rails to the traction-rails the wheels will readily adapt themselves to their work, if both the traction and slide rails are of proper height; and in changing from the traction-rails to the independent ways one of the rollers *e* may be so arranged as to lift the wheels clear of the rails, when the change is made at a slow speed, without any transferring device.

The sliders *h h* are attached to the car in any convenient manner, and are made of fine steel, planed smooth and true, with a hard temper and high polish on the rubbing-surfaces, if intended to run upon the slide-rails *d d*, but not polished if intended to run upon the rollers *e e*. The sliders have a flange on one side to lie up against the side of the slide-rails *d d*, or against the longitudinal beam *c*, on which are set the rollers *e e*, to serve as guides to keep the car in place.

The flanges on the wheels serve as guides in keeping the trucks of the cars in line directly over the traction-rails when the wheels are suspended, so that when the movement of the cars is shifted from the sliders or runners to that of wheels the wheels regain and engage the track with precision and certainty; but if the car-wheels are raised so high that the flanges cannot serve as guides, some other device for that purpose can be attached to the car.

The sliders or runners may be made long enough to extend the whole length of the car, or they may be made in short lengths, set in line on each side of the car to which they are attached.

The continuous bearings or slide-rails *d d* are also made preferably of fine steel, planed smooth and true on the top and sides, tempered hard, and highly polished. I prefer a slide-rail of the T shape; but instead of a slide-rail of that form secured with bolts, in the usual way, on cross-ties, blocks, or longitudinal beams, a round rod or square-faced bar may be laid on the top of a beam, and embedded in the timber with a slight elevation of the face only above the surface of the beam. A similar rod or bar is also placed on one side of the beam *C*, to serve as a bearing for the flange of the sliders.

The ends of the slide-rails *d d* are united with a lap-joint, *z*, to make the connection of the rails perfectly even and smooth.

The rollers *e e* are made of hardened steel, say six inches in diameter, hung in suitable metal boxes on journals or axles, upon which they revolve. They are placed in line at such distances apart on a longitudinal beam as will permit the sliders to rest upon two or more rollers at the same time.

Besides the ordinary brake, which operates

on the car-wheels to arrest their motion and stop a train, I also employ a brake, *i*, which operates vertically upon the traction-rails *c c*, to arrest motion and stop a train when the cars are moving on the sliders. By this arrangement I am enabled to quickly arrest the motion of the car, although it may be traveling on the slide-rails, when the ordinary brake-wheels are of no use, and by causing the brakes to work on the traction-rails the wear of the slide-rails by the action of the brakes is prevented.

In cases where rope or chain traction is used in place of a locomotive, the separate rails for the brakes to act on would still be of great value, as the employment of vertically-acting brakes on slide-rails would most probably be found impracticable.

The slide-rails and the sliders running on them will require constant lubrication; and for this purpose I place in front of the sliders a lubricating mop or sponge saturated with fine oil or other lubricating material regularly supplied from a suitable reservoir attached to the car. Gutters and receiving-cups are provided to catch and save the drip. An appendage of scrapers and brushes is also placed in front of a train of cars, to clear away dust and cinders or snow and ice. When necessary, a cover of some strong and elastic material, like vulcanized rubber, may also be laid over the slide-rails, or the rollers so arranged that the sliders shall lift the cover as they pass along and leave it in place behind them.

The vibration and noise which are caused by pounding of car-wheels upon the rails when a train moves rapidly over a railway, and especially on elevated street-roads, will be avoided by the use of sliders moving on the slide-rails, or on the rollers, as described. A train of cars on sliders will move smoothly and silently, like a sleigh on steel runners gliding over a field of ice. A great saving will be made in the wear and tear of the rolling-stock and the track of a railway by the use of sliders, and accidents from broken rails and wheels will be avoided by removing the cause of destruction of the metal.

Runners or sliders were used for land-transportation long prior to the invention of wheeled vehicles, and have always been employed in preference to wheels, as occasioning less draft wherever they could be run upon snow or ice; but as no material known to art can compare with ice—the product of nature—in lubricity, greater power will be required to move cars upon steel sliders over slide-rails of steel or other hard material than on wheels. Not more than double power, however, will be required; and to move them over rollers no greater power will be required than will operate with ordinary car-wheels on traction-rails.

Having described my invention and the manner of performing the same, what I claim as new, and desire to secure by Letters Patent, is—

1. A wheeled railway-car having a set of

sliders or runners, in combination with traction-rails for the wheels and bearings for the sliders or runners, provided with devices for automatically transferring the weight of the car from the wheels to the sliders or runners, or from the sliders or runners to the wheels, substantially as described.

2. The combination of sliders or runners *h h* and a wheeled car, *A*, with a compound railway and suitable transferring devices, whereby a convertible car is adapted and arranged to operate alternately on traction and slide rails, substantially as shown and described.

3. The combination of a car having wheels *b b* and sliders or runners *h h* with a compound railway, consisting of continuous lines of ordinary traction-rails and a set of ways independent thereof, constructed substantially as described, and adapted to receive said sliders or runners, arranged to operate as set forth.

4. The combination of the sliders or runners *h h*, the car-wheels *b b*, the traction-rails *c c*, and independent ways, constructed as de-

scribed, with sets of inclines, to gradually transfer the weight and shift the movement of the cars from the traction-rails to the slider-bearings, or from the latter to the former, substantially as specified.

5. The combination of a car provided with wheels to run on the traction-rails on the curved portions of a compound railway with sliders adapted to run on independent ways, formed either of slide-rails or rollers, on the straight portions thereof, thereby preventing on said straight portions the usual noise caused by the wheels running on the rails, as set forth.

6. The combination of independent ways, constructed substantially as described, and adapted to receive the sliders or runners of a car on the straight portions of a railway, with traction-rails arranged at the curves, switches, and sidings, to receive the ordinary car-wheels at those points, substantially as and for the purpose set forth.

OSBORNE MACDANIEL.

Witnesses:

CHARLES H. NASH,  
HENRY SUYDAM.