3 Sheets—Sheet 1.

E. Y. ROBBINS.

Railway Car.

No. 83,731. Patented Nov. 3, 1868.

Fig. 1

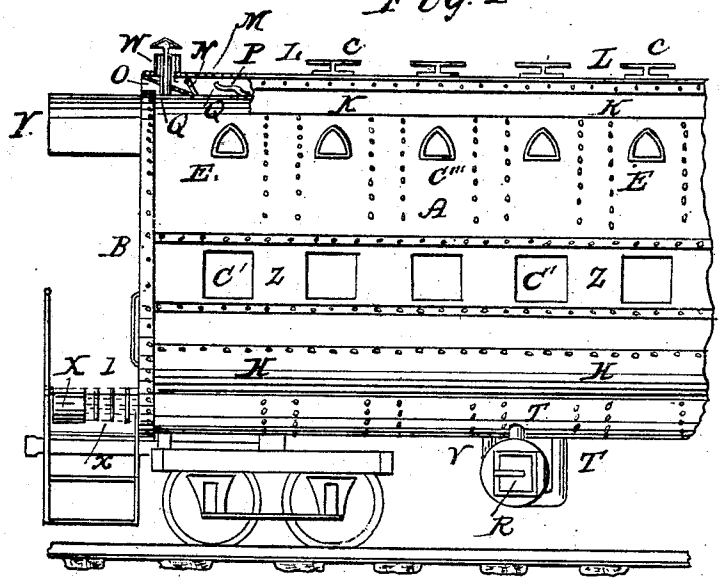


Fig. 3

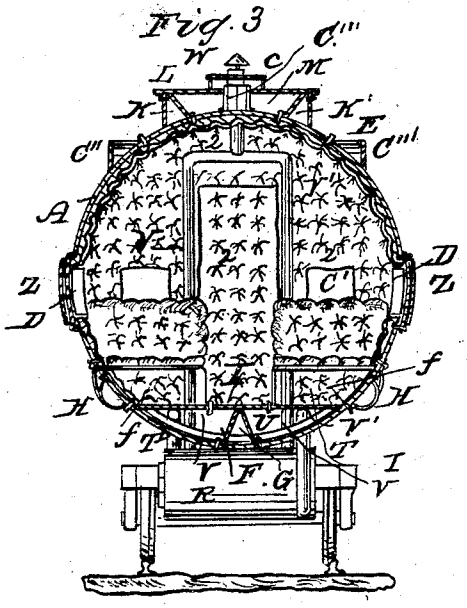
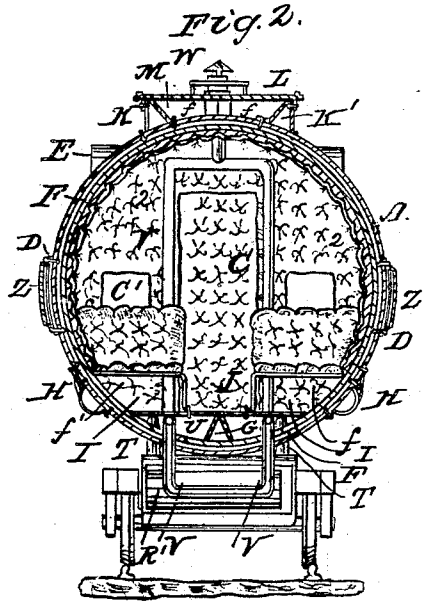


Fig. 2.



Witnesses

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3 Sheets—Sheet 2.

E. Y. ROBBINS.

Railway Car.

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Fig. 1.

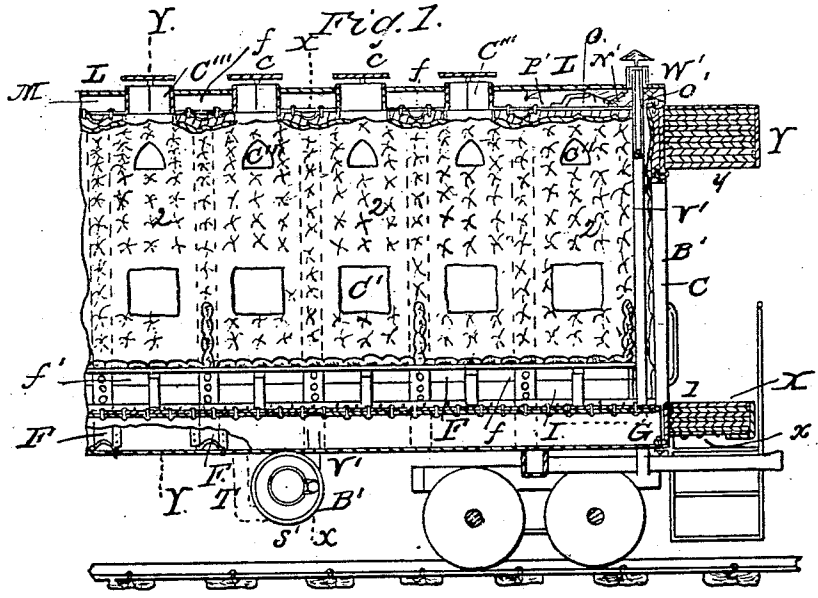
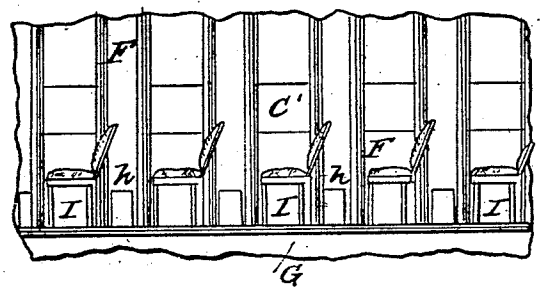


Fig. 6



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Railway Car.

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Fig. 4

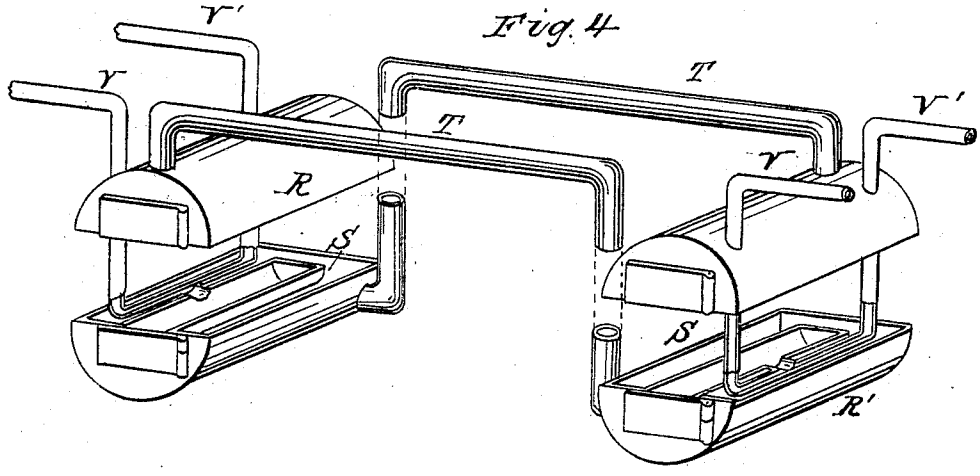
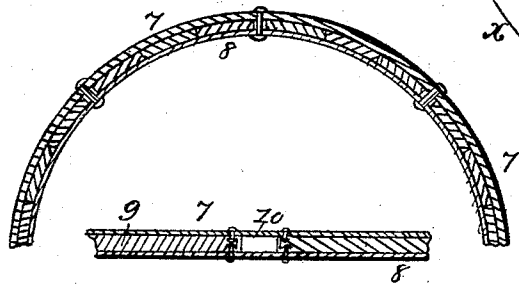


Fig. 7



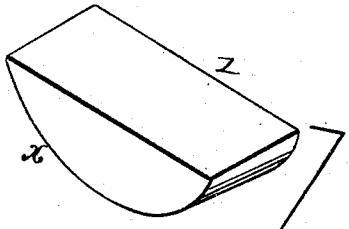
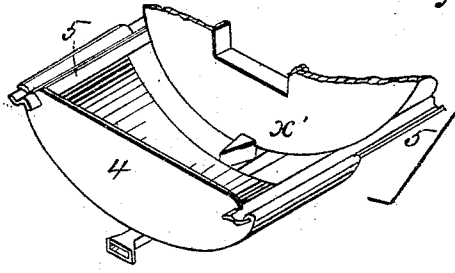


Fig. 5



Witnesses

Jas A. Layman

A. G. Webb

Inventor

E. Y. Robbins

By Knight Bros

Attys

United States Patent Office.

EDWARD Y. ROBBINS, OF CINCINNATI, OHIO.

Letters Patent No. 83,731, *dated November* 3, 1868.

IMPROVED PASSENGER-RAILWAY CAR.

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

To whom it may concern:

Be it known that I, EDWARD Y. ROBBINS, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Passenger-Railway Cars, for the purpose of securing greater comfort and safety to passengers; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

My invention chiefly relates—

First, to a form and construction of a railway-car, by which the greatest possible strength is attained, compatible with lightness and capacity, avoiding the necessity of a general frame-work of bars and rods, or of beams, posts, &c.

Second, to the provision of the yielding, elastic, or compressible platforms, for the purpose of diminishing the force of a collision.

Third, to the provision of cushions for the sides and top of the interior of the car, instead of the customary projections of wood, metal, and other hard bodies.

Figure 1 represents portions of a railway-car, partly by side elevation, and partly by a longitudinal section.

Figure 2 is a transverse section at the line *x–x*.

Figure 3 is a transverse section at the line *y–y*.

Figure 4 is a partly-sectionized perspective view of the heating-apparatus.

Figure 5 is a perspective view of a form of my yielding platform.

Figure 6 is a modification, showing the feet-rests or niches, which may be introduced, if desired.

Figure 7 comprises a transverse and a longitudinal section, showing a modification of the shell or body.

My preferred form of car-body, A, is that of a hollow cylinder, or cylindroid, composed of thin plates of wrought-iron, riveted or bolted together, and having ends, B B′, of the same material.

The car-body is pierced for doors, windows, and other necessary openings, C C′ C″ C‴, and the margins of these openings are stiffened, either by angle-irons D, canopies E, or otherwise.

Attached to the concavity of the body are hollow ribs, F, which receive fresh and purified air through apertures, *f*, and discharge it into that portion of the interior of the car between the floor and the seats by apertures, *f′*. The ribs F serve the twofold purpose of stiffening the car-body, and of supplying it with fresh air.

For the purpose of additional stiffening, I attach to the bottom of the car, on its inside, a ∧-formed iron or Keelson, G, and this keelson may be of such a heighth as to serve to support the floor at its mid-width, in the manner shown, the floor being riveted to it. The heating-pipes, hereafter shown, should also be made to serve as additional supports to the floor.

In order to still further stiffen the body, and at the same time to improve its external appearance, and render it less liable to roll down hill if thrown off the track, I attach to each side of the car, somewhat below its mid-height, a semi-tubular strip of sheet-iron, H. This semi-tube may be further stiffened by a beam of wood, enclosed within it, or it may be hollow entirely, or it may be made to communicate with the interior of the car by apertures, so as to present lockers or recesses, *h*, to be suitably padded, and of convenient size and elevation for a foot-rest for the passengers.

The body is still further stiffened by the floor I, which I make of wrought-iron, and firmly rivet to the concavity of the car.

Attached to the top of the car, throughout its length, are two angle-irons, or ∧-formed strips, K K′, which support and are attached to a roof-plate, L. The strips K K′, besides serving to stiffen the body longitudinally, also, in conjunction with said plate L, serve to enclose an air-duct, M, which, by means of a self-acting apparatus, is opened alternately at one or the other end, according to the motion of the car. This apparatus consists of two flaps, N N′, of which that which is for the time being presented forwards, is opened by the current of air created by the motion of the car. Placed in front of each flap is a screen or sieve, O O′, of wire gauze, to arrest sparks, cinders, and other mechanical impurities, and behind each flap is a recess or pocket, P P′, to catch such particles as may pass through the screen.

Q are holes, which permit the escape of particles arrested by the screen and pocket.

From the duct M the air passes into the ribs F, through the apertures *f* aforesaid.

C‴ are ventilators, guarded by caps, *c*.

The cushions and upholstery should be made of non-combustible materials.

For the purpose of warming the car, I employ two stoves, R R′, suspended from the car-body, and outside of the same. Each stove has a hot-air jacket, S, from whose upper part ascends a hot-air pipe, T, which, entering the space U, beneath the floor, is carried backward or forward, as the case may be, and is thence passed through the bottom of the car-body, and enters the lower part of the jacket of the other stove. There is, by this means, accomplished a double circulation from each stove-jacket, through the lower part of the car, to the other jacket.

The smoke-pipes V V′ are likewise conducted ir to the space beneath the floor, and, passing to the end of the car, enter chimneys, W W′, and serve to warm those parts of the floor nearest the end-portions of the car, in the same manner that the hot-air pipes T warm the middle portion.

In order to moderate the violence of railway-collisions, I give the platform X, and also the end-portion Y of the roof, a boxed, or chambered shape, and stuff or pack the same with a mass of shoddy, wool, sponge, hemp, caoutchouc, or other compressible and elastic

material, *x y*, which, on an endwise collision of two cars, such as would be sufficient to smash up a common platform, will, by its compressure, act to cushion and weaken the force of the blow. Where the platform is stuffed with hemp, or other fibrous material, it may be floored, or covered with a sheet of India rubber, 1.

The strips, of metal or other material, which support the mass of compressible material in the platform, are made to slide together or under the end of the car-body, to permit the compression, in case of collision, to break the shock gradually, and any necessary connection between the body of the car and the coupling-bar, or the bars that support the platform, which would obstruct the sliding of the supporting-strips, on which said mass of compressible material rests, should be made sharp, as at *x'*, fig. 5, so as to cut said strips when pushed against them in case of collision. Instead of this mass of compressible material, as India rubber, shoddy, oakum, or coils of wire, being placed in the platform itself, it may be placed under or within the bottom of the car, just at the ends, and the platform made to slide back upon and against said elastic and compressible mass in case of collision.

The sashes of the windows C' are held securely within guards, Z, between which and the car-body they are susceptible of being slid horizontally, for opening and closing. The glass in the upper windows may be made to turn on a pivot.

In order to lessen the danger to life and limb from collisions, overturns, break-downs, and like casualties, I cover the entire sides, ends, and tops of the interior of the car with padding or cushions, 2.

The platform may be formed as in fig. 5, where 4 is a box, resting on brackets 5, on which it is capable of sliding.

The car-body, either entire, or any part of it, may be composed of two concentric cylinders, or parts of cylinders, 7 and 8, with a filling, 9, of timber. Where this form is adopted, the air-conductors and stiffening-ribs F may be replaced by angle-irons, 10, between the two shells, and riveted to both, forming channels for the fresh air to pass down.

While preferring the truly cylindrical form, as that which affords the greatest strength, stiffness, and resisting-power, with the least weight and material, I reserve the right to make the car-body somewhat flattened, or of an elliptical, or nearly elliptical shape, in its cross-section, still retaining sufficient curvature, or cylindrical shape, in the sheet-iron shell, which forms the body of the car, to give it the requisite strength and stiffness, without a general frame-work of bars, rods, or beams.

I have described my warming-apparatus in connection with a metallic car-body of the peculiar form preferred by me, but it is evidently applicable to warming cars of the ordinary wooden construction, in which case the heating-pipes may be placed above the floor, under the seats, along the sides of the car.

I distinctly disclaim as any part of my invention such a frame-work as that shown in either of the patents of B. J. Motte, dated April 4, 1854, and September 24, 1861.

I also disclaim making a car of staves and hoops, as that of George S. Hacker's, patented January 21, 1841.

Neither do I claim as any part of my invention a packed or spring-coupling bar, or bumper, under and distinct from the platform, as shown in the patents of J. C. Jackson, January 20, 1863, J. P. Laird, February 7, 1865, and Fairlamb & Judson, January 9, 1838.

The leading feature in my car-body is that of a shell without a frame-work, the shape of the shell rendering a frame-work unnecessary.

The main cylinder is made first, and is a complete thing in itself. If stiffening-strips or hollow ribs are deemed necessary, they are put on afterwards, and as a subordinate appendage. My cylindrical shell is a complete body in itself, the ribs being but accessory and semi-tubular, and they may be left out entirely, and still the cylindrical shape of the shell itself will give the requisite strength and stiffness.

The patent granted to George S. Hacker, hereinbefore referred to, is a car-body, made, not of iron, but of wood, and of many distinct longitudinal strips or staves of wood, not fastened one to the other, but held from falling apart by hoops, placed at some distance from each other; and if one of the staves were knocked out or in, the whole thing would fall to pieces, neither the staves nor the hoops having in themselves any strength or adhesiveness as one body, but each depending upon the others to keep in place, whereas mine is one continuous body, all firmly fastened together, both longitudinally and circumferentially.

The devices shown in the above-named patents, for lessening the concussion of cars coming in contact with each other, are not platforms at all, but only bumpers or coupling-bars under or beside, and entirely different from the platform.

My yielding platform serves the purpose of a bumper, but does not supersede the ordinary coupling-bar and bumper, which is placed underneath my platform, as shown in my drawings. This coupling-bar and bumper, which is placed under and entirely distinct from my platform, may itself work against a spring, but this I do not claim.

My invention is a yielding or compressible platform, which, in case of a collision, or other severe and unusual shock, when the coupling-bar is crushed, shall serve as an additional security, a safeguard, acting as a great cushion, yielding gradually, breaking the shock, gathering up or receiving the momentum of the car before it shall come in contact with the next car. In all ordinary cases it serves the purpose only of a platform, not being compressed, or acted on all in any ordinary bumping incident to starting or stopping, but in cases of emergency, or some accident, when the coupling and other bumpers are smashed up, then this platform comes into a second and very important use as a cushion and additional safeguard.

Having thus described my invention,

What I claim as new therein, and desire to secure by Letters Patent, is—

1. The body of a passenger-railway car, made of wrought-iron, steel, or other metal, the different parts or sheets being riveted or otherwise firmly fastened together, the whole forming one continuous shell, of a cylindrical or approximately equivalent shape, the shape itself being such, together with the thickness of the metal, as to give the requisite strength and stiffness without the necessity of a general frame-work of bars and rods, or hoops, &c.

2. The yielding platform X, constructed and employed as and for the purposes herein specified.

3. The hollow annular ribs F, extending completely around the interior of the cylindrical shell, in the manner and for the purposes specified.

In testimony of which invention, I hereunto set my hand.

E. Y. ROBBINS.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.