(No Model.)

H. W. LIBBEY.

CAR.

No. 441,178. Patented Nov. 25, 1890.

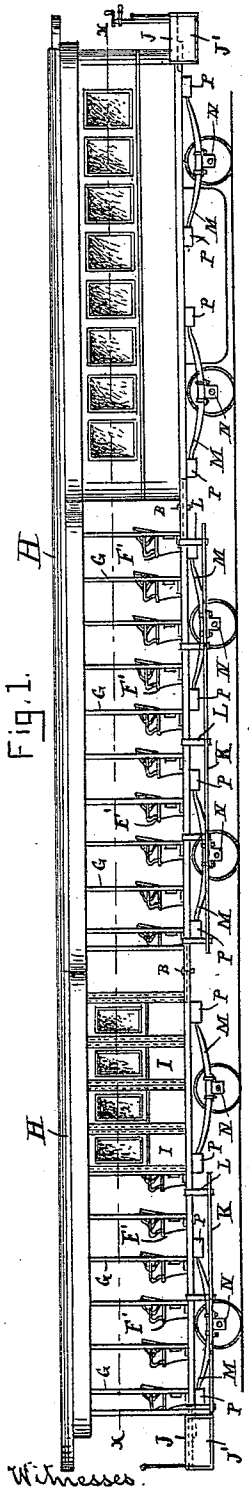


Fig. 1.

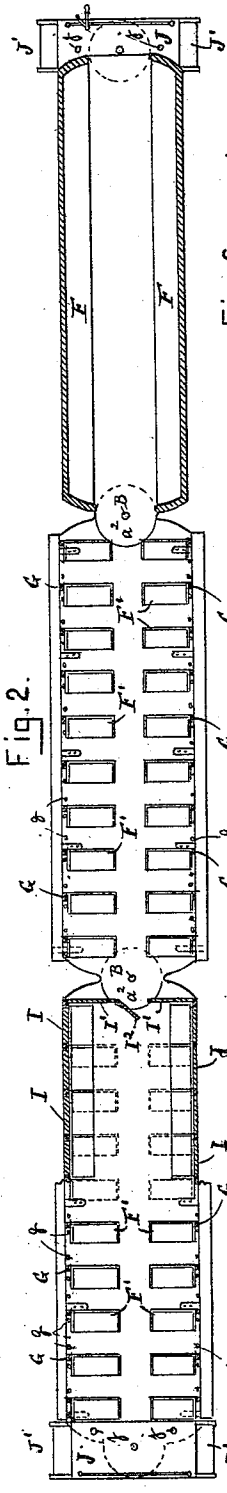


Fig. 2.

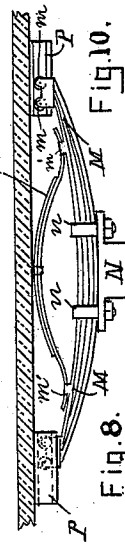


Fig. 6.

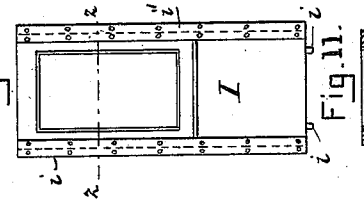


Fig. 10.

Fig. 11.



Fig. 7.

Fig. 8.

Fig. 9.



Fig. 12.

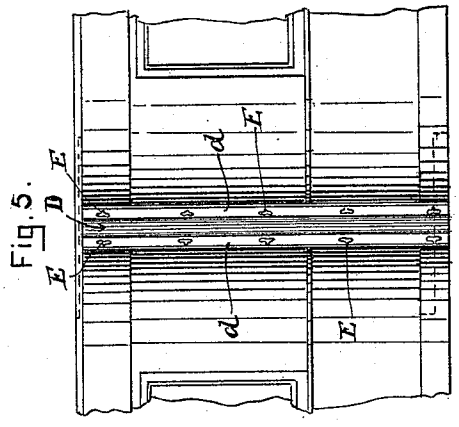


Fig. 5.



Fig. 4.

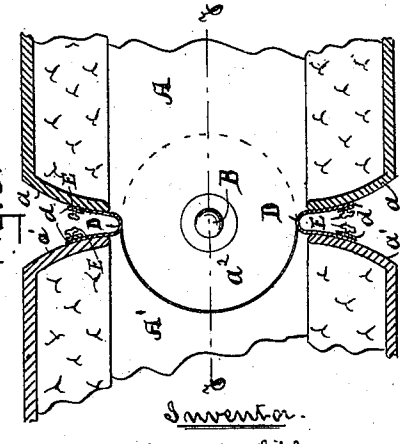


Fig. 3.

Witnesses.
Winfred S. Hewson
John J. Morse.

Inventor.
Hosea W. Libbey
by Edwin Planta
attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HOSEA W. LIBBEY, OF BOSTON, MASSACHUSETTS.

CAR.

SPECIFICATION forming part of Letters Patent No. 441,178, dated November 25, 1890.

Application filed August 11, 1890. Serial No. 361,636. (No model.)

To all whom it may concern:

Be it known that I, HOSEA W. LIBBEY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Cars, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention refers to certain improvements in passenger-cars, and are particularly applicable to cars propelled by an electric or other motor.

The invention consists of certain details of construction, as hereinafter fully described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 represents a side view of three cars embodying my invention. Fig. 2 is a horizontal section of the same, taken on line *x x* of Fig. 1. Fig. 3 is a view of the ends of two adjacent closed cars, showing the manner in which they are connected. Fig. 4 is a vertical section taken on line *y y* of Fig. 3. Fig. 5 is a side view of same. Fig. 6 is a side view of one of the springs. Figs. 7 and 8 are respectively perspective views of one end of the spring and the box in which it works. Fig. 9 is a view of one of the step-straps for open cars. Fig. 10 is an elevation of one of the panels for converting an open into a closed car. Fig. 11 is a section taken on line *z z* of Fig. 10. Fig. 12 is an end view of one of the seats.

In constructing cars according to my invention the cars are connected together, so as to form, as it were, one continuous car of several sections; hence the term "sectional" car. The ends of each car are of the form shown—that is, they curve in on each side for, say, about one-quarter of the width of the car and then project out in a true semicircle, the projecting portions fitting one over the other, the ends being recessed, one at the top and the other at the bottom, to receive the semicircular end of the adjacent car, as will be best seen in Figs. 3 and 4, A representing the end of one car and A′ the end of the adjacent car. *a a′* are the inwardly-curved ends, and a^2 a^3 the semicircular projecting pieces. It will be seen that these overlap each other and are connected together by a bolt B, thus forming a circular hinge-connection. The bolt is secured on the under side with a pin *b;* but, if desired, the bolt could be screw-threaded and be secured by a nut. Small plates *c c′* are let in to take the wear off the bolt B.

It will be seen that by connecting the cars together in the manner described the floor is continuous, no space being left between the cars. Thus a train of cars is formed into one continuous car. When closed cars are thus connected, I prevent wind and rain from entering between the cars by means of a flexible joint of rubber, leather, or other suitable material, which will readily yield to allow for the different positions the cars may assume when passing around curves.

D represents a sheet of rubber, leather, or other suitable material, to each end of which is secured a metallic bar *d*, provided with a number of slots, through which are passed buttons E, secured to the sides of the car. After the buttons are passed through the slots in the bars and turned so as to tighten them up, the elastic material is compressed between the bars and the car and makes a very tight joint.

In closed cars I prefer to have the seats F run lengthwise of the car, as shown in Fig. 2.

For open cars I connect the seats F in such a manner that they can stand across the car or lengthwise of the car, as may be desired. This I accomplish by arranging the standards G, that support the roof H, at a distance apart equal to the length of the seat, and each seat is hinged at one of its rear corners to one of the posts G, so that they can be placed transversely of the car, leaving a passage-way between the two rows of seats; or they may be turned back so as to stand longitudinally of the car, as shown in the forward half of the rear car in Fig. 2. Each end of these seats is supported by a leg, the outer one being hinged to the standard G and the inner one being provided at its lower end with a pin or pins that fit into holes formed in the floor of the car, thus keeping the seat in its proper position. A side view of the inner bracket is shown in Fig. 12.

To make the open cars available for use in winter or bad weather, I provide a series of panels I, that just fit between the standards G. The lower ends of these panels, one of which is shown detached in Fig. 10, I provide with two or more small pins *i*, that fit into holes *g*, (see Fig. 2,) formed in the floor of the car, and on each side of the panel is secured a flat bar *i′* of

metal, which is by screws secured to the standards G. Corresponding panels I′, having a door I², are employed to close the ends of the car. It will be seen that by means of these panels an open car can readily be converted into a closed car.

To the forward and rear ends of a section of cars I secure removable platforms J, which are secured by bolts *j*, passing through the removable platform and the end of the floor of the car. On each side of these platforms are steps J′, and the platforms are also provided with the necessary levers and the like for operating the motor and brakes.

When the cars are used as open cars, a step K the length of the car is attached on each side by means of hangers L, one of which is shown detached in Fig. 9. These hangers can be readily screwed onto the floor of the car and as readily removed.

I secure the body of the car to the journal-boxes of the axles by means of a double-leaf spring of peculiar construction, and shown detached in Figs. 6, 7, and 8.

M is the main portion of the spring, secured to the journal-box N by means of saddle-bolts *n* or other suitable means. The outer ends of this spring are each formed with a small carriage in which is mounted two anti-friction rollers *m*, that work in a box-shaped piece P, secured to the body of the car. This box is somewhat wider than the spring, so as to form a ledge *p* on each side, the space between the ledges being sufficient for the easy play of the spring. The rollers *m* work on the upper part of the box P, and the sides and ledges *p* prevent them from becoming disconnected above the spring M, and under the car-body is secured another leaf-spring M′, secured at its center to the car-body, and its ends resting and working upon the upper leaf of the spring M, which at the points where the two springs are in contact is provided with small lips *m*′, that retain the ends of the spring M′ in place, thus forming a double-leaf spring, the lower portion being longer than the upper, the ends of the upper bearing between the weak and strong points of the lower leaf, thus strengthening and equalizing the elasticity of the spring.

What I claim as my invention is—

1. Cars the ends of which are rounded in for a short distance and then project in a true semicircle, the end of one car adapted to overlap the end of the other car, and connected together by a bolt, substantially as set forth.

2. Sheets of flexible material D, having metallic strips *d*, secured on both their side edges, in combination with two adjacent cars the ends of which are rounded in for a short distance and then project in a true semicircle, as described, and means for attaching said flexible material to the ends of the cars, substantially as set forth.

3. In a car, seats hinged at one corner to the standards on each side of the car, whereby they can be set transversely of the car, leaving a passage-way between them from one end of the car to the other, or be turned so as to set longitudinally of the car and form a continuous seat on each side of the car, substantially as set forth.

4. In combination with a car having rounded ends adapted to overlap the end of an adjacent car, said car having standards G extending from the floor to the roof, and a series of removable panels I, adapted to fit and be secured between all of the said standards, whereby the car can be converted from an open to a closed car, and vice versa, substantially as set forth.

5. In combination with a car such as described, a removable platform J, substantially as set forth.

6. A car-spring consisting of a leaf-spring attached to the axle-box and having anti-friction rollers at its ends, boxes for said rollers to work in, and a leaf-spring secured to the car-body, the ends of which rest and work upon the upper leaf of the lower spring, substantially as set forth.

7. Cars having rounded ends *a a*′, semicircular projections a^2 a^3, fitting one over the other, and a bolt B, connecting them together and forming a circular hinge-connection, substantially as set forth.

8. In combination with cars having rounded ends *a a*′ and semicircular projections a^2 a^3, fitting one over the other, and connected together by a bolt B, flexible sheets D, having metallic strips *d*, and means for securing them to two adjacent cars, thus inclosing the space between the two cars, substantially as shown and described.

9. In combination with cars having standards G extending from the floor to the roof, panels I, having a metallic bar *i*′ on each side, said panels fitting between the standards, and means for securing them in place, substantially as shown and described.

10. In combination with a car, seats F, each hinged at one of its outer corners to a standard G, and a leg at its inner end for supporting the same having pins, said pins entering holes in the floor to keep the seat in position, substantially as set forth.

11. A double-leaf car-spring consisting of the leaf-spring M, secured at its center to the axle-box N, anti-friction rollers *m* on the ends of said spring, the boxes P for the anti-friction rollers to work in, and the leaf-spring M′, secured to the car at its center and its end resting and working upon the upper leaf of the spring M, substantially as shown and described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 3d day of July, A. D. 1890.

HOSEA W. LIBBEY.

Witnesses:
CHAS. STEERE,
EDWIN PLANTA.