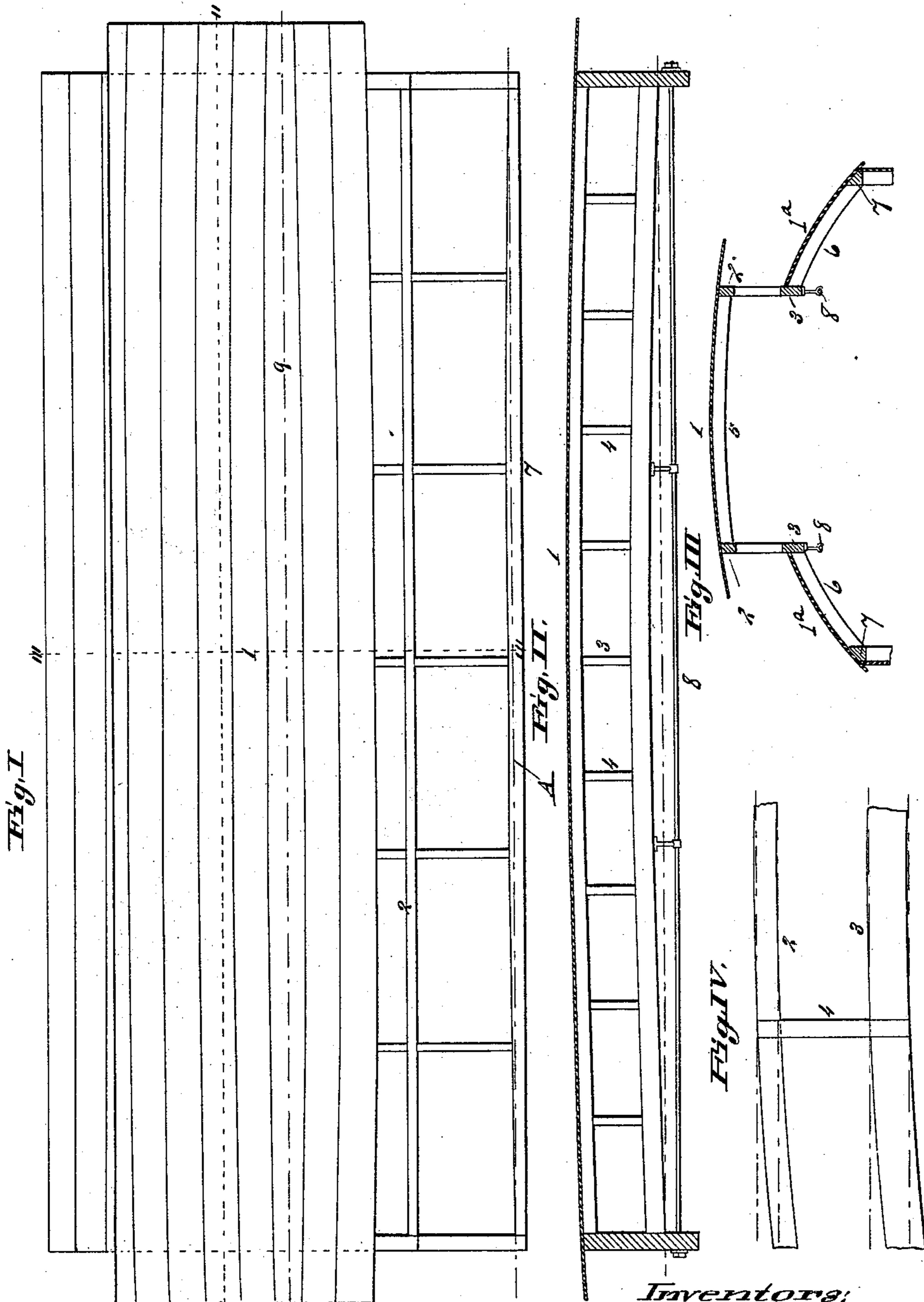


(No Model.)

F. BAIER & D. R. HART.
STREET CAR.

No. 447,240.

Patented Feb. 24, 1891.



Attest:
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attys

UNITED STATES PATENT OFFICE.

FRED BAIER AND DANIEL R. HART, OF ST. LOUIS, MISSOURI, ASSIGNORS TO
THE BROWNELL CAR COMPANY, OF SAME PLACE.

STREET-CAR.

SPECIFICATION forming part of Letters Patent No. 447,240, dated February 24, 1891.

Application filed January 2, 1891. Serial No. 376,513. (No model.)

To all whom it may concern:

Be it known that we, FRED BAIER and DANIEL R. HART, both of the city of St. Louis, in the State of Missouri, have invented a certain
5 new and useful Improvement in Street-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 Our invention relates to an improvement in the construction of the upper or roof portion of the body of a street-car, which is necessary owing to the additional strains on the roofs of electric and other cars operated by
15 mechanical motors; and our invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a top or plan view illustrative of our invention. Fig. II is a detail vertical section taken on line II II, Fig. I; and Fig. III
20 is a transverse section taken on line III III, Fig. I. Fig. IV is a section of Fig. III enlarged.

Referring to the drawings, 1 represents the
25 roof of the car; 2, the top ventilator-rails; 3, the bottom ventilator-rails; 4, the uprights joining the top and bottom ventilator-rails on the respective sides of the car-roof. 5 represents the rafters, and 6 represents the carlings.

30 7 represents the top plates.

In the manufacture of street-cars it has been customary to put the top and bottom ventilator-rails, with their connecting-uprights, in place at right angles to each other.
35 The carlings being of uniform length and the top plates of uniform width; would result in having the top line of the roof and side line of the top plate straight. This construction is bad, because of the tendency of the weight
40 of the roof to cause the top plates to spread farther apart in the center, and in doing so causing the top of the car to settle and become like the hollow back of a horse, and eventually to cave in and be dangerous to passengers if not repaired. To partially remedy
45 this faulty construction it has been the practice to put up the ventilator-rails, top plates, carlings, and rafters as before described, but before attaching the roof-boards, which heretofore have had their sides parallel to the carlings, rafters, &c., to raise the ventilator-rails

in the center, by means of temporary supports, out of their natural position of a straight line, so as to describe to a very limited extent (or in the same proportion as the sides of the car
55 are contracted in the center, as hereinafter described) the arc of a circle. The carlings being of uniform length and attached to the ventilator-rails and top plates, would necessarily pull the top plates together in the center, so that the side lines of the top plates, instead of being on a straight line, would show
60 concave lines from one end of car to the other, and while in this position the roof-boards are attached. The objection to this method of construction is that the carlings, top plates, and rafters are held in a strained and unnatural position by the roof-boards and the temporary supports underneath. When the latter
65 are removed, the strain on all parts of the roof is excessive and in a short time causes the frame-work to resume its normal position, showing straight lines on top and side of car. It takes but a short time thereafter for the force of gravity to cause the center of the
75 roof to settle and sides of car to spread with attending consequences, as before described. To obviate these difficulties we place the top and bottom ventilator-rails, which have been previously mortised, to correspond with ten-
80 ons on the uprights, with the latter intervening, and on which glue or other adhesive substance has been applied, into a form of the shape of an arch, and let them remain until the glue becomes set. When removed
85 from the form, the ventilator-rails and uprights have the shape of an arch, as shown in Fig. II, and will retain this shape indefinitely without the temporary supports. If the carlings were of uniform length, which it is desirable they should be, as the making of them
90 that way is greatly simplified, and the top plates were of uniform width their entire length and were now attached to the ventilator-rails, the sides of the top plates would assume the concave form already described; but as it adds greatly to the beauty of a car if the sides are straight, in order to accomplish this and at the same time avoid making carlings of unequal lengths to accommodate the spring
100 of the arch in the ventilator-rails, we make the top plate enough wider in the center on

the inside and taper same toward each end. After the ventilator-rails, carlings, and top plates are in position, as before described, they are now ready for the roof-boards; but
5 as the top line of the rafters is curved it becomes necessary to curve the sides of the roof-boards; but to avoid the necessity of curving the sides of each board we make the center board 9 of the top dome narrower at
10 each end than in the center, and the balance of the boards are forced into shape to conform to the center board and held in position by nailing to rafters and carlings, as usual. When the ventilator-rails, uprights, carlings,
15 rafters, top plates, and roof-boards are put in position, as above last described, they will retain the arched form on top and the sides of the car will remain straight indefinitely, thus adding to the safety of the passengers, the
20 durability of the car, and lessen the cost of repairs. To add further to the desirability of this construction we use metal truss-rods 8, extending from end to end of car-body immediately under the bottom ventilator-rails.
25 These rods having thread and nuts on both ends, can be drawn as tightly as occasion requires.

We claim as our invention—

1. In the construction of a car-body, the

ventilator-rails 2 and 3 and the uprights 4, 30 when such parts are framed into an arched form before being placed in position in the construction of the car, substantially as specified.

2. In the construction of a car-body, the 35 combination of the ventilator-rails, carlings of uniform length, and the taper top plates 7, substantially as and for the purpose set forth.

3. In the construction of a car-body, the 40 combination of the ventilator-rails 2 and 3 and uprights 4, framed into an arched form before being placed in position, the carlings of uniform length, the tapering top plates 7, and the irregular-shaped roof-boards 9, substantially as specified. 45

4. In the construction of a car-body, the combination of the ventilator-rails 2 and 3 and uprights 4, framed into an arched form before being placed in position, the carlings 6 of uniform length, the tapering top plates 7, 50 the irregular-shaped roof-boards 9, and truss-rods 8, substantially as and for the purpose set forth.

FRED BAIER.

DANIEL R. HART.

In presence of—

C. W. JOSLIN,

M. B. RICHARDSON.