(No Model.)

3 Sheets—Sheet 1.

R. T. BARTON.

STREET RAILWAY CAR.

No. 598,842. Patented Feb. 8, 1898.

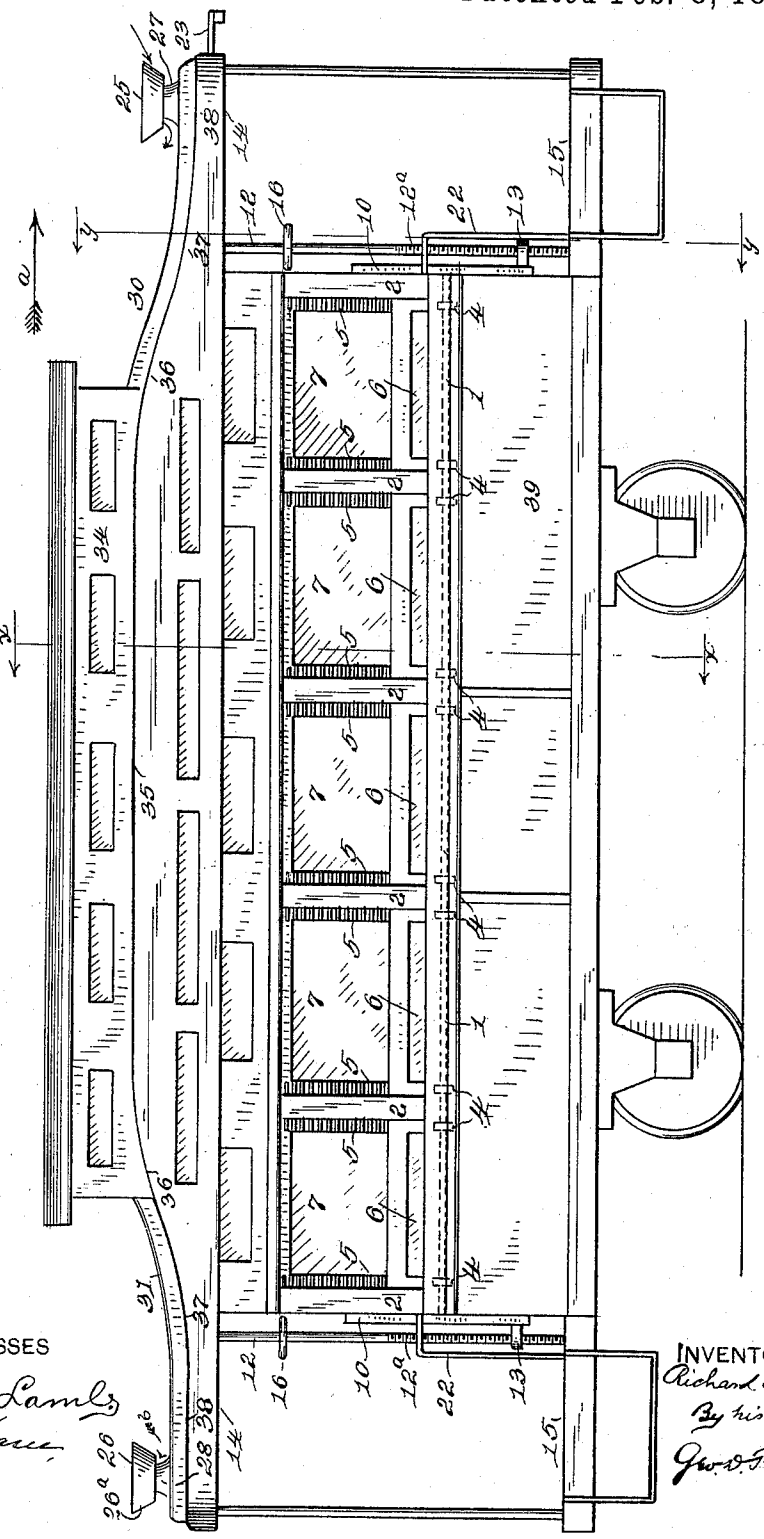


Fig. 1.

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Fig. 3.

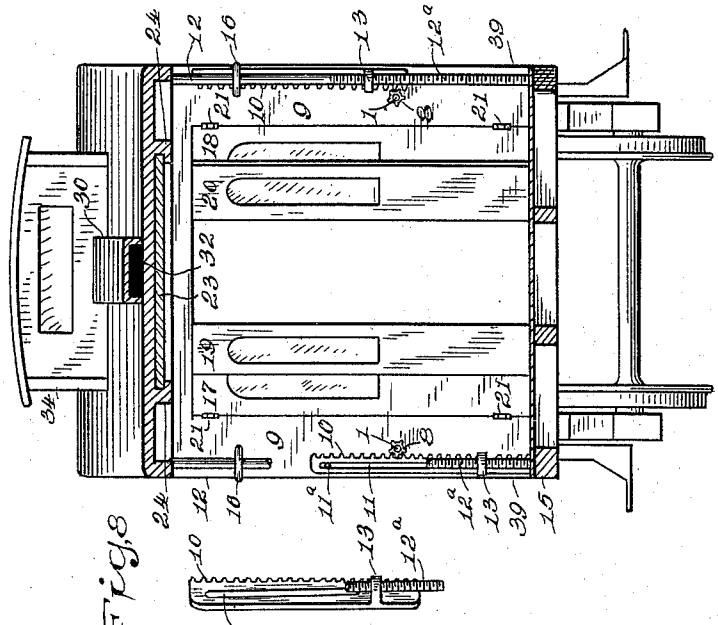
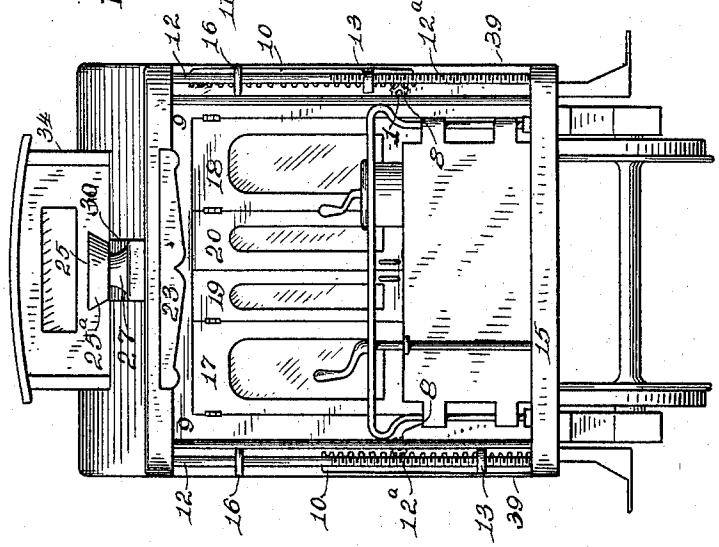


Fig. 8

Fig. 2.



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Fig. 5.

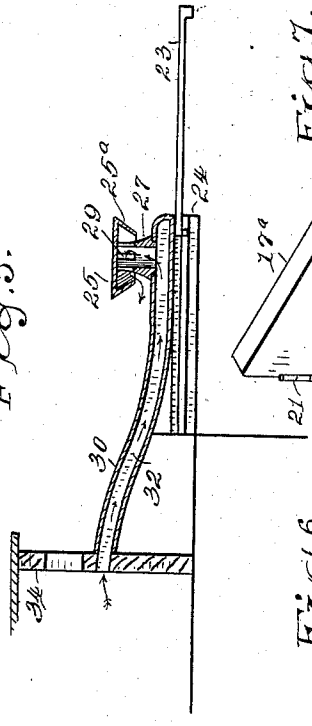


Fig. 7.

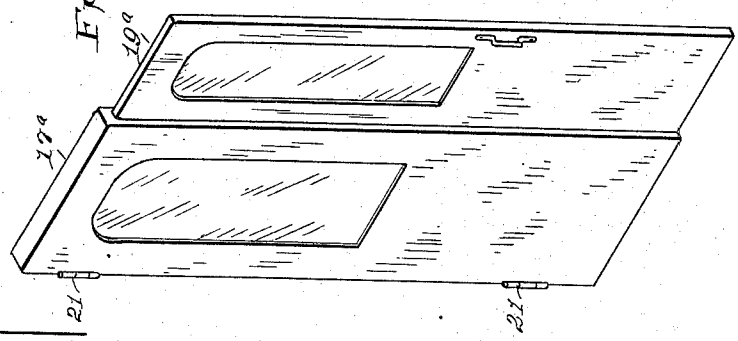


Fig. 6.

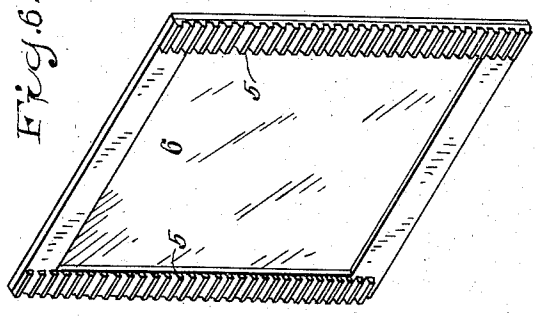
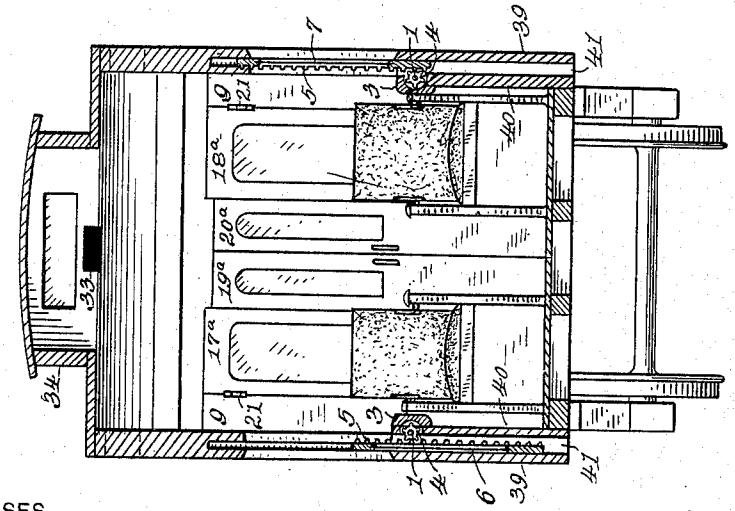


Fig. 4.



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UNITED STATES PATENT OFFICE.

RICHARD T. BARTON, OF NEW HAVEN, CONNECTICUT, ASSIGNOR OF ONE-HALF TO JEROME KENNEDY AND WILLIAM W. SMITH, OF SAME PLACE.

STREET-RAILWAY CAR.

SPECIFICATION forming part of Letters Patent No. 598,842, dated February 8, 1898.

Application filed October 5, 1897. Serial No. 654,140. (No model.)

To all whom it may concern:

Be it known that I, RICHARD T. BARTON, a citizen of the United States, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Street-Railway Cars, of which the following is a specification.

My invention relates to street-railway cars; and it consists, first, in providing certain mechanical means whereby a car is readily converted into either an open or a closed car; second, an improved means of ventilating the car.

These and other features will be fully described in the following specification and such features as I believe to be new and novel particularly pointed out in the claims.

To enable others to understand my invention, reference is had to the following drawings, in which—

Figure 1 represents a side elevation of a car, showing the windows on the near side partially lowered, while the windows on the opposite side are fully closed, showing also the ventilators on the roof and one of the weather-protecting shields for the motorman slightly pulled out. Fig. 2 is an end elevation of the car, showing the double doors (composed of two sections each) closed and the mechanism for raising and lowering the windows on the sides of the car. Fig. 3 is a sectional end elevation of the car through line *y* of Fig. 1, showing one section of the doors opened, and a broken view of one of the window-elevating rods. Fig. 4 is a sectional end elevation of the car through line *x* of Fig. 1, showing rack and pinion for elevating the windows. Fig. 5 is a detail sectional side elevation of the ventilator on the top of the car and a broken view of the said top or roof, showing also the weather-shield fully drawn out. Fig. 6 is a detail perspective view of one of the side windows of the car, showing the racks on the sides for operating the same. Fig. 7 is a modified detail perspective view of one of the end doors of the car. Fig. 8 is a detail perspective view of one of the sliding racks and a broken view of the threaded portion of its elevating-rod.

Its construction and operation are as follows: As the mechanism for elevating the windows on both ends of the car and the construction and equipment of all of the windows are precisely alike, the same figure of reference will answer for the different mechanical devices that operate the windows.

1 are rods running lengthwise of the car, and they are journaled partly in the casings 2 and partly in the removable strips 3 on the inside of the car. These strips serve also to cover up the shaft, so that it will not be seen.

4 are pinions mounted on the rods 1 to engage with the racks 5, Fig. 6, mounted on the side rails of the window 6. As these racks are placed on the inside of the windows, they are seen only on the closed windows 7 in Fig. 1, while in the partially-open windows 6 they would be hidden from view.

8 are pinions mounted on the ends of the said shafts projecting outside of the end walls 9 of the car. (See also Fig. 2.)

10 are a series of four rack-slides, (see also Figs. 3 and 8,) which rack-slides lie against the end walls 9 of the car. Each of said rack-slides is provided with the elongated guide-slots 11, and 11^a are guide-pins standing out from said end walls, adapted to enter said slots to prevent the rack-slides tilting.

12 are a series of four elevating-rods whose lower threaded ends 12^a are adapted to engage with threaded holes formed in the lugs 13 of the said rack-slides. The upper ends of the rods 12 are journaled in the top 14 of the car, while their lower ends are journaled in the platform 15.

16 are hand-wheels rigidly mounted on rods 12 for operating said rods to raise and lower the rack and by this means rotate the rods 1 and by means of the engagement of the several pinions mounted on said rods with the racks of the window raise and lower all the windows on each side of the car.

17 and 18, Figs. 2 and 3, are double doors on each end of the car, each of which has the short folding sections 19 and 20. In Fig. 2 the doors and their sections are represented as closed, which would be the case in stormy weather, and when necessary to secure a passage the short sections would simply be folded back upon said doors for the ingress or egress of the passengers, when they could be again

closed and kept so, except when used as before stated. In pleasant weather the short sections would be folded upon the doors and the doors swung back on their hinges 21 against the side rails 22, and thus leave the ends of the car open practically its full width. In Figs. 4 and 7 is shown a modification of these door-sections, which instead of folding upon the doors are made to slide therein, 17^a and 18^a representing the door and 19^a and 20^a the sliding short sections.

23 (see Figs. 1, 2, 3, and 5) is a weather-protector furnished at each end of the car for the protection of the motorman. These protectors operate in the channel-ways 24, Fig. 3, in the roof of the car and are adapted to be drawn out, as shown at Fig. 5, for protection or pushed in flush with the end of the car-roof, as shown at Fig. 2.

The means for ventilating the car when the doors and windows are tightly closed, as in stormy weather, is constructed as follows: 25 and 26 are caps situated at the outer ends of the overhanging porches of the car, and they are provided with the downward-inclined sides 25^a and 26^a. (See more particularly Fig. 5.) 27 and 28 are hollow columns which support these caps, and these columns are provided with ports 29 within said caps. 30 and 31 are air-shafts having air-passages 32 and 33, which open into the housing 34 of the car. When, therefore, the car is moving, say, for instance, in the direction of arrow *a*, Fig. 1, the air-current will strike against the inclined sides 25^a of the ventilator-cap 25. This will tend to produce a vacuum in the interior of said cap and will thereby start the air moving along the passage 32 to fill such vacuum, which operation will move the body of impure air in the top of the car toward the forward ventilator in the direction indicated by the arrows. As the impure air is thus drawn out of the car through the forward ventilator the reverse of this process will take place at the rear ventilator, where the air, of necessity, must enter said ventilator (see arrow *b*) to maintain the proper pressure within the car. When the car is moving in the opposite direction, this process will of course be reversed. Thus it will be seen that pure air, so essential to the health and convenience of the passengers in a tightly-closed car, is always secured.

It will be observed that the pockets or spaces between the outside 39 and the side walls 40 of the car are open at the bottom, so that when the windows are closed the rain beating thereagainst will simply run down on the outside and be discharged through the lower opening 41, Fig. 4, of said pockets.

A car constructed as above described possesses many advantages both to the company operating the road and to the passengers. It is readily convertible either into an open or closed car, as all that is necessary on the approach of a sudden shower or fall in temperature is for the conductor to grasp the hand-wheels of the elevating-rods and close the windows on one or both sides of the car, as required, and when the car is completely closed the ventilators before mentioned will maintain a pure and wholesome atmosphere within. Equipping all of the windows with double racks will prevent cramping when they are raised or lowered, thus requiring less effort to manipulate them. The threaded elevating-rods at the ends of the car in combination with the rack-slides will not only give the operator full and complete control of the windows, so as to lower them to any point desired, but they cannot jar down or be made to open further by any amount of pressure on the top of the windows.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described improvement in street-cars or conveyances of like character, consisting of an operating rod or shaft running the full length of the car, pinions mounted on said shaft, toothed racks mounted on each side of all the windows and adapted to engage with said pinions, means for operating said shaft so as to raise or lower all of said windows at the same time, for the purpose set forth.

2. The herein-described improvement in street-cars or conveyances of like character having a series of windows arranged on each side of the car, consisting of operating rods or shafts running the full length of the car, as shown, and carrying pinions adapted to engage with the windows, each window carrying a double rack, the ends of said shafts projecting without the ends of the car and carrying pinions on said ends, rack-slides adapted to engage said pinions, elevating-rods having a threaded portion adapted to engage threaded holes in said rack-slide, whereby the movements of the windows are fully controlled by the operator and the accidental dropping of said windows is prevented, for the purpose set forth.

3. The herein-described improvement in street-cars, of the character described, consisting of an operating-shaft running the full length of the car as shown, said shaft journaled partly in the casing or side of the car and partly in a removable strip adapted to hide said shaft from view, pinions mounted on said shaft adapted to engage double racks provided on each of the car-windows so that when said shaft is turned it will raise or lower all the windows true and level without cramping, said shaft projecting through the ends of the car and carrying pinions on such projecting ends adapted to engage rack-slides without the car, elevating-rods having threaded portions adapted to engage threaded portions of said rack-slides, for the purpose set forth.

4. The herein-described improvement in street-cars, consisting of the double doors each provided with a short section adapted to be

operated independent of said doors so that, when said sections are opened an ordinary passage-way will be provided, and when said doors and their sections are fully opened a passage-way is provided equal to the full width of the doorway of the car, for the purpose set forth.

5. The herein-described improvement in street-cars, consisting of window-operating shafts extending the full length of the car and carrying pinions adapted to engage double racks mounted on each of the car-windows, said windows adapted to operate in passage-ways between the outer side and the inner walls of said car, said passage-way open at the bottom to permit the escape of water striking against the outside of said windows when closed, for the purpose set forth.

6. The herein-described improvement in street-railway cars or vehicles of like character, having a series of windows on each side thereof, consisting of a rotatable shaft on each side of the car, and, in close proximity to said windows and running longitudinally with the car, racks attached to each of the vertical rails of all of said windows, said racks adapted to engage fixed pinions on said shaft so that, when said shaft is rotated all of the windows connected therewith will be operated to raise or lower, and by reason of each window being provided with double racks said windows are caused to operate true and level and without cramping, for the purpose set forth.

7. The herein-described means for ventilating cars which consists, in combination with air-shafts running from the ends of the roof to the housing or elevated roof portion 34, of the hollow supporting-columns 27 and 28 having port-holes therethrough, of inverted hollow frustum-shaped caps mounted on said columns, as shown, so that, when the car is in motion the air will strike against the inclined side of the cap at the forward end of the car and produce a partial vacuum within said cap and thereby move the air within the car toward such cap, substantially as set forth.

Signed at New Haven, in the county of New Haven and State of Connecticut, this 29th day of September, A. D. 1897.

RICHARD T. BARTON.

Witnesses:
JULIUS C. CABLE,
WILLIAM O'KEEFE, Jr.