2 Sheets—Sheet 1.

A. K. LISSBERGER & S. D. SAMUELS.

Railway-Car.

No. 223,291. **Patented Jan. 6, 1880.**

FIG. 1.

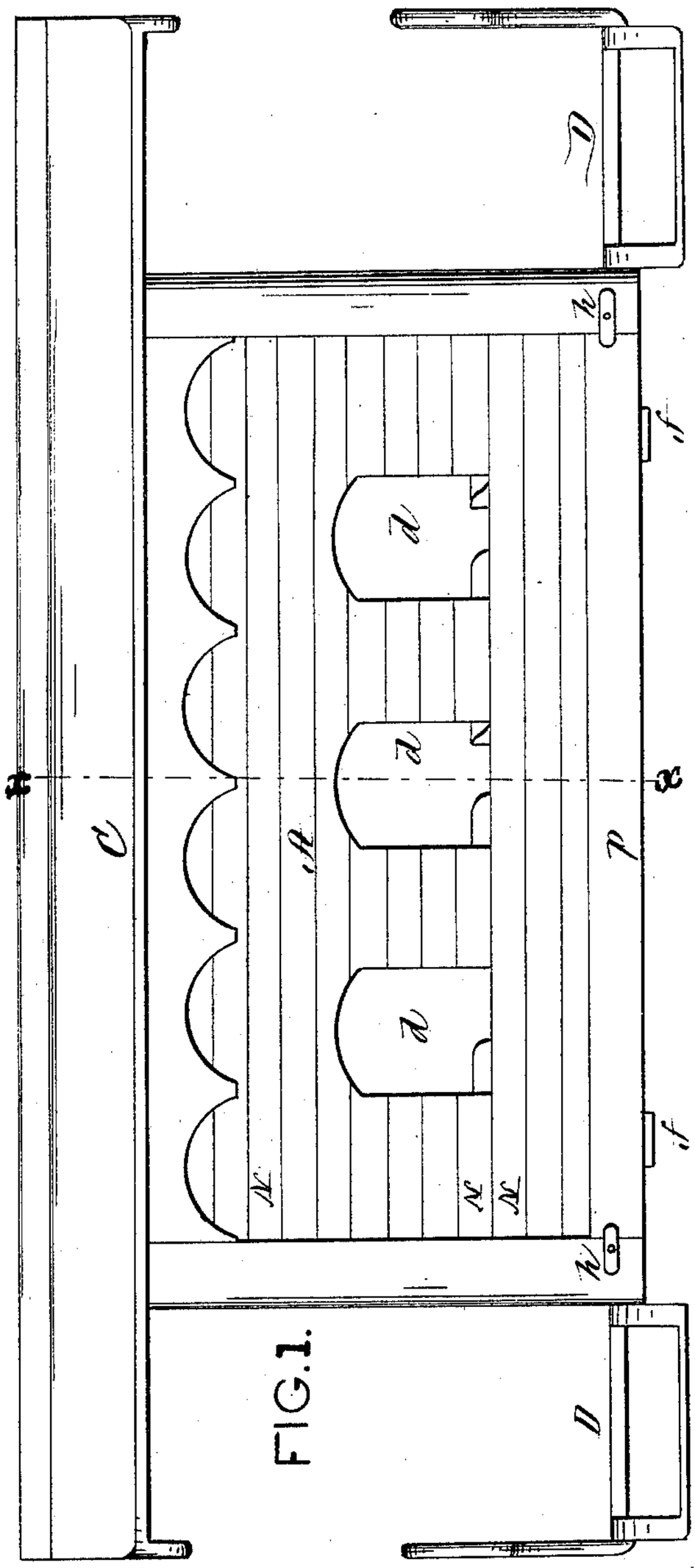


FIG. 3.

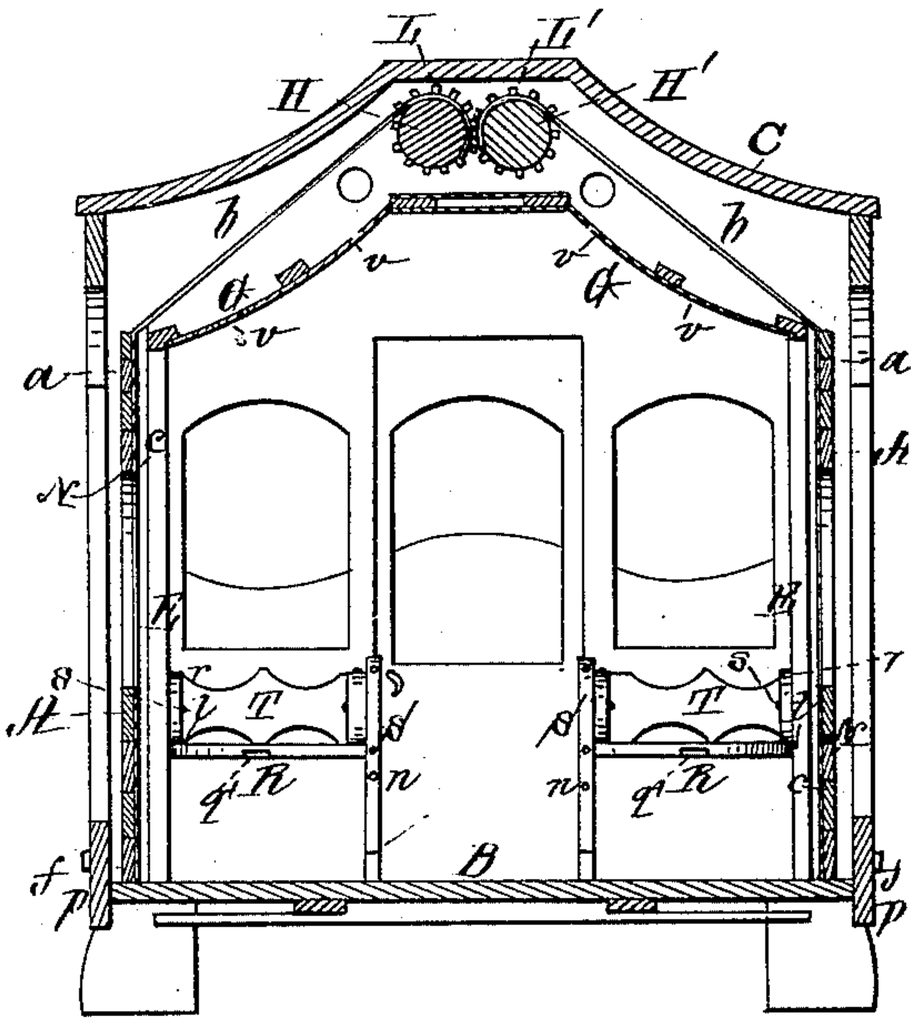
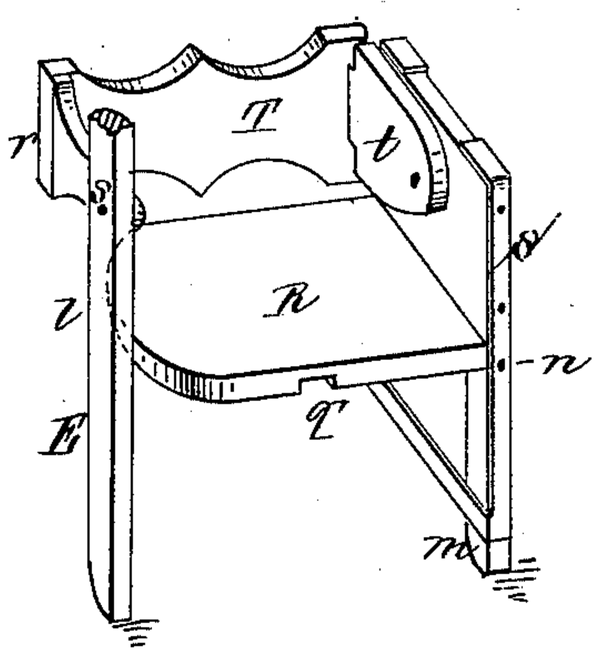


FIG. 5.



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2 Sheets—Sheet 2.

A. K. LISSBERGER & S. D. SAMUELS.

Railway-Car.

No. 223,291. Patented Jan. 6, 1880.

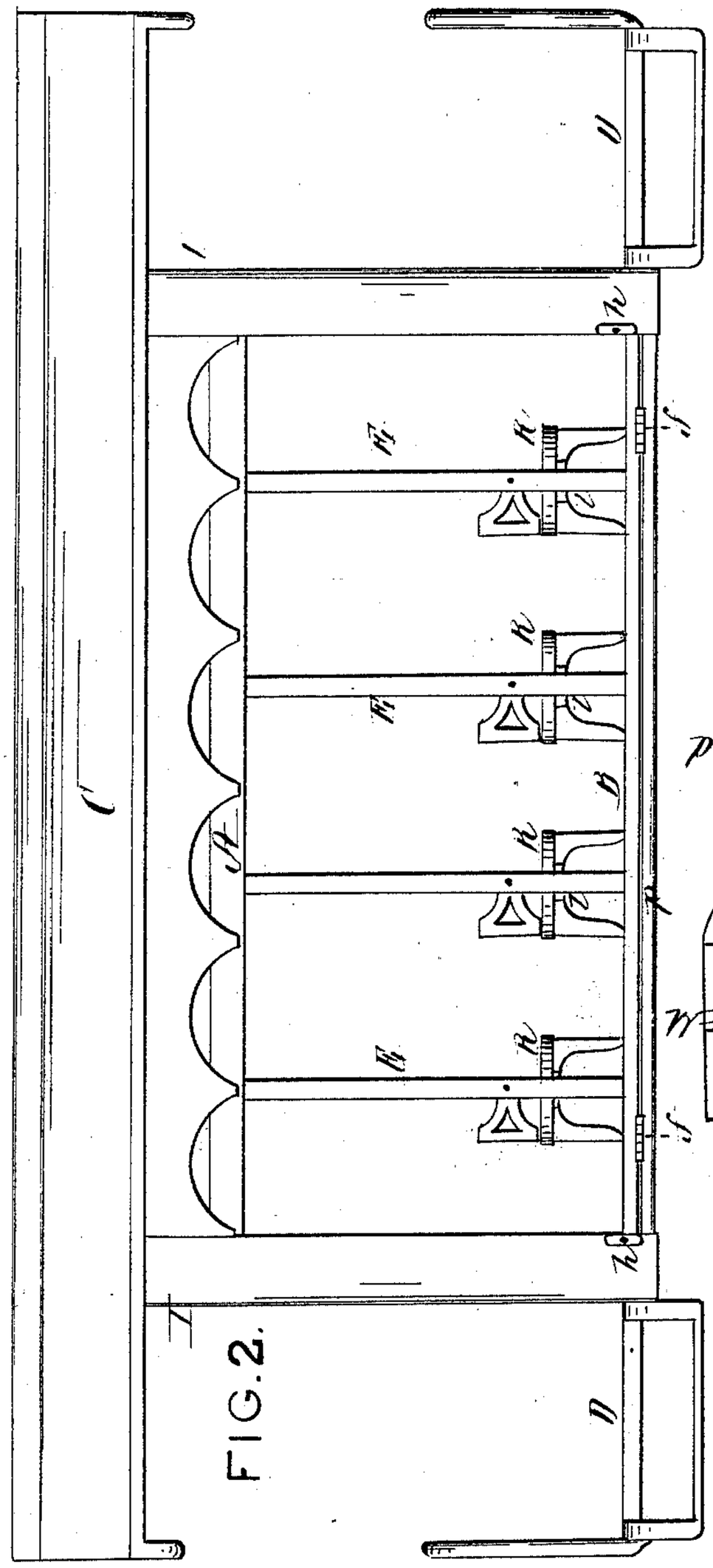


FIG. 2.

FIG. 4.

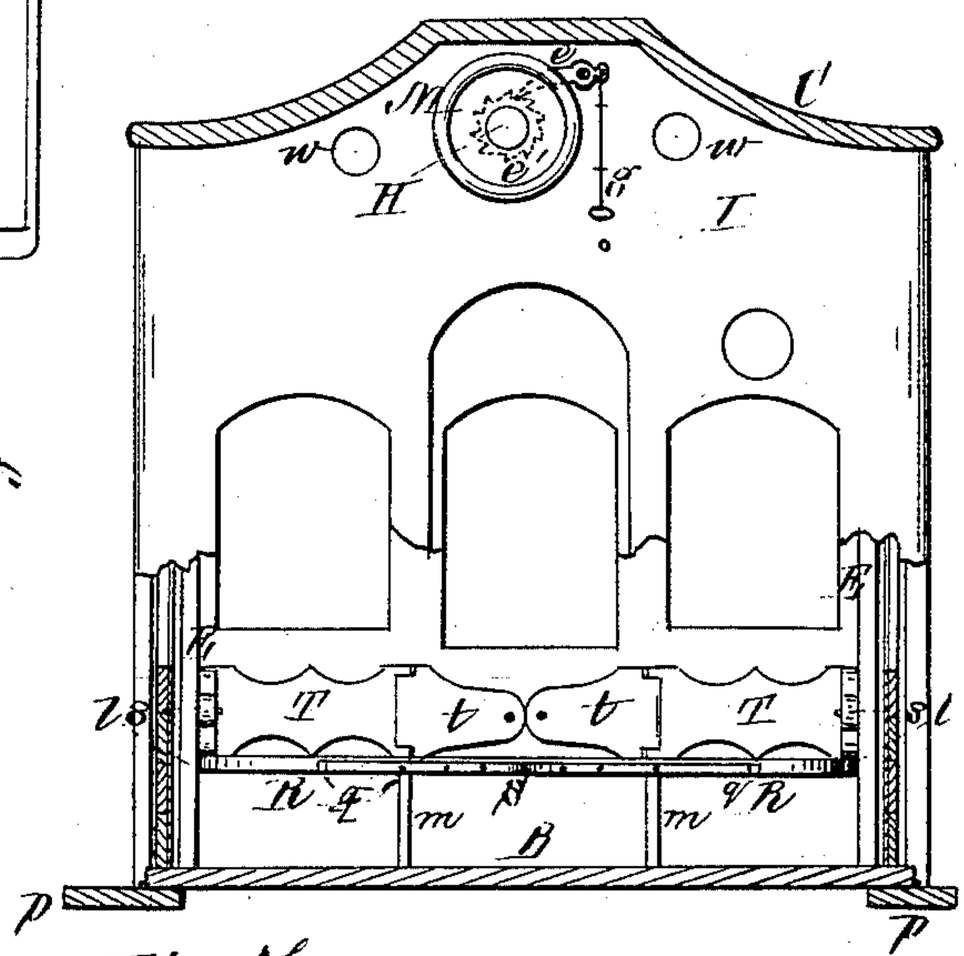


Fig. 7.

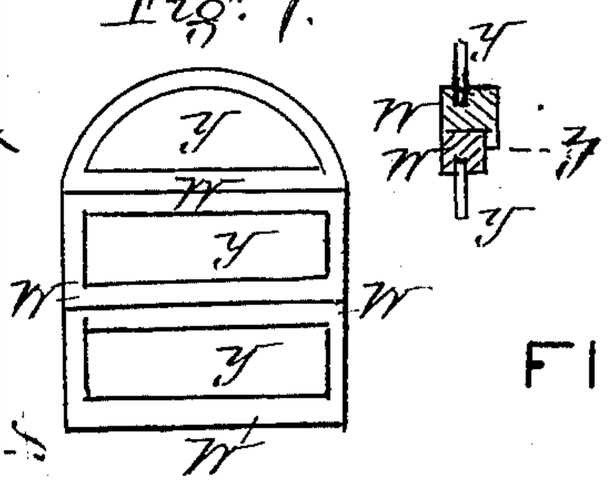
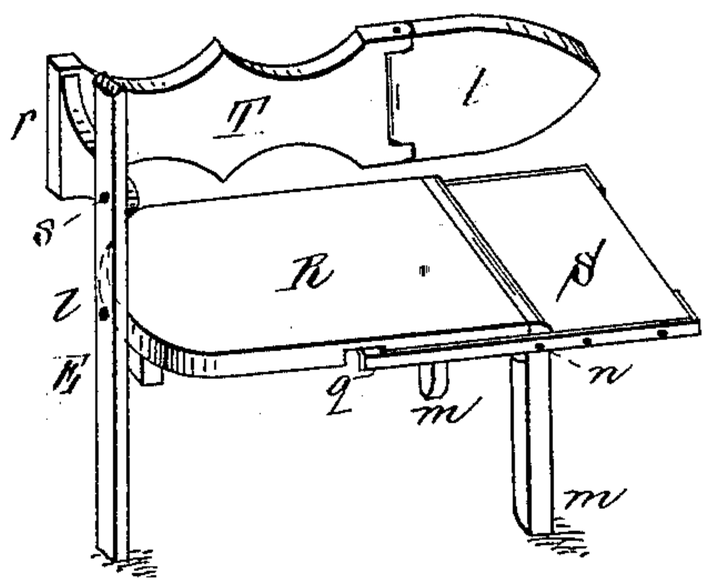


FIG. 6.



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UNITED STATES PATENT OFFICE.

ABRAHAM K. LISSBERGER, OF BOSTON, MASS., AND SAMUEL D. SAMUELS, OF MONSON, ME.; SAID SAMUELS ASSIGNOR TO SAID LISSBERGER.

RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 223,291, dated January 6, 1880.

Application filed August 25, 1879.

To all whom it may concern:

Be it known that we, ABRAHAM K. LISSBERGER, of Boston, in the county of Suffolk and State of Massachusetts, and SAMUEL D. SAMUELS, of Monson, in the county of Piscataquis and State of Maine, have invented certain Improvements in Railway-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of a street-car constructed in accordance with our invention, the car being closed. Fig. 2 is a side elevation of the same, the car being open. Fig. 3 is a transverse section on the line *x x* of Fig. 1, showing the arrangement of the seats when the car is required to be closed. Fig. 4 is an elevation of one end of the car, a portion of the casing being removed to show the arrangement of the seats when the car is to be employed as an open one. Figs. 5 and 6 are perspective views of one of the seats in the two positions it occupies when folded to adapt it for use in a closed car, and when unfolded or extended to adapt it for use in an open car; Fig. 7, detail to be referred to.

Our invention relates, particularly, to that class of car capable of being converted from a closed to an open car, and vice versa, to adapt itself for constant use during the various changes of the weather.

Our invention consists, first, in the side of a car composed of a series of longitudinal slats or sections hinged together or secured to a backing of canvas or other suitable flexible material, or to two or more belts, chains, or cords wound upon and taken up by a longitudinal shaft or roll located at any convenient point, but preferably within the casing of the top of the car, the shaft or roll for elevating one side being geared to the shaft or roll for elevating the other side, and being operated by a wheel, crank, spring, or other suitable device, whereby both sides may be simultaneously raised with facility, and the closed car be instantly converted into an open one, or vice versa, at pleasure.

Our invention consists, secondly, in a pivoted continuous step extending longitudinally along the side of the car, the said step being swung down for the use of passengers in entering at the sides of the car when the slats are elevated to provide an open car for fine weather, the step being readily swung up and caught in place by a suitable fastening when the side of the car is closed in cool or unpleasant weather.

Our invention consists, thirdly, in a peculiar construction and arrangement of the seats, whereby auxiliary seats pivoted at their inner ends to stationary seats may be swung down or unfolded, so as to extend entirely across and close the center of the car when it is to be entered at its open sides, and may be readily folded or swung up, so as to open a central passage through the car when its sides are closed and it is entered from the platforms at the ends of the car.

Our invention consists, fourthly, in a leaf pivoted to the inner end of the back of each stationary seat, whereby an extension is formed which serves as a back for the auxiliary seat when swung down across the central passage, for use when the car is open at the sides, the said extension-back being folded in at right angles to the main back when the passage through the center of the car is to be left open for use.

Our invention also consists in a window formed of longitudinal sections of glass provided with independent pivots to admit of the glass being wound up with the slatted side without breaking.

To enable others skilled in the art to understand and use our invention, we will proceed to describe the manner in which we have carried it out.

In the said drawings, A represents the side, B the floor, C the roof, and D D the platforms, of a street or railway car. E E are stanchions or posts rising from the floor a short distance inside the line of each of the outer faces of the car, and serve to support its top or ceiling G, a longitudinal space or opening, *a*, being thus formed between the outer edge of the side of the ceiling and each side of the top of the car, a chamber, *b*, being also formed between the

top of the ceiling G and the under side of the roof C. Extending longitudinally through this chamber *b* are two shafts or rolls, H H′, having their bearings in the ends I of the car, the extremities of the rolls having secured thereto cog-wheels L L′, which engage with each other, respectively.

One end of the roll H projects through the end of the car, and has secured thereto a hand-wheel, M, which is located at such height as to be accessible to the driver or conductor of the car.

N N are a series of longitudinal wooden slats attached to a backing, *c*, of canvas or other flexible material, the slats and backing being cut away at proper places to form the openings for the windows *d*, the slats thus arranged forming one of the entire sides of the car, which may be raised by means of an apron of cloth, or by suitable bands, chains, or cords connected with the top of the canvas backing, or with the slats themselves and with the rolls H H′, it being simply necessary for the conductor or driver to turn the hand-wheel M, which winds the apron around the roll and elevates the slatted side with extreme facility, thus converting the car into an open car when it is desired to afford the passengers a better opportunity of viewing the scenery outside, and providing them with abundant air and sun when the weather is favorable.

The windows are composed of sections of glass *y*, Fig. 7, arranged longitudinally and set in independent frames W, hinged together, said construction admitting of the windows being raised with the slatted side without the glass being broken; and the lower edge of the frame of each section of glass is provided with a flange, *z*, which overlaps the upper edge of the frame below it, whereby rain is precluded from entering the car.

The side may be held in its elevated position by means of an ordinary pawl, *e*, engaging with a ratchet, *e′*, on one of the rolls H H′, where it projects outside the end of the car; and the slats may be instantly dropped to close the side and convert the car into a closed one, in the event of a storm or change of weather, by simply raising the weighted rod *g*, connected with the pawl, which is thus lifted out of contact with the ratchet *e′*, the hand-wheel being grasped so as to check the too rapid unwinding of the apron and too sudden descent of the slatted side.

Hinged or pivoted at *f f* to the under side of the floor is a continuous longitudinal step, *p*, which, when down, as seen in Fig. 4, presents its upper or tread side in a horizontal position. This step is for the use of passengers in entering the car from the side when it is being employed as an open car.

When the side of the car is closed the step may be swung up, as seen in Fig. 3, and held in place by a simple button or spring-catch, *h*, at each end of the step.

R R are the seats, which are so constructed and arranged as to be adapted for use when the car is open or closed at the sides. The center of each stationary seat at its outer end is secured at *l* to the inside of the adjacent stanchion or post E, while its inner end is supported by two legs, *m*, secured to the floor. The side of the seat or inner arm-rest thereof, when the car is closed and a passage is to be made through its center, is formed by a swinging extension-piece or supplemental seat, S, provided on its front and rear with metal bands, pivoted at *n* to the top of the legs *m*, said construction admitting of the supplemental seat S being thrown up, as shown in Fig. 5, to close the inner end of the seat R and serve as its arm-rest.

When the side of the car is to remain open, the stationary seats R and supplemental seats S may be arranged so as to form one continuous long seat extending entirely across the car by simply throwing or swinging down the two contiguous supplemental seats till their inner ends abut or come in contact with each other, in which position, Figs. 4 and 6, each one is firmly supported by a cross-bar, *q*, connecting their outer ends, and brought to a snug bearing within a groove or channel, *q′*, formed in the under side of the stationary seat R.

The back T of the stationary seat is made reversible, its outer arm, *r*, being pivoted to the stanchion E at *s* to admit of this movement. To the inner end of each back is pivoted a leaf or section, *t*, which may be folded in at right angles thereto, Fig. 5, when the supplemental seats are not in use and the passage through the center of the car remains open, this pivoted leaf being swung back into line with the back T, so as to form a continuous back when the car is open at the sides, and the seats are so arranged as to form a continuous seat extending transversely across the car.

Through the top or ceiling of the car are formed a series of perforations, *v*, which communicate with the chamber *b*, and through each end of the car are formed openings *w*, also communicating with the chamber *b*, and by this means we are enabled to secure perfect ventilation for the car when it is closed.

We claim—

1. In a convertible car, the flexible sides A A, each composed of a series of horizontal slats placed contiguous to each other in one and the same vertical plane, and connected together so as to form a continuous closed apron extending between the ends of the car, and raised at one operation by means accessible from the platform, substantially as described.

2. In combination with a car capable of being opened at its sides, the continuous pivoted steps P P, extending longitudinally therewith, substantially as and for the purpose set forth.

3. In a convertible car, the combination of the stanchions E, stationary seats R, and supplemental seats S, adapted to be swung down

to close the passage through the center of the car, and thereby form a continuous seat transversely across it, substantially as specified.

4. In combination, the stanchion E, the main back T, pivoted thereto, and the leaf *t*, pivoted to the latter, whereby it may be folded and unfolded, as and for the purpose set forth.

5. A window composed of sections *y*, of glass, set in independent frames W, provided with independent pivots, in combination with the slatted side A, as and for the purpose set forth.

Witness our hands this 4th day of June, 1879.

ABRAHAM K. LISSBERGER.
SAMUEL D. SAMUELS.

In presence of—
IBI LISSBERGER,
EDWIN R. HAYNES.