No. 655,566. Patented Aug. 7, 1900.

G. MOORE.

STREET RAILWAY CAR.

(Application filed Feb. 21, 1900.)

(No Model.) 4 Sheets—Sheet 1.

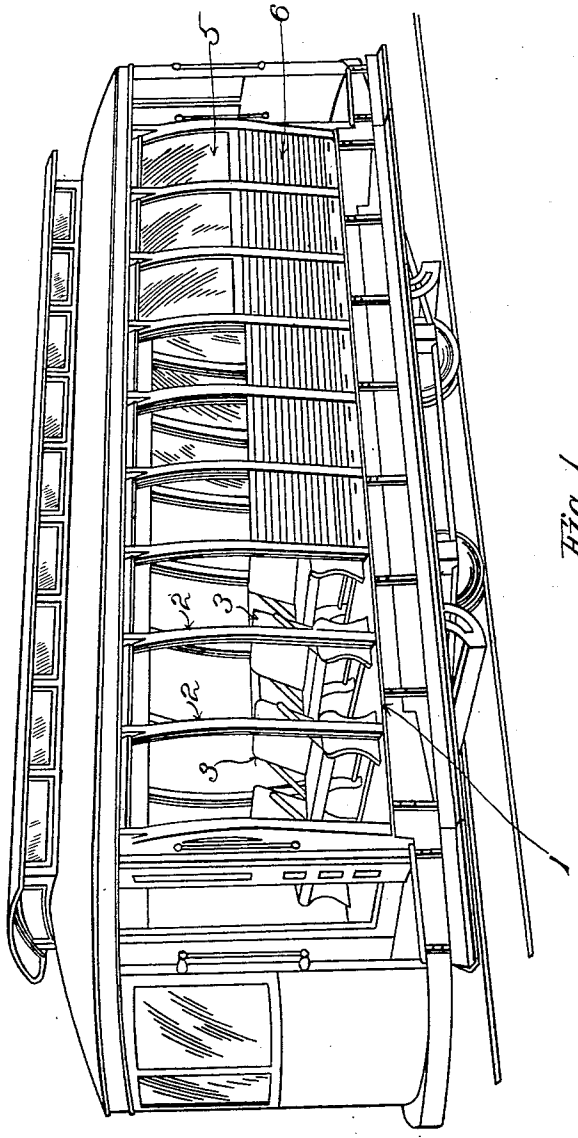


Fig. 1.

Witnesses:
Oscar F. Hill
Alice H. Morrison

Inventor:
George Moore
by Macleod Calver & Ramsdell
his Attorneys.

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

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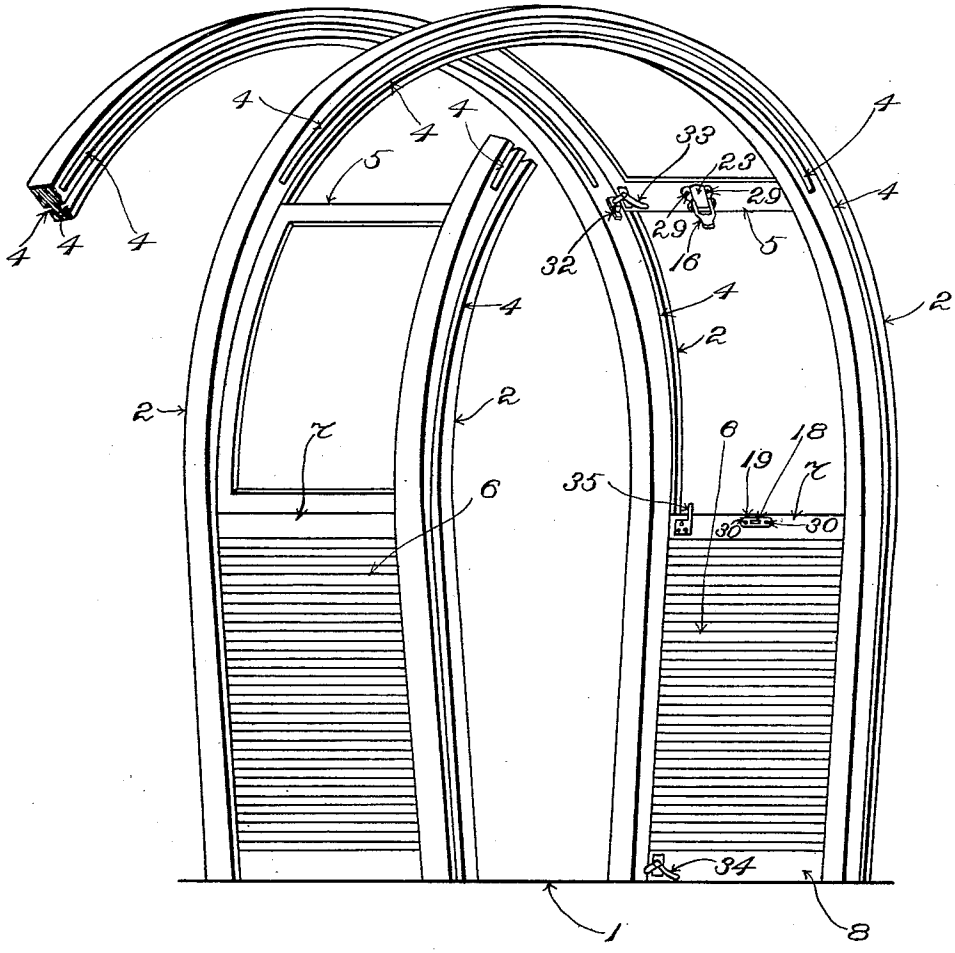


Fig. 2.

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Fig. 4.

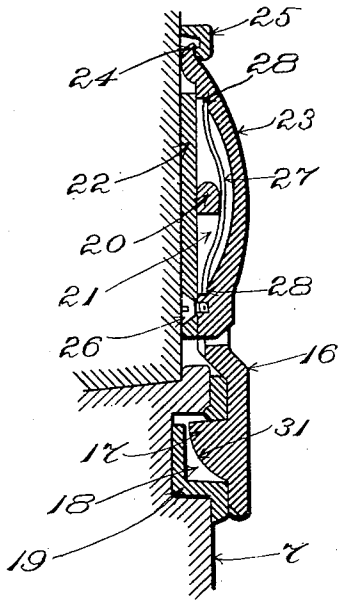


Fig. 3.

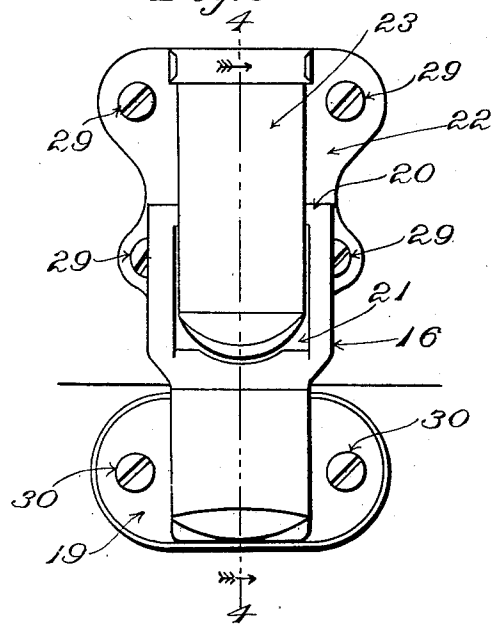


Fig. 6.

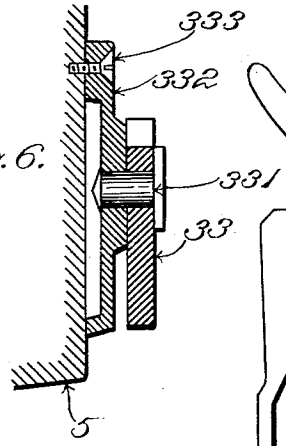


Fig. 7.



Fig. 5.

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(No Model.) 4 Sheets—Sheet 4.

Fig. 9.

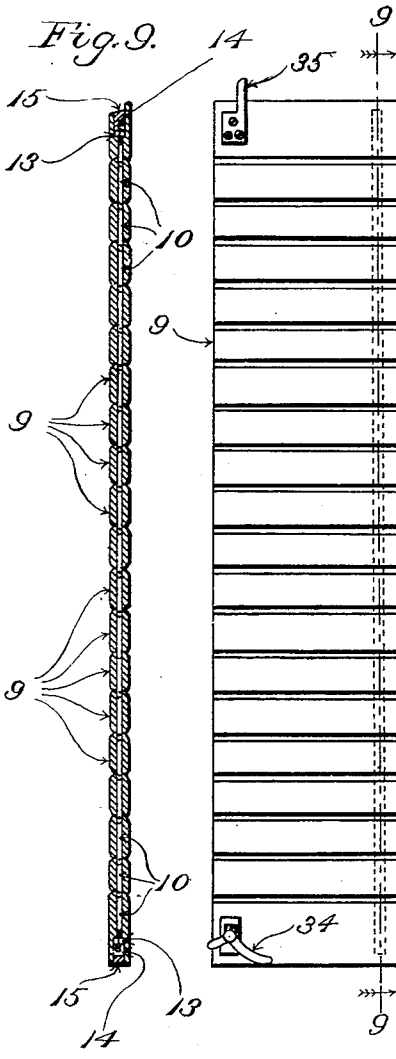


Fig. 8.

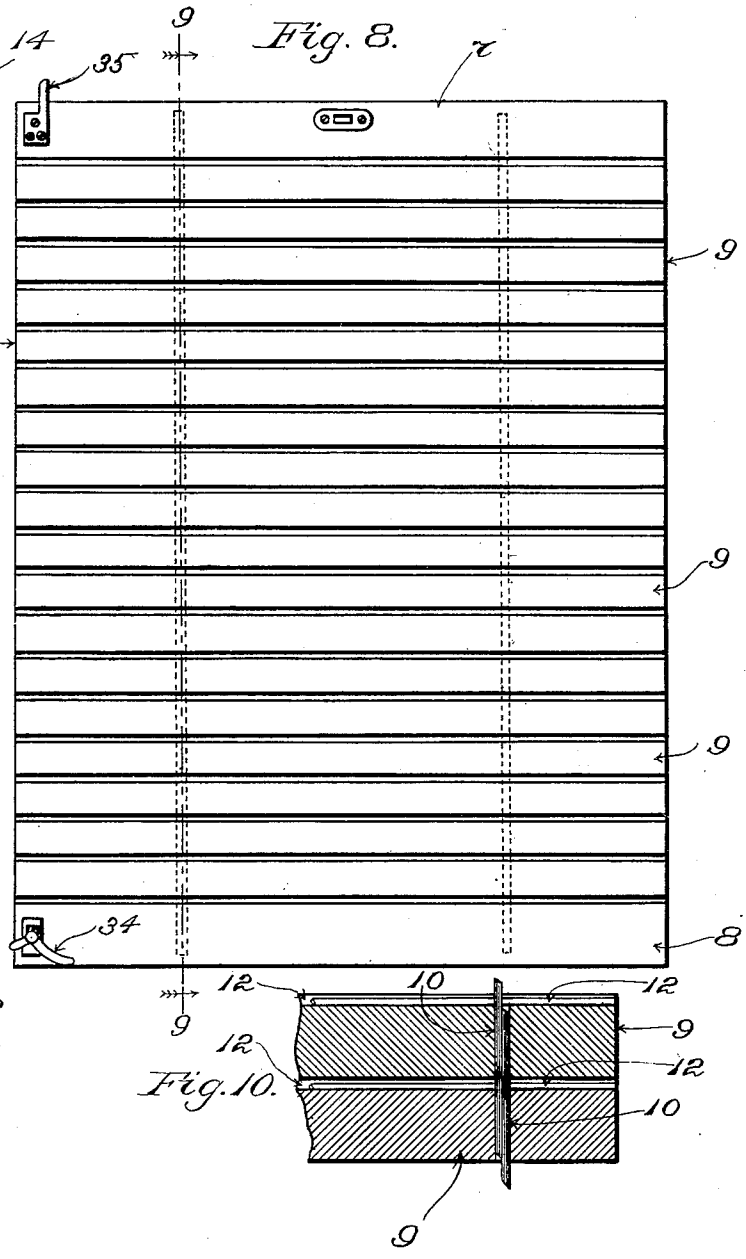


Fig. 10.

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

UNITED STATES PATENT OFFICE.

GEORGE MOORE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE DUPLEX CAR COMPANY, OF NEW YORK, N. Y.

STREET-RAILWAY CAR.

SPECIFICATION forming part of Letters Patent No. 655,566, dated August 7, 1900.

Application filed February 21, 1900. Serial No. 5,991. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MOORE, a citizen of the United States, residing at Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Street-Railway Cars, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention has relation to street-railway cars, although certain features thereof are adapted to other uses within the scope of the invention.

The invention relates more especially to street-railway cars which are "convertible," or, in other words, which may be employed, as desired, either with the sides thereof completely closed or covered in for purposes of protection, as in the case of the ordinary closed car during cold or otherwise disagreeable and inclement weather, or with the sides thereof completely thrown open during warm and pleasant weather, as in the case of the ordinary open or summer car.

In the particular type of car to which the invention is shown as applied there is a series of upright frames or ribs which rise or spring from the floor of the car at distances apart corresponding, by preference, to the spacing of the seats of the car. These frames or ribs are disposed crosswise of the car and, as will be understood, are located in the sides and top of the body of the car. Each frame or rib is symmetrical in contour, its upper portion being curved in the arc of a circle, the said arc extending on opposite sides of the body of the car down to or nearly to the normal positions of the lower edges of the window-sashes. From these points the frames or ribs extend, preferably in straight lines, to the floor; but the precise form of this portion of the frames or ribs is not material to the present invention. In the sides of the frames or ribs are formed grooves, one of such grooves beginning at each side of the body of the car in the lower end of a given frame or rib and extending thence upward and along the overhead curved portions of the frame or rib over to the opposite side of the body of the car, the upper portions of the two grooves in a given side of a frame or rib overlapping in the said overhead curved portion of the frame or rib. Between the respective upright frames or ribs are fitted sliding side sections, each having its opposite edges fitted within and adapted to slide up and down along the grooves which have just been mentioned as formed in the said frames or ribs. Each side section comprises a window-sash and a panel below the same. The window-sash works in the curved upper portions of the grooves in the upright frames or ribs and is curved to the same degree as the said upper portions. The panels are composed of slats flexibly jointed together in order that they may adapt themselves to the varying conformations of the grooves. When the window sashes and panels of all the side sections are down in normal position, the car is completely closed in at the sides. If desired, one or all of the window-sashes may be pushed up into the overhead or roof portion of the car, leaving the panels down in place, and the car will then resemble one of ordinary character which has a corresponding number of its window-sashes open. Again, if desired, the panels also may be pushed up into the overhead or roof portion of the car, whereby the sides of the car will be completely opened up.

The present invention more particularly resides in the construction of the flexible panel above mentioned, also in novel means for enabling the sash of a given side section to be detachably connected with the corresponding panel, means whereby either a sash or an entire movable side section may be locked in an upraised position, and thereby retained in the overhead or roof portion of the car, and means whereby after a sash has been upraised and locked in place by such locking means it may conveniently be unlocked by pushing up the panel until it meets the sash and drawing down both panel and sash together in their engaged condition.

The invention will be described in detail with reference to the accompaning drawings, which illustrate the best form thereof that has yet been devised, and afterward the novel features of the improvement will be defined in the claims at the close of this specification.

In the drawings, Figure 1 is a perspective

view of a car embodying the invention. Fig. 2 is an isometric view showing, on an enlarged scale, certain of the upright frames or ribs and the movable side sections that are supported between the same. Fig. 3 is a front elevation of the catch and keeper that are applied to the sash and panel constituting a movable side section for the purpose of enabling the said sash and panel to be connected together when required. Fig. 4 is a section taken on the plane that is indicated by the broken line 4 4, Fig. 3, looking in the direction indicated by the arrows near the ends of such line. Fig. 5 is a front elevation of the locking-lever that is applied to the sash and the finger coacting therewith, which is applied to the panel. Fig. 6 is a section on the plane that is indicated by the broken line 6 6 in Fig. 5, looking in the direction indicated by the arrows near the ends of such line. Fig. 7 is a side elevation of the finger shown in Fig. 5. Fig. 8 is a front elevation of a panel. Fig. 9 is a section on the plane that is indicated by the broken line 9 9 in Fig. 8, looking in the direction that is indicated by the arrows near the ends of such line. Fig. 10 is a detail view of the panel, partly broken out in order to illustrate the devices by means of which the slats are joined together.

Having reference to the said drawings, and more especially first to Figs. 1 and 2 thereof, 1 is the floor of the car, 2 2 are the upright frames or ribs, 3 3 are the seats of the car, 4 4 are the grooves in the sides of the frames or ribs, 5 5 are the curved sashes sliding in the curved upper portions of such grooves, and 6 6 are the flexible panels sliding in the straight portions of the said grooves below the said sashes, all substantially as described at the outset herein.

The construction of the panels is shown in Figs. 8, 9, and 10. Each panel is composed of a top rail 7, a bottom rail 8, and the intermediate strips or slats 9 9, which are connected together into a unitary but flexible structure by means constituting a portion of my invention and which will now be particularly described. The upper meeting edges of the bottom rail and strips or slats are convex or rounded, while the under meeting edges of the top rail and the said strips or slats are concave to fit the former, as is shown most clearly in Fig. 9. Longitudinally through the panel are extended one or more lines of links 10 10, which are received in holes extending from edge to edge of each strip or slat. These links are shown clearly in Fig. 9 and are indicated by dotted lines in Fig. 8. The projecting end portions of each of the said links are flattened and arranged to overlap with the corresponding portions of adjoining links, as shown in Fig. 10, the said ends being joined by means of wires 11 passing through the overlapping portions. The wires 11 11 are received in grooves 12 12, which last are formed in the rounded or convex edges of the bottom rail 8 and of the intermediate strips or slats 9 9. The ends of the said wires extend to the ends of the slats, and when the panel is in place between two of the upright frames or ribs the latter prevent the wire from working endwise out of place. The links that are applied to the top rail 7 and bottom rail 8 have their outer ends screw-threaded, as shown in Fig. 9. The said screw-threaded ends receive thereon nuts 13 13. For the reception of the said nuts 13 13 the top and bottom rails aforesaid are formed with recesses, as 14, the outer portions of the said recesses being filled with plugs 15 15 of wood.

By the above-described construction of panel the joints thereof are completely concealed, but the parts of the panel may be readily taken apart to replace a broken or damaged portion of the panel. Furthermore, the distance of each intermediate strip or slat from the adjacent strips or slats necessary to preserve the complete flexibility of the panel and to prevent the adjacent strips or slats from binding upon one another is always maintained.

The catch device by means of which the sash and panel constituting a movable side section are connected together is shown in detail in Figs. 3 and 4 and applied in Fig. 2. It comprises, essentially, a latch 16, having at the free end thereof an engaging nose or projection 17, which enters a recess 18 in a keeper 19. The latch 16 is formed at the opposite end thereof with a cross-bar 20 and also with an opening 21 adjacent to the said cross-bar. The mounting of the latch comprises a base-plate 22 and a cover-plate 23. One end of the cover-plate is furnished with a hook 24, fitting under a raised lip 25 on the base-plate, the other end of the cover-plate passing through the opening 21 of the said latch 16 and being connected with the base-plate by a screw or screws 26. Between the cover-plate 23 and the cross-bar 20 a bent plate-spring 27 is arranged, the ends of the latter resting against shoulders 28 28 on the under side of the cover-plate, while the middle portion of the said spring makes contact with the cross-bar 20 of the latch, as is shown in Fig. 4. The said cross-bar is cam-shaped in cross-section, as shown in Fig. 4. As will be obvious, the disengagement of the latch from the keeper may be effected readily by hand, and, if desired, the latch may be swung up or reversed into an inoperative position, the pressure of the spring against the cam-shaped portion of the cross-bar of the latch operating to retain the latter in either its operative position or its inoperative position. The base-plate of the latch is secured to the bottom rail of the sash by means of screws 29 29, while the keeper 19 is secured to the top rail of the panel by means of screws 30 30. The nose of the latch is beveled or curved, as at 31, to facilitate the rising of the same over the edge

of the top rail 7 of the panel and over the keeper applied to the said top rail when the panel and sash are brought together.

It will be obvious that with the foregoing construction the latch will operate to engage automatically with the keeper whenever the sash and panel are brought together. For example, when the sash is in the upraised position in which it is shown at the right in Fig. 2, or even farther around within the overhead portion of the car, it is simply necessary to push the panel upward until the meeting-rails of the two come in contact with each other, whereupon the latch will snap into the recess of the keeper, thereby connecting the parts.

The means whereby either a sash or an entire movable side section may be locked in an upraised position, and thereby retained in the overhead or roof portion of the car, and the means whereby after a sash has been upraised and locked in place it may conveniently be unlocked by pushing up the corresponding panel and may be drawn down therewith will now be particularly described with reference to Figs. 2, 5, and 6.

32, Fig. 2, is a stop-piece which is affixed to one side of each upright frame or rib, preferably at the height to which it is desired that the sash or the entire movable side section shall be raised. 33 is a locking-lever which is applied to the sash for engagement with the said fixed stop-piece in order that the sash may be held in the upraised position in which it is represented in Fig. 2. The corresponding locking-lever that is applied to the panel for the purpose of engaging with the said fixed stop-piece in order to hold the panel in its completely-upraised position is designated 34, Fig. 2. In Fig. 2, at the right-hand side thereof, the panel is shown in its lowest or normal position, the window-sash being upraised and being held in the upraised position through the engagement of the locking-lever 33 thereof with the fixed stop-piece 32. When it is desired to elevate the panel also, the latter is simply pushed upward in the grooves 4 4, and after coming in contact with the sash it will push the same ahead of it until the locking-lever 34 of the panel engages the said stop-piece, whereby the entire side section will be held upraised in the overhead portion of the car. This latter position is illustrated in the case of the three side sections at the left in Fig. 1, the three middle side sections in the said figure representing the sashes upraised and the panels down, while the three side sections at the right in the said figure are shown as completely closed or drawn down.

In Figs. 5 and 6 the locking-lever 33 is shown pivoted by a riveted pin 331 upon a stand or base 332, the latter being secured by screws 333 333 to the bottom rail of the sash 5.

When the entire side section is raised in the manner just described and the locking-lever 34 is in engagement with the stop-piece 32, the entire side section may be drawn down by disengaging the said locking-lever from the said stop by hand and drawing down on the panel, the panel and sash being already in engagement with each other through the latch 16 and keeper 19. The complete drawing down of the side section, however, would be prevented by the reëngagement of the locking-lever 33 on the sash with the stop 32. In order to prevent such reëngagement, there is provided a finger 35, Figs. 2, 5, and 7, which is affixed by screws 351 351 to the top rail of the panel in line with the locking-lever 33 of the sash. When the panel is raised and comes into engagement with the sash, the finger 35 turns the locking-lever 33 on its pivot, thereby turning the same into its inoperative position and holding it in such inoperative position during the time while the entire side section remains upraised and while it is being again drawn down. In such latter motion, therefore, the locking-lever 33 passes by the fixed stop 32 without engaging therewith. When subsequently it is desired to raise the sash alone, and when thereupon the sash is disconnected from the panel, by swinging the latch 16 free from the keeper 19 the locking-lever 33 is at the same instant withdrawn from the finger 35 and resumes its operative position ready to engage with the fixed stop 32 as soon as the sash is completely upraised.

What I claim is—

1. A railway-car or the like vehicle having the grooved upright frames or ribs, the movable side section comprising the window-sash having its edges fitted to the grooves of the said frames or ribs, the panel also movable in the said grooves, the catch to connect the said sash and panel in a separable manner, the locking devices carried by the sash and panel, the fixed stop-piece which is engaged by the said locking devices respectively, and the disengaging finger carried by the panel.

2. The flexible panel comprising the top and bottom rails and intermediate slats or strips with their convex and concave edges fitting together and having the recesses extending longitudinally in the said convex edges, the links passing through the said rails and slats or strips, and the wires passed through holes in the overlapping ends of the links extending in the direction of the length of the slats or strips and occupying said recesses.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE MOORE.

Witnesses:

LEPINE HALL RICE,

WILLIAM A. COPELAND.